

1999 Interim Report

on the APVA Excavations at Jamestown, Virginia

October 2000



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APVA *Jamestown*
REDISCOVERY

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The 1999 summer field school students and crew.



Introduction

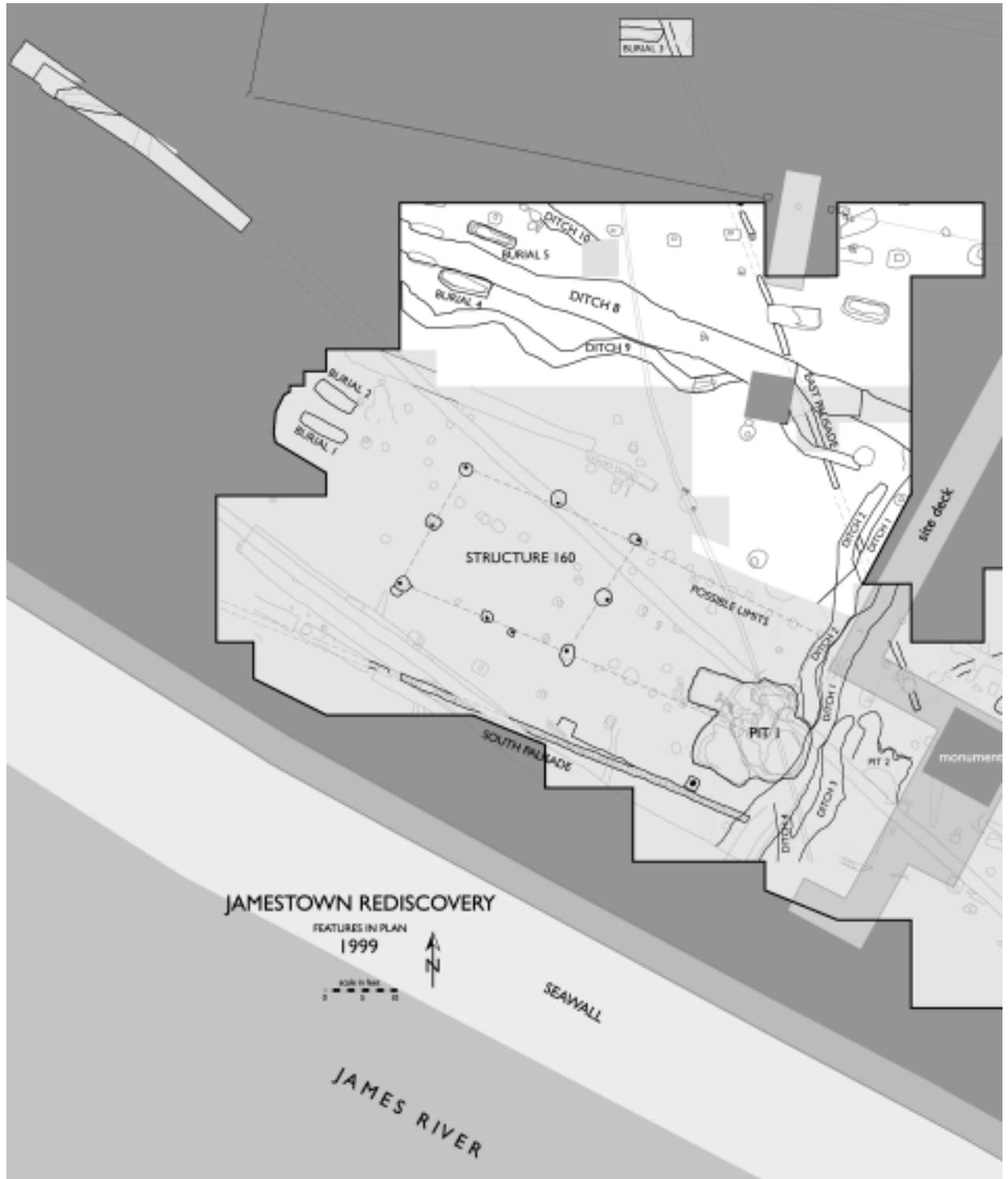
The 1999 Interim Report for the *Jamestown Rediscovery* project includes four different areas of research. First, like annual reports from 1994-98, it presents findings from the previous year of excavation at the Association for the Preservation of Virginia Antiquities' Jamestown Island property. Second, the report provides a summary of the site's excavated artifact-rich features, complemented with explicit date ranges and TPQ determinations. The synthesis presented here corresponds with suggested guidelines for a broad

inventory of 17th-century archaeological sites in the Chesapeake. Entitled *Capital and Countryside: Jamestown and its Hinterland*, preliminary results of this region-wide project are posted on-line at: www.apva.org/resource/jt2000/index.html. The feature summary from the APVA's 1994-99 excavations leads to a third analysis presented here, one centered on general archaeological patterns within the site's entire material assemblage. Fourth, this report discusses selected artifacts recently recovered through excavation.

Figure 1. Aerial view of 1999 Jamestown Rediscovery excavations.



Figure 2. Archaeological site plan through 1999.



1999 EXCAVATIONS

Summary of Results

The 1999 field season included the continued delineation and excavation of Structures 163 and 165, the digging of 40 plowzone squares, and the exhumation of two burials. Removing disturbed contexts above the western quarter of Structure 163 and testing a clay cap on its northern end offered further insights into the symmetrical form of the building. The fill and stratigraphy in the eastern half of Structure 165's cellar revealed significant construction and use-related details, suggesting that this edifice served as both a building and a fort barrier. Plowzone excavation increased the project's total exposed site area by 25%, from 120 to 160 completely dug 10' grid squares, and revealed over 100 new features. Diverse in identity, these previously concealed contexts included human burials, structural remains, and ditches. In an effort to learn about historical mortuary practices and to increase the general understanding of life and death at Jamestown Island, excavators fully uncovered the human skeletal remains within two graves. Although located within the archaeological footprint of James Fort and aligned with its south wall, at least one of the burials dated to a much later time period.

Structures

Structure 163

JR100

During the past year archaeological investigations of Structure 163, a 30' by 50' building with a cobble foundation and two brick chimneys, focussed on defining its perimeter and uncovering its interior. Likely constructed, occupied, and destroyed from ca. 1630-60, a 1644 land patent suggested that a merchant named John White owned this structure. Removing the long and narrow strip of plowzone that sealed the extreme eastern quarter of the building revealed no evidence of additions, chimneys, or porches. A test trench into the clay cap at the structure's northern end indicated the presence of a northern robber's trench. Four feet north of the northern hearth, this trench demonstrated the symmetry of the stone foundation. Distinct from the clay

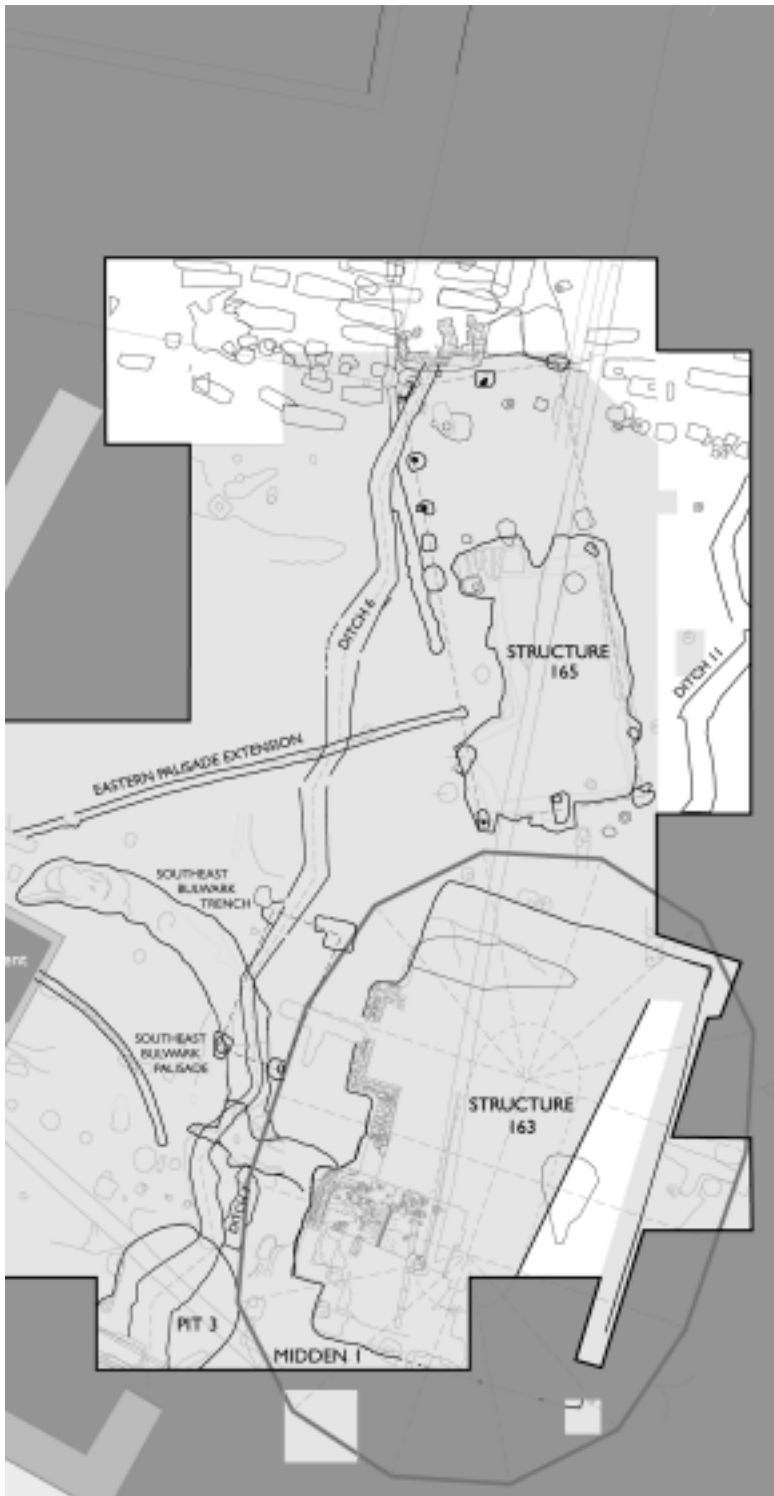




Figure 3. Overhead photograph of Structure 163.

cap and evenly spaced about the two western hearths, Structure 163's cobble foundation measured 30' by 45'. Excavation continues on Structure 163.

In February of 1999, a supervisor from Sprung Instant Structures led members of the *Jamestown Rediscovery* staff in assembling a temporary dome over Structure 163. The covering is a 50' by 70' oval in plan. It protects the archaeological remains, shielding Structure 163 from the elements and maintaining a controlled interior climate. It also serves as a visitor station. The Sprung Structure is open to the public on weekends when much of the site is usually covered in protective panels, cloth, and plastic.

Structure 165

JR158, 212, 219-222, 224-226, 314-315, 369, 375

Excavation of the strata in and around Structure 165, an earthfast building with an "L"-shaped cellar, offered insights into its construction, use, and destruction. By the end of 1998, the western half of the cellar had been completely removed. Excavation of the east half of Structure 165's cellar in 1999 revealed similar layers but significant architec-

Figure 4. A view from the interior of the Sprung dome that protects Structure 163.



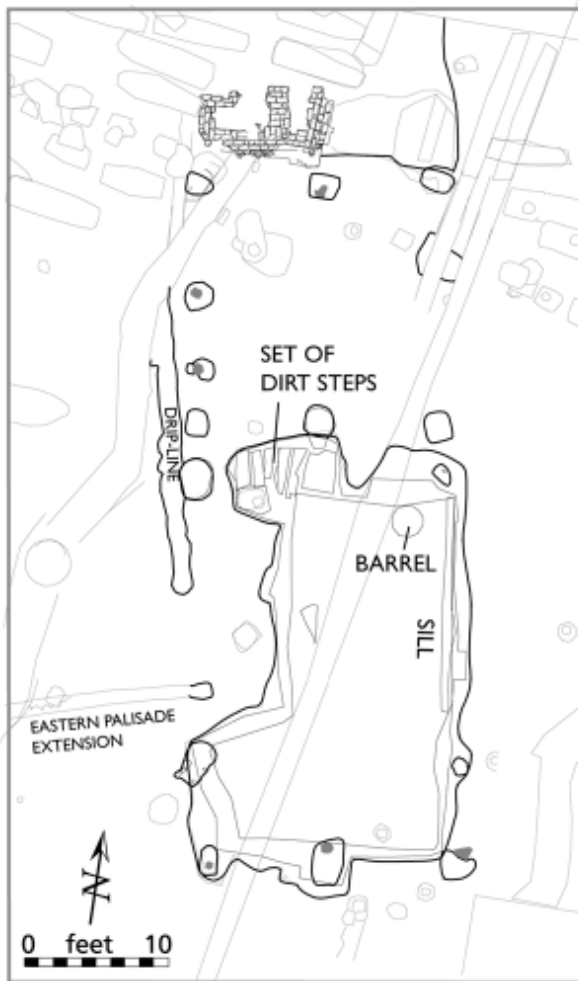


Figure 5. Archaeological plan of Structure 165 and associated features.

tural distinctions. Both halves contained evidence of the same four major fill episodes. These consisted of: 1) a bottom occupation layer, 2) a clay ramp of redeposited subsoil at the cellar's south end, 3) a series of lower strata rich in refuse with a TPQ of 1610, and 4) a top layer of mixed soils that post-dated 1630.

Exposing the east wall of the cellar revealed a builder's trench and a 15'3" sill with small end posts. With one end in the cellar's northeastern corner, the sill extended southward along the eastern perimeter. Although it did not reach the southern extent of the cellar, the exact location of the sill's southern terminus was important. It was positioned along a line that other stratigraphic evidence emphasized as well. Had the eastern palisade extension continued eastward an additional 20 feet, it would have intersected the interior corner of the right angle that the "L"-shaped cellar formed and the southern end post of the cellar's sill. This spatial relationship further supported the notion that the cellar was constructed in two phases that were divided by that very line. Previous excavation of the cellar's western half had denoted a significant difference in the slope of the walls between the northern rectangular core (vertical) and the southwest wing (heavily sloped).¹ Furthermore, the diminishing clay ramp strata ceased at the dividing line. Colonists likely first dug the rectangular cellar core and second, put in the southwest wing. Both components respected the eastern palisade extension. Although constructed at two distinct times, the site's inhabitants did not deposit substantial refuse in Structure 165's cellar between these construction episodes.

Just inside of the cellar's northeastern corner, excavation revealed the remains of a buried barrel. Likely a sump, the wood of the barrel had completely deteriorated, leaving only a circular stain. Occupation-level debris surrounded the edges of the barrel.

A series of 18 potential postholes formed a bisected rectangle over the cellar that extended northward to a hearth base (JR215) exposed in 1998. Although the postholes have yet to be sectioned and substantiated,

Figure 6. The archaeologist's trowel points at the cylindrical stain of the decayed barrel, which cut both the subsoil floor of the cellar and the lowest layer of occupational fill.



they apparently demarcate in part the extent of Structure 165. The two lines of postholes along the north/south axis of the building might also continue further northward, past the current limits of excavation. Additionally, possible soil stains in the floor of the cellar that could offer insight into its interior spatial division have yet to be tested.

Palisades

East Curtain

Four areas of the Fort's eastern curtain had been exposed before the 1999 digging season:

- 1) the area closest to the southeast bulwark,
- 2) a 5' section in between Ditches 8 and 9,
- 3) a 5' segment just to the southeast of the foundations of the 1617/39 Jamestown Church, and
- 4) a 5' component in the north churchyard.

These aligned segments clearly delineated the triangular fort's eastern parameters. Previous excavation hinted that the east palisade had been actively dismantled, in contrast to the base of southern wall and eastern extension, which appeared to have rotted in place. Whereas these other palisades had clear evidence of postmolds, the soil stains in the trench of the eastern wall were nebulous. Furthermore, the stain of the original trench was less distinct as well. The segments of the east curtain that were uncovered in 1999 maintained many similar characteristics with previously dug sections and helped to fill in blanks between earlier palisade tests.

Excavation revealed seven additional sections of the east curtain. A host of later features and anomalies sliced through the soil stain that remained from the early fort wall. From south to north these included Ditch 1, Ditch 2, a large tree stump, Ditch 9, Ditch 8, an extended burial (JR340), and a modern churchyard posthole (JR310). In addition, two gaps in the palisade were exposed that did not result from later earth moving. Since no historical gate posts were found adjacent to either of these openings, these spaces likely resulted from differential post and trench depths during construction or differences in the wall dismantling process. Plowzone analyses in a subsequent section of this report further discuss the destruction of the east curtain.

Possible North Palisade Extension or Drip-line

Although the high density of later anomalies north of Structure 165's cellar made the location and verification of early features difficult, excavation uncovered a linear stain that might be the architectural footprint of a northern palisade extension. Whereas the eastern palisade extension ran from the southeastern bulwark to the edge of the cellar in Structure 165, the potential north palisade extension picked up to the north and west of Structure 165. If both eastern and northern palisade extensions respected the apparent edges of the building, then Structure 165 likely served a dual purpose, in typical bawn fashion, as building and barrier. Thus, in order to continue a barrier between the fort and the outside world, the north palisade extension would have started as the building ceased. If this were the case, then the hearth (JR215) was not likely associated with Structure 165. It would have been outside of the barrier formed by the combination of the building and the palisade. However, these interpretations are preliminary as neither the identity of the north palisade extension nor the northern limits of Structure 165 have been verified by excavation.

A host of features cut the plausible northern palisade extension, including Ditch 6, a structural corner post from Structure 165 (JR217/374), a historical churchyard fence post (JR377), and at least two extended burials (JR234 and 235). Although this feature contained no postmolds, it resembled other slot trenches at the site. A similar linear feature to the south (JR195) had initially been thought to be evidence of a northern palisade extension, but excavation revealed that it was likely a drip-line from the roof of Structure 165. The combination of its lack of fill and postmolds, and its overall shallowness (<2") contradicted a palisade interpretation. Likewise, this possible north palisade extension could be a drip-line as well. If so, it would respect the edge of the hearth. Contrary to the notion presented above, this would intimate that Structure 165 included the hearth and was even longer than initially posited.

Ditches

Plowzone excavations revealed additional sections of three ditches that had been located previously. They uncovered three new ones as well. Only one of the ditches was tested.

Ditches 1 and 2

Excavations in 1999 further delineated the boundaries of a series of middle 17th-century ditches at the south center of the site. Ditch 1 continued in a relatively straight north-northeast path for at least 14'. It cut part of the triangular fort's east curtain and was cut by a posthole (JR341). Although Ditch 1's northern terminus eluded the crew, additional plowzone removal 40+' to the north-northeast of its current limits (JR241) indicated that Ditch 1 must have either ceased or turned before intersecting the 10' grid unit centered at N9815/E9765.

Evidence of Ditch 2 also surfaced during plowzone removal. Like Ditch 1, Ditch 2 cut the fort's eastern palisade. Unlike Ditch 1, Ditch 2 came to an abrupt squared off stop 4' east of Ditch 9. Ditches 2 and 9 were both meandering ditches, uniformly 2'2" in width. Their central axes formed a right angle. These common factors intimated their contemporaneity.

Ditch 8

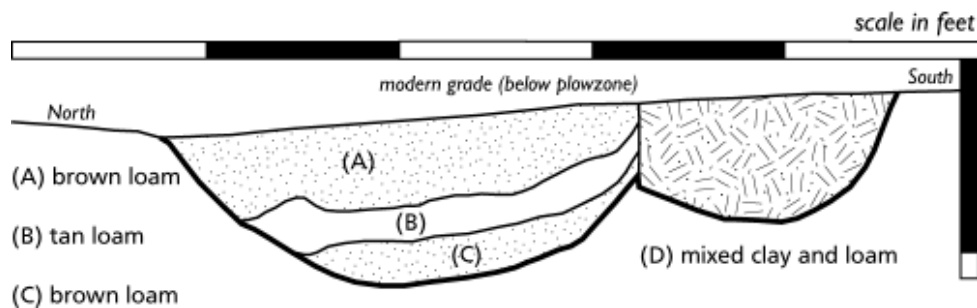
JR88, 90, 317

Oriented 68° west of north, Ditch 8 was a 4'5" wide trench that stretched 75+' across the western half of the site. It did not continue eastward past Ditch 6. Ditch 8 cut through two extended burials (JR316 and 320) and completely sealed a third (JR379). It also sliced through the triangular fort's east curtain and Ditch 9 in two places. Both of its present termini extended into areas currently sealed by plowzone.

Two different sections of Ditch 8 were tested, one at its exposed western extreme (JR317) and another 70' to the east (JR88, 90). The first test was trapezoidal in plan. One side was a perpendicular bisector of the feature and its opposite was along both a gridline and a site boundary. It measured 5'1" (w/e) by 4'2" (s/n) by 6'9" (e/w) by 3'9" (n/s). Excavation revealed that this section of Ditch 8 contained two separate digging and filling episodes. Site inhabitants first dug a shallow trench (JR317D) to the south with a slightly rounded base. It reached a maximum depth 5" below the base of plowzone. After this ditch was filled with mixed clay and loam, a deeper and wider trench to the north, also slightly rounded, was cut through it. This later ditch phase contained three layers of alternating brown and tan loam (JR317A-C). Its fill tipped up to the south, suggesting that it had been originally deposited from that direction. The ditch section contained few artifacts, only one of which offered an insightful chronology. The interface between plowzone and the top of the sealed context produced a nearly complete late 18th-century glass wine bottle, indicating that this area of the ditch had been filled after 1780. The excavation of nearby Burial 4 supported this time frame. The western extreme of Ditch 8 cut through this grave, which dated to the second half of the 18th century.

The eastern test section of Ditch 8 shared few characteristics with its counterpart 70' to the west. It consisted of four layers (JR90A-D), one general fill episode, and included a handful of early 17th-century artifacts. The lowest strata was distinctively V-shaped, in direct contrast to Ditch 8's other round-bottomed layers. The upper layers in Ditch 8's eastern section contained a wealth of early artifacts. Layer JR90B included prehistoric pottery, Border Ware, delftware, Jamestown Potter, majolica, Martincamp, Martins Hundred Potter, Midlands Purple, European ball-clay pipestems with bores 9/64" in diameter, case-bottle glass, and part of a lockplate and serpentine. The assemblage suggested that site inhabitants filled

Figure 7. North-south profile map of Ditch 8, Section 1.



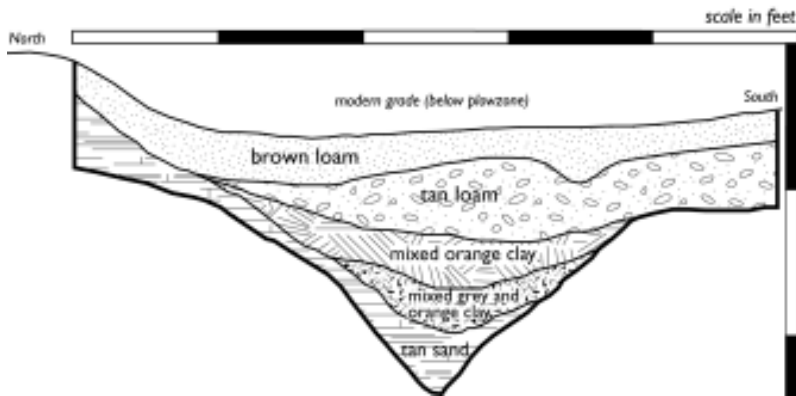


Figure 8. North-south profile map of Ditch 8, Section 2.

this ditch section after 1630. Adjacent layers contained copper and glass beads, intimating an even earlier fill date. All strata were filled from the south.

Material and stratigraphic inconsistencies between the two Ditch 8 sections complicated any holistic interpretation. Two different types of explanations could account for the differential fill. A temporal hypothesis contended that the two sections of the ditch were dug at different times. Since its earliest stratigraphic layer cut a middle 18th-century grave, the western section had to have been dug after ca. 1750. Likewise, the fill in the eastern section supported the notion that Ditch 8 was dug and filled in the 1630s. Along the assumption that a ditch dug at one time would contain a uniform bottom, the non-uniform profile shapes of the ditch bases furthered the belief that the ditch was dug in different centuries.

An equally viable spatial interpretation maintained that the entire ditch was dug at the same time—in the 18th century—and that the fill merely reflected the features it cut. The northwest corner of the site contained few early 17th-century artifacts. Thus, when Ditch 8 was filled in ca. 1750, a paucity of early materials entered the fill. In fact, the feature contained a dearth of artifacts from any time period, suggesting that this area of the site was never a locus of activities that produced substantive debris. The nearby graves and documentary records of adjacent church land holdings further supported the belief that this area served as a graveyard during the 17th and 18th centuries. Conversely, the eastern end of Ditch 8 cut through an area rich in dense early to middle 17th-century features. Ditches 1 and 2 extended from the river to within 5' of where Ditch 8 was tested. Thus, Ditch 8's early eastern-end fill might relate the temporality of nearby features it truncated and not the actual digging and filling date of the 18th-century ditch.

Ditch 9 JR344

Just south of Ditch 8, excavation uncovered Ditch 9, a meandering west-northwest/east-southeast ditch that wended gently back and forth at 140° curves for at least 64'. It ranged in width from 2'2" to 3'2" and consisted of seven bends. Ditch 9 cut the triangular fort's east curtain and was interrupted at least four times, twice by Ditch 8, once by a large circular stain (JR343), and ultimately by the 1907 General Assembly monument. Whereas the ditch's western end continued beyond the current limits of excavation, its eastern terminus came to a squared off end. It ceased 2'2" short of the north edge of Ditch 2, which also came to a rectangular terminus. As stated earlier, the central axes of these two meandering ditches formed a right angle, suggesting that they were dug at the same time.

Ditch 10

Just north of a pedestaled dogwood tree, excavation revealed faint traces of a 2'6"-wide ditch that ran northwest/southeast. At least 10' long, this ditch continued underneath unexcavated plowzone to the northwest and southeast.

Ditch 11

Ditch 11, a meandering feature that zigged and zagged northward for at least 34', was parallel and 35' east of Ditch 6. Both of its ends continued beyond the limits of current excavation. Similar in form and orientation to Ditch 6 (ca. 1640-60), they each maintained a north/south alignment and an average width of 3'6". Their similarity in form hinted their contemporaneity. However, this notion contradicted an interpretation regarding Struc-

ture 163 and its relationship with Ditch 6. It had been posited previously that Ditch 6 served as a western boundary for the land on which Structure 163 was built.² Ditch 11 marked no apparent barrier of significance with respect to the building. In fact, it might cut the fill of Structure 163. The north side of Structure 163 contained a large clay cap that was oriented with the building. A series of stones in a ditch cut this clay fill. The stones and the trench in which they were discarded lined up with the southern extent of Ditch 11. A 10' section of unexcavated plowzone currently blocks these two areas. Nevertheless, if they are one in the same and if the clay cap is part of the building's destruction sequence, then Ditch 11 cut the fill of the Structure 163. As a result, Ditch 11 would have been dug and filled after the destruction of Structure 163. If Ditch 11 was not contemporaneous with Structure 163, then Ditch 6 could not have been temporally consistent with both of them.

Human Burials

Plowzone removal during 1999 revealed the outlines of 32 probable human burials south of the standing Jamestown Church. The graves consisted of 25 fully uncovered stains and seven that were still partly sealed by adjacent plowzone. They were individually identified as burials on the basis of their oblong rectangular shape, mixed clay/loam fill, general east/west orientation, and close proximity to one another. In addition, all of the burials were in the general vicinity of a known historical graveyard surrounding the current church. The 32 newfound

graves each contained brick inclusions in the upper most layer of their fill, indicating a pre-excitation TPQ of 1607. Equating larger grave-shaft soil stains (>5' by 1' 6") with adults and smaller ones (<5' by 1' 6") with children, the 25 fully exposed burial stains likely contained the remains of 19 adults and six juveniles.

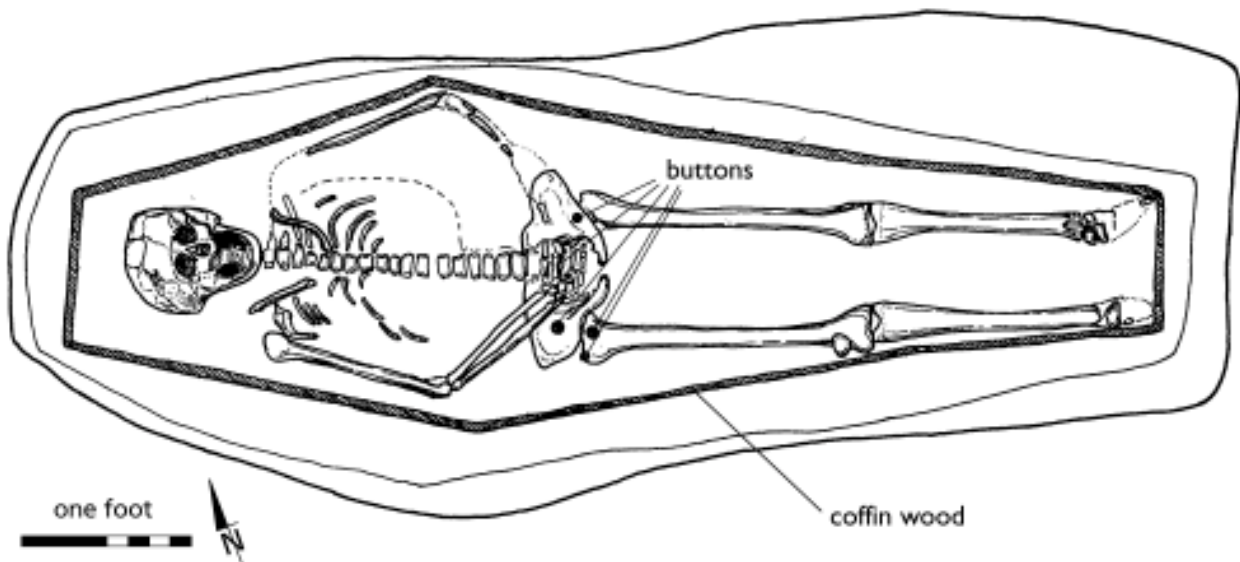
The two burials selected for additional investigation were located inside of the triangular fort and oriented more with the river and south palisade than the current church. Removing the fill within the grave shafts by natural layer, archaeologists used trowels and fine tools to excavate. They screened 100% of the soil through ¼" hardware cloth and piece-plotted all of the artifacts. Fully exposing the skeletons in the ground allowed paleopathologist Doug Owsley to study the human remains *in situ*. Ultimately, the bones were removed, cleaned, and conserved, enabling Owsley to undertake additional analyses at his Smithsonian Institution laboratory.

Burial 4

JR316A-G

Burial 4, centered at N9809.3/E9678.5, contained the skeletal remains of a human male who was at least 20 years old at the time of his death. The wooden coffin in which he had been buried was well preserved. It sealed the entire skeleton between thin sheets of decayed wood. The notable preservation of the coffin offered insight into its construction sequence and overall form. Excavation revealed five buttons along the skeleton's pelvis associated directly with the deceased individual. Identical types of coat and breeches buttons were

Figure 9. Archaeological plan of Burial 4 with five buttons in and around the pelvis.



made after 1750 and commonly used during the American Revolutionary War. These artifacts, combined with the stratigraphic evidence of Ditch 8—and its late 18th-century wine bottle—cutting the fill of Burial 4, suggested that this grave was dug and filled ca. 1750-80.

In the sealed layers above the coffin, archaeological investigations produced no artifacts that indicated a post-Fort (1624-) grave chronology. Material finds included chipped quartzite, prehistoric pottery, Coarseware, lead shot and sprue, case-bottle glass, brass rivets, fish scales, and iron fragments. Although few of these finds maintained a narrow 17th-century date range, *Jamestown Rediscovery* analyses have tied high densities of these items to Fort-Period occupation. In this case, negative evidence—the lack of any late 17th-century or 18th-century artifacts in the grave fill above the coffin and the minimal quantity artifacts from any time period in the entire burial—did not confirm early deposition. Instead of being linked to time, this material pattern was likely tied to another archaeological dimension. The absence of 18th-century items from the grave fill of a burial dug and filled in the 1700s offered insight into how this area of the site was used, or more accurately not used, from 1607-1800. The paucity of historical artifacts suggested that the current northwest corner of the site was never a locus of intense domestic or industrial activity, and that by the 1700s it was largely exclusive to mortuary practices.

A 7'2" east/west by 2'1"-2'7" north/south rectangular red sandy loam soil stain at the base of plowzone, Burial 4 was cut by the top layer of Ditch 8 along the grave's north side. In an effort to isolate previously sunken plowzone and prevent it from possibly contaminating undisturbed feature fill, the first layer of

the burial (316A) was dug to a flat level 2" below the base of plowzone. Layer 316B consisted of the red sandy loam fill within the primary grave shaft, which narrowed to 7'1" by 2'6" at its base. Burial 4 contained a secondary grave shaft (316C & D) that was a few inches shorter and much narrower at the eastern end than the primary grave shaft (316A & B). Evidently, the person who historically dug the grave started a much larger hole than necessary and economized the breadth of his endeavor after about 1½' of shoveling. The secondary grave shaft appeared at the base of 316B as a long hexagonal stain with rounded edges. Removal of the smaller secondary grave shaft fill exposed the remains of a collapsed wooden coffin lid (316E). Removal of the smaller secondary grave shaft fill exposed the remains of a collapsed wooden coffin lid (316E).

The asymmetrical hexagonal coffin was 6'4" long, 11" wide at the foot and head of the wooden box, and 2'0" wide at its shoulders. Its top was 1'8" below plowzone and its base (316G) sat 11" lower at the interface between the bottom of the secondary grave shaft and the top of subsoil. Overall, the skeleton rested 2'8" below the base of plowzone. All of the coffin wood was saved for further analysis. Excavation produced 73 coffin nails, each of which was mapped in place. No other artifacts were found associated with the coffin.

Concentrated at the coffin's head, foot, sides, and central north/south cross axis, the nails and their specific placement and orientation revealed the construction sequence of the coffin. The long strips of intact wood with uninterrupted grain in the sides of the coffin provided additional clues. Upward pointing nails along the bottom center north/south axis indicated that construction of the coffin began with aligned bottom slats that were secured by a middle cross-piece. Next, head and foot boards were attached, using nails to secure these outer pieces

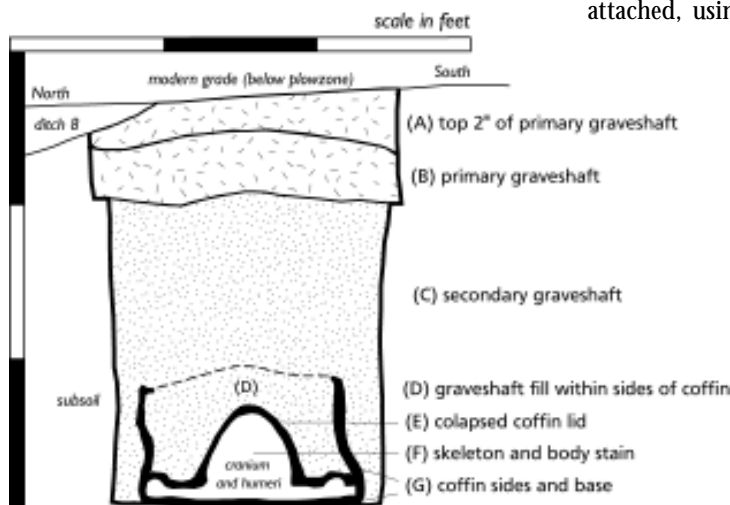


Figure 10. Profile map of Burial 4.

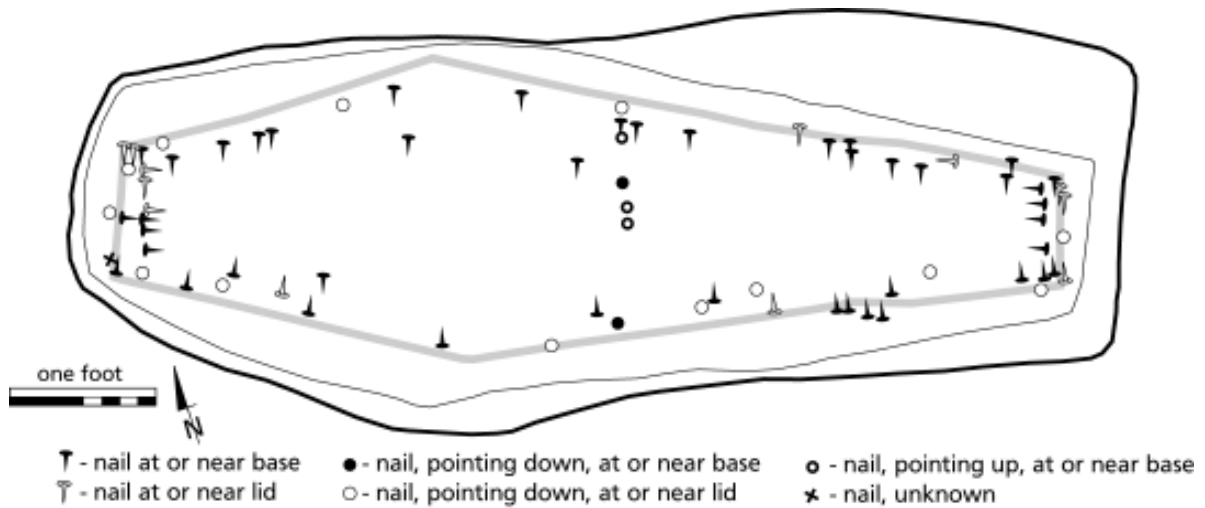


Figure 11. Piece-plot plan of the coffin nails from Burial 4.

along the edges of the bottom slats. Nail orientation again provided sequential clues. The foot-board nails were pointed to the west and the headboard nails were angled to the east, indicating that they had been joined after the bottom slats were secured to one another. Curved side boards were then hammered into place. Nails uncovered in the side boards were exclusively at the top and bottom of the coffin. None were in the sides as connectors. Sideboard nails either faced down and were associated with the lid, or were aligned north/south and connected to the lid or base. The lack of sideboard nails, except in lid or base capacities, and the uninterrupted wood grain both supported the contention that each side was a lone piece of wood. Even though the coffin shoulders appeared slightly angular in plan, the wood strips extended through these corners and ran the entire length of the wooden box. These sideboards might have been curved through a steam-bending process. This technique offers an explanation as to the asymmetry of the coffin shoulders. Ultimately, steamed curved wood likely would lose its shape in the ground, resulting in asymmetrical sides. The last step in coffin production occurred after the body was placed inside of the wooden box. The lid was nailed on and secured with many nails pointing downward and across at the head, foot, and along the sides.

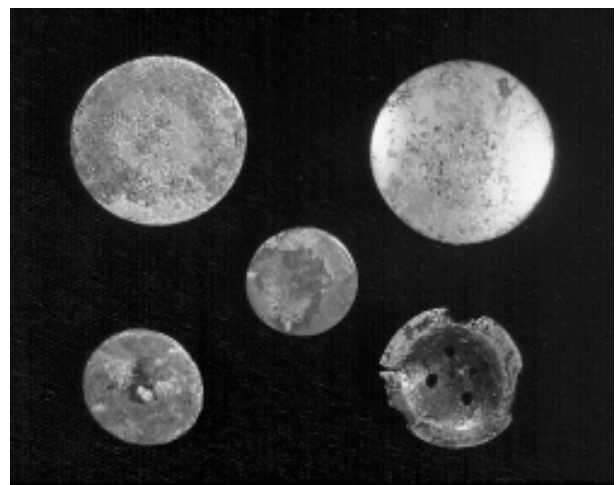
The human skeleton within Burial 4 had much more coffin wood above the torso as opposed to the lower long bones. An inverse relationship existed between the amount of coffin wood present and the preservation quality of the human remains. Whereas the femurs, tibias, and fibulas had little adjacent coffin wood and were extremely well preserved, the humeri, radii, and ulnas were entirely sealed with thin sheets of wood and were highly degraded. Areas

with better preserved coffin wood above them likely created a more aerobic environment that led to higher bone degradation.

The extended skeleton (316F) was oriented along traditional Christian norms, with the head at the western end and the feet at the east extreme of the grave shaft. The elbows flared out at the sides and the hands were folded across the pelvis. Both the knees and ankles were apart as well. These factors, combined with the lack of pins, suggested that this individual did not get wrapped in a shroud. The presence of buttons, indicators of clothing, verified the burials lack of shroud.

Each of the five buttons uncovered through excavation sat on or near the pelvis. Although the button assemblage included only three different types, none formed matching sets. A plain white brass coat button, identified as a Type 7 button (TPQ: 1750) and measuring .9" in diameter, was un-

Figure 12. The five buttons from Burial 4: two large coat buttons (top), two small breeches buttons (bottom left and center), and one medium-sized wooden button (bottom right).



covered on the skeleton's right hip.³ Two additional buttons were found less than 4" away on the proximal end of the right femur. One was an incomplete brass breeches button (Type 8), .7" in diameter, and the other was a plain brass coat button (Type 7; .9" diameter). An additional plain white brass breeches button (Type 8; .7" diameter) surfaced when the left femur was separated from the pelvis. As the excavator rotated the proximal end of the left femur in order to remove it without disturbing the pelvis, the button appeared. Over the years, it apparently had slid down the crevice between the two bones. A fifth button was discovered once the pelvis had been blocked and removed. During additional excavations in the archaeological laboratory, a button .8" in diameter was uncovered underneath the folded metacarpals but above the pelvis. It was a wooden button wrapped in leather and coated with a copper alloy.

The skeleton itself was located tightly against the south wall. The skull was partially collapsed. The position of the mandible, open and slightly disarticulated, made it deceptively appear as if the thoracic vertebrae projected out of the mouth. Many of the teeth were disarticulated as well, including an upper canine that rested on the left side of the mandible and two upper incisors located on top of various thoracic vertebrae. One well-worn molar indicated that this individual was at least 20 years old at the time of death. On the basis of the form of the pelvis, the skeleton was male. However, the cranium was relatively gracile for a male. The interred individual was approximately 5'7" tall at the time of death. Whereas only fragments of the ribs, clavicles, scapulae, arm bones, and metatarsals had withstood the test of time, the cranium, vertebrae, pelvis, and lower long bones were fairly well preserved. Surprisingly, the most preserved elements were the metacarpals, usually one of the first elements to dis-

integrate. The metallic salts in the nearby buttons likely caused the remarkable preservation.

Burial 5

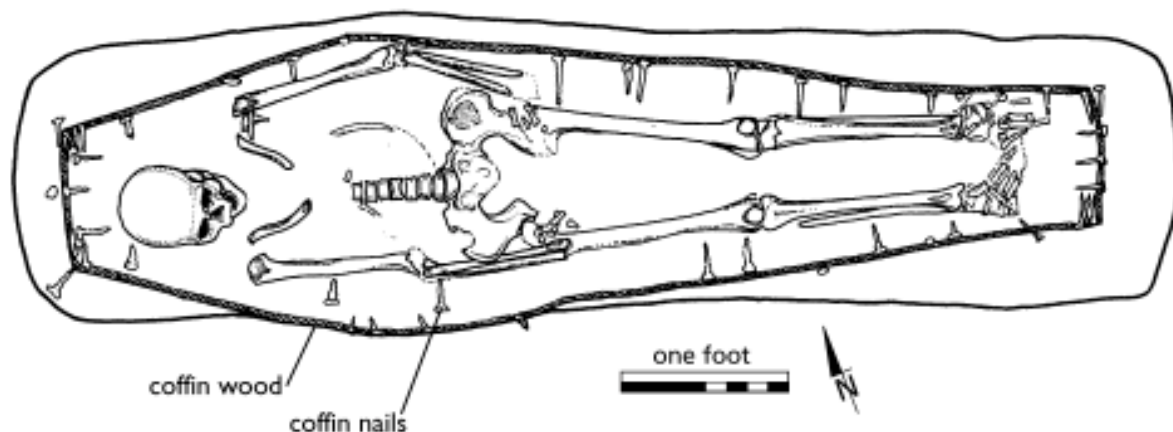
JR320A-F

The skeletal remains and associated artifacts indicated that Burial 5 contained a human female who had been wrapped in a shroud and then placed in a hexagonal wooden coffin. Although the coffin wood was not well preserved, excavation produced a small concentration of decayed hair on the skeleton's cranium. The artifacts in the grave fill—chipped quartzite, flint, oyster shell, brick bats, coffin nails, and shroud pins—provided little temporal information. Burial 5, centered at N9815.604/E9682.584, was parallel to and located only 8'0" from the 18th-century skeletal remains in Burial 4. On the basis of its common orientation with and close proximity to Burial 4, Burial 5 was likely associated with similar mortuary activities during the middle to late 1700s.

At the base of plowzone, Burial 5 was a 6'9" east/west by 1'8" north/south soil stain consisting of mottled red/brown sandy loam with large brick chunks (>1 cu. in.). As was the case with Burial 4, the top layer (320A) was dug to a flat level in order to buffer feature fill from sunken plowzone. The top of layer 320B, also mottled red/brown sandy loam with large brick chunks, was 4" below the base of plowzone. The fill's substantial bricks might have resulted from the post-1750 destruction of the nearby Jamestown Church. The coffin stain surfaced once an additional 2' of grave shaft fill had been removed. Because of the extreme depth and narrowness of the grave shaft and to aid in the digging process, archaeologists excavated a 2' by 2' by 3' swath into subsoil along the eastern side of the burial.

The coffin in Burial 5 was hexagonal and symmetrical, 6'2" long, 10" wide at the foot and head of

Figure 13. Archaeological plan of Burial 5 with coffin wood and piece-plotted nails.



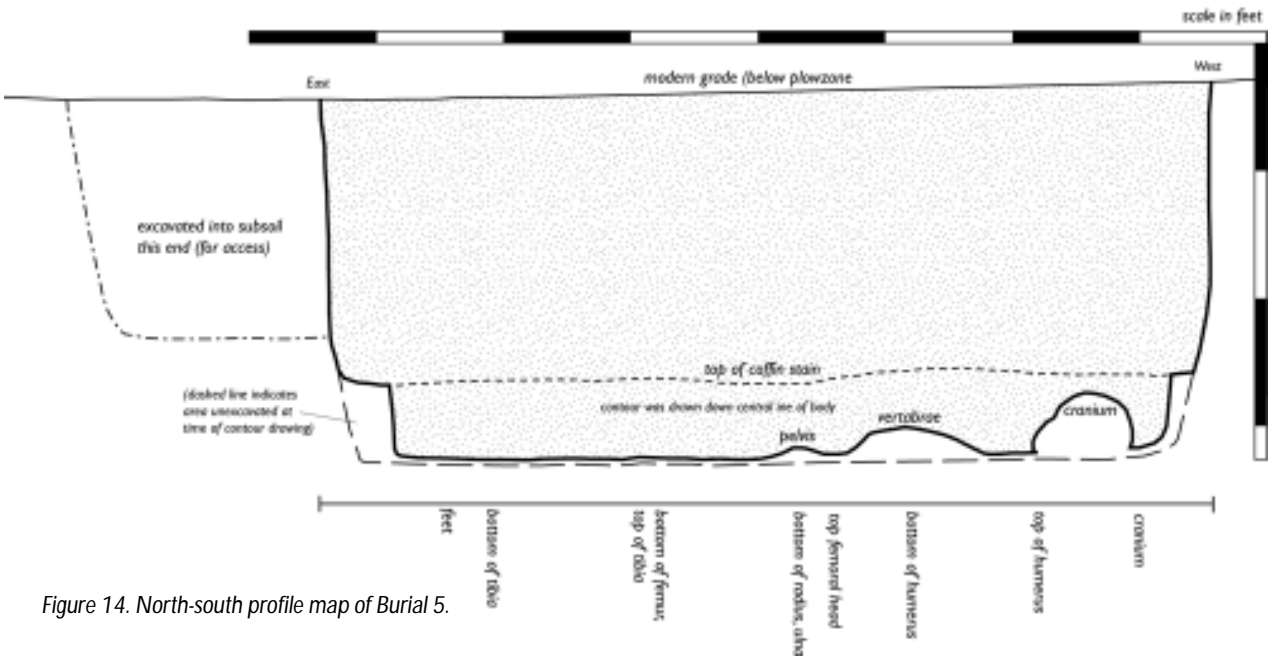


Figure 14. North-south profile map of Burial 5.

the wooden box, and 1'9" wide at its shoulders. Removing the dirt that had historically fallen into the sunken and collapsed coffin (320C) revealed multiple small pieces of coffin wood. For the most part, the only coffin wood (320E) that remained was underneath the skeleton (320D). Associated artifacts from the lower strata of the burial included 50 coffin nails around the edges of the coffin stain and four copper shroud pins touching the skeleton. Three pins rested on the cranium and a fourth lay under the chin. A small concentration of the deceased's hair was preserved, likely resulting from the metallic salts in the pins. The skeleton was 3'0" below the base of plowzone.

The individual in Burial 5 was extended and oriented with its skull at the western end. In addition to the multiple pins, excavation produced other evidence suggesting a shroud presence as well. The ankles were 3" apart from one another, as were the knees, indicating that the deceased had been wrapped tightly. The elbows were also located very close to the hips. On the basis of pelvic measurements, the skeletal remains were those of a female. She was approximately 5'4" tall at the time of death. The skull, long bones, pelvis, and metatarsals were well preserved while the vertebrae, ribs, and metacarpals had almost entirely deteriorated.

The Graveyard

The past year's plowzone removal revealed the first broad sub-surface glimpse of the south churchyard's burial plan. It inspired preliminary observations regarding the use of space in the area. Overall, two general clusters of graves were located. The first group,

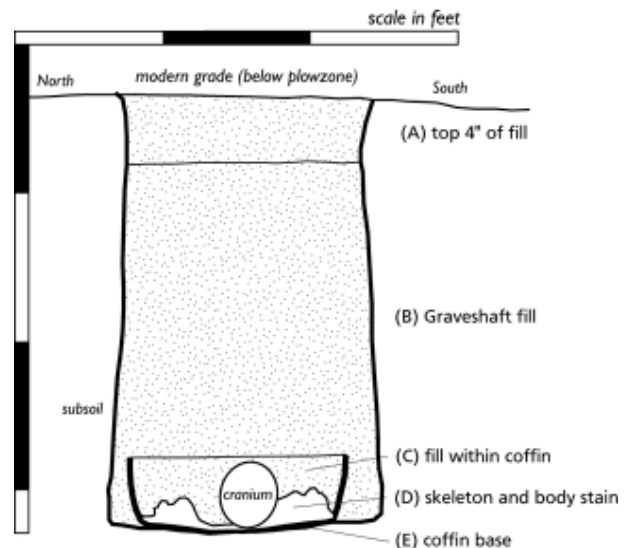


Figure 15. East-west profile map of Burial 5.

which included four rectangular stains and the corner of fifth, was bunched inside of the 1607 fort's triangular footprint. Thirty feet west of the nearest section of eastern palisade, these burials (JR316-320, 379) maintained a common orientation. Their long axes were 69° west of north, and aligned with a variety of other features. These included two previously excavated *Jamestown Rediscovery* burials (JR102: 62° west of north, JR156: 53° west of north), the south curtain of the fort (67.5° west of north), and the 1901 concrete sea wall that forms the current north shore of the James River at the site (60.5° west of north). The second group of graves consisted of 27 soil stains and

extended 110' east from the fort's east curtain. Most of these burials were oriented more than 80° west of north, aligned almost true east/west. They were positioned at nearly the same angle as a previously exposed interior churchyard burial (JR91: 83° west of north) and the footings of the 1617 and 1639 Jamestown Churches, on which the present church stands (90° west of north or true east/west). The current church was constructed in 1907.

Although the two newly uncovered clusters of burials included subtle distinctions in location (well inside of the fort vs. on or outside of the fort) and orientation (<70° west of north vs. >80° west of north), they maintained general spatial similarities as well. All were within 80' of the 1617/1639 Church foundations and north of the site's 9800 North gridline. Most of the burials were aligned with one another, either side-to-side or end-to-end. Furthermore, following traditional Christian norms, each was aligned predominantly east/west.

With one exception, all of the grave stains uncovered at the site from 1994-99 fit into two general categories on the basis of their location and orientation. Excavations revealed a total of 27 burials aligned with the foundations of the 1617 and 1639 Jamestown Churches and located outside of or cutting through the footprint of the original triangular fort. To the contrary, seven were not oriented with the church floor plans and were located within the border of the initial palisaded fortifications. The lone burial (JR286) that did not fit the criteria was ori-

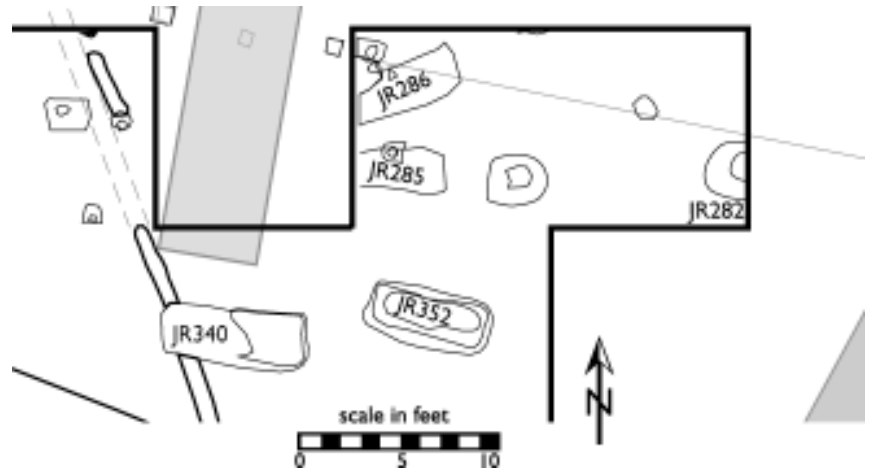


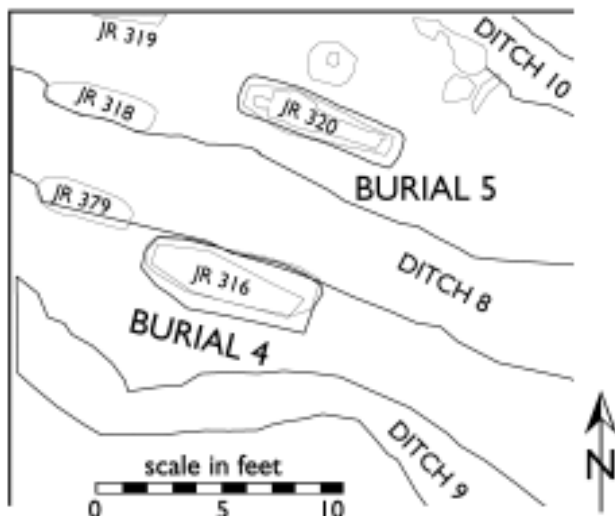
Figure 17. Archaeological plan of Cluster 2 burials, each labeled with its ER number.

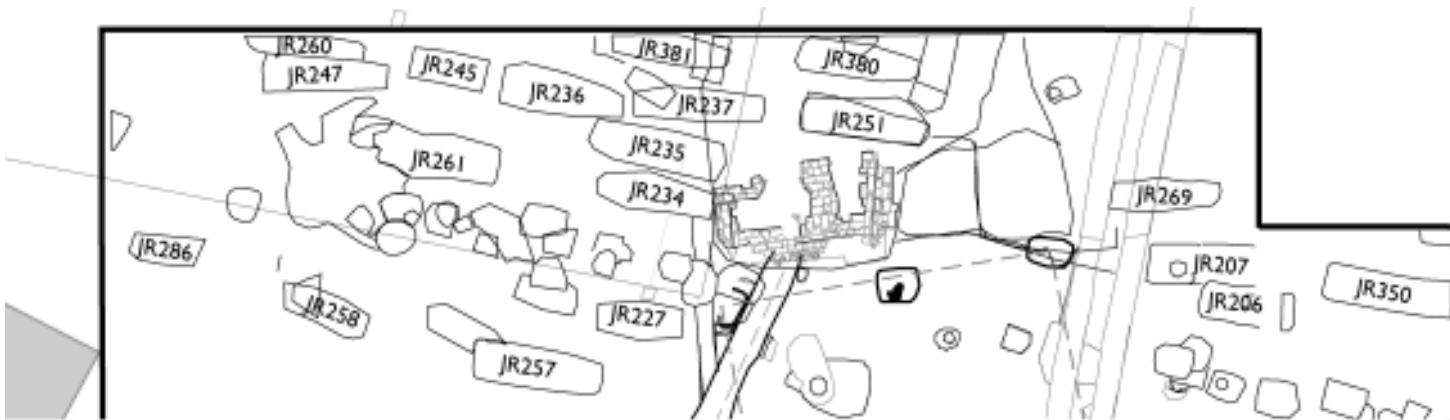
ented 109° west of north. It was the only grave with an east/west alignment tilted to the south.

Inter-feature stratigraphic relationships provided limited sequential information about the burials. Ditch 8 cut and thus post-dated three of the graves oriented with the palisaded fort's south curtain and the sea wall (JR316, 318, 379). In fact, one of the burials (JR379) was not apparent until the ditch section above it had been completely removed. As reported earlier, excavation uncovered a nearly complete late 18th-century wine bottle at the interface of plowzone and the top layer of Ditch 8, suggesting that the adjacent burials were both dug and filled before ca. 1780. One of the church-aligned burials (JR340) cut the triangular fort's east curtain. Two others (JR234 and 235) truncated a brick hearth that may be part of Structure 165 (JR215). Plowzone removal also uncovered a grave oriented with the Jamestown Church (JR257) that cut through a probable indigenous burial (JR273) in a pre-Fort context. Like other prehistoric features at the site, the fill surrounding the native grave consisted of hazy tan fill and contained no brick inclusions.

Most of the burials exhibited in plan one of two fill patterns. Some consisted of a uniformly mixed clay/loam. Others had an elongated ring of clay around a center of brown loam. The latter suggested the presence of a coffin burial. Once historical grave-diggers had placed a coffin in the grave shaft and filled the hole, the lid would often collapse. Consequently, some of the brown loam from upper strata would settle into the newly collapsed grave shaft and produce this ringed effect. Although the presence of ringed fill hinted at a coffin burial, its absence did not necessarily equate with a coffin-less burial. Many excavated historical graves that contained coffins did not have ringed fill in their upper strata.

Figure 16. Archaeological plan of Cluster 1 burials—5 total—grouped in the northwest of current excavations.





Two of the burials south of the churchyard did not follow either of the typical grave-fill patterns. In plan, the burial that cut the triangular fort's east curtain near the 1907 First Assembly monument (JR340) contained dark brown loam on its western half and around the edges of the entire shaft, while the eastern half was orange clay. The differential west half/east half fill suggested that only one side of the coffin collapsed. However, in opposition to coffin-burial norms, the loam was along the outside edges instead of in the center. A grave four feet to the east (JR352) also had anomalous fill. Instead of the typical double fill of a coffin burial, this grave had three concentric rings of fill. Like JR340, the outside ring consisted of dark brown loam. This elongated oval encircled a ring of orange mottled clay, which bounded an additional oblong area of brown loam. The two inner rings followed coffin-burial norms, but the additional ring of loam around its edges was anomalous. These two church-aligned burials that were located close to the remains of the triangular fort's east curtain and at the southern limits of the churchyard were distinct in that they contained dark loamy fill along their edges.

An overall spatial gradient for the burials existed with respect to the current limits of the site. The number and density of graves significantly decreased as one moved from north to south in the core *Jamestown Rediscovery* excavation area. The row of recently removed plowzone squares that was closest to the current church, centered at gridline North 9815, contained twice as many graves (18) as the row 10' to the south, N9805 (9). Furthermore, the grid row an additional 10' to the south, N9795, had only two. On the basis of grave placement alone, this gradient established a general south barrier for the church burial ground.

Churchyard Fence Posts

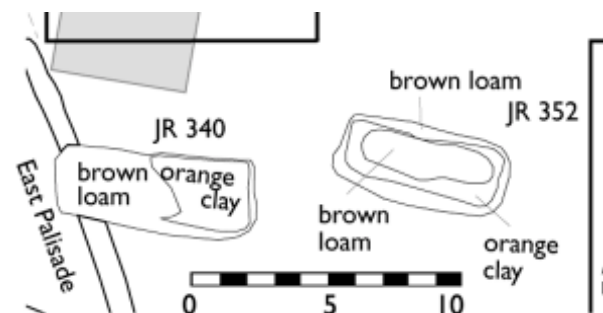
Plowzone excavation revealed 43 postholes running east/west along the northern limits of current excavation. They marked the remains of at least three church fences over the past four centuries. There were two lines of modern postholes and one that likely dated much earlier. If a postmold contained wood, cement, or modern fill it was identified as modern. In addition, perfectly circular molds dug by modern posthole diggers also served as a criterion for modernity.

Historical Church Fenceline

JR255, 270, 281, 231, 230, 228, 232, 233, 376, 377, 211, 210, 209, 208, 367, 365, 364, 360, 359, 358, 357, 361, 355, 356, 354

The historical church fence line contained 25 postholes, many of which cut each other and earlier features. Overall, they were tightly clustered, with the exposed eastern and western extremes being only

Figure 18. Archaeological plan of two burials with anomalous fill patterns.



55' apart. On average, there was an historical churchyard posts every 2'2" in this line. On the eastern edge of the site, a "B" layer found underneath the plowzone strata sealed these posts. Another factor suggesting their antiquity concerned Ditch 6 (ca. 1640-60). This linear feature extended over 110', but came to stop just inches before the posthole line, apparently respecting the boundary it marked. Thus, Ditch 6 and the historical churchyard posts were likely contemporaneous. The specific orientation of the historical churchyard fence line corresponded with the alignment of many of the churchyard burials. Whereas the average (mode) orientation of these graves was 80° west of north, the fence line was aligned 77° west of north.

Overall, multiple lines of evidence tentatively identified the southern extent of the 1617-1750 Jamestown Church graveyard. Burial quantity and frequency dropped off dramatically to the south from gridline N9800. Twenty-five historical postholes, oriented and aligned nearly identically with church-era

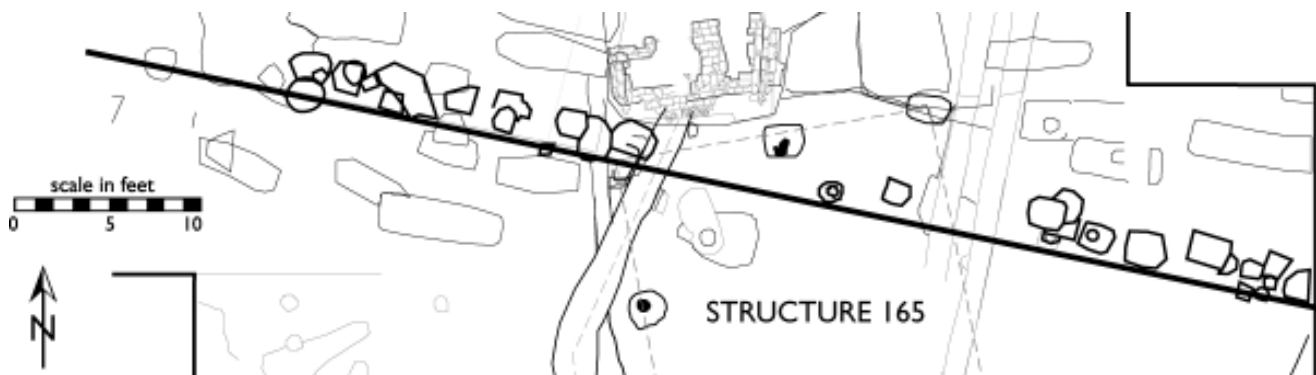
graves were located just to the south of the significant burial spatial gradient. Ultimately, corroborative clues located the probable 17th- and early 18th-century southern limits of the churchyard.

Modern Church Fencelines

JR321, 312, 313, 310, 285, 246, and 263;
JR289, 288, 249, 264, and 353

One line of modern postholes consisted of at least seven posts and was oriented 85° west of north. A second modern fence line included five postholes and was aligned 77° west of north. The modern church fence postholes were stratigraphically superior and cut only by each other. Many of them sliced through a variety of historical features, including burials and palisade lines. With few exceptions, the various modern church fence postholes were not found south or east of the standing iron fence's southeastern corner post, suggesting that they marked the same bounded area.

Figure 19. Archaeological plan of historical fenceline, marking a churchyard's one-time southern boundary.



1994-99 FEATURE SUMMARY

Of the many features excavated at the site of the original James Fort during the *Jamestown Rediscovery* project, 13 contained over 400 artifacts in their fill. This section of the interim report offers brief descriptions and explicit dates for these sealed contexts. Based on a variety of factors, the chronologies take into account material and stratigraphic characteristics and identify the TPQ of the sealed context. Dated items, chronologies from parallel findings at other sites, historical analogs, established and newly developed dating methods for European tobacco pipes, pipemaker mark chronologies, and pottery production and use date ranges and intersections all contribute to temporal analyses of the 13 features. The confluence of multiple lines of evidence overrides individual errors inherent in each measure and provides reliable date ranges for the features.

With one exception, the 13 features fell into two distinct temporal categories: 1607-20 and 1630-60. These archaeological parameters coincided to a certain degree with historical designations regarding the existence of James Fort (1607-23) and Post-Fort

Jamestown (1624-60+). English fortifications at Jamestown Island underwent steady decay in the late 16-teens and early 1620s until they had entirely “gone to ruin” in 1623 (Kingsbury 1935 IV:259). Artifact-rich Fort-Period features included Structure 165, Pit 3, and Pit 1. Ditches 1-4, 6, and 7, Pit 2, Structure 163, and Midden 1 belonged to the Post-Fort Period. The Southeast Bulwark Trench was exceptional, containing evidence of having been filled during both periods.

Fort-Period Features

Pit 1 (JR1-4), an amorphous 20' by 16' feature, contained five sub-pits. Its earliest component, sub-pit A, was aligned with Structure 160 and likely served as a cellar to this building. Later components of Pit 1 included evidence of the feature having been used as a daub pit. Some of these subsequent sub-pits were also in general alignment with Structure 160 and the southern palisade wall, hinting independently that they belonged to the Fort Period as well. Ditch

Figure 20. Archaeological site plan with Fort-Period Phase features in bold.



1, filled in ca. 1630-60, cut through the later subpits of Pit 1.

Pit 3 (JR69, 124), a cylindrical pit 15' in diameter and 6' deep, likely served as a secondary expense magazine for James Fort. Pit 3's relationship to the Southeast Bulwark Trench is uncertain. These features may respect each other, or the east curve of the bulwark may be a later accommodation for the expense magazine. Ditch 7 (1630-50) and Ditch 6 (1640-60) both cut the fill of Pit 3.

Structure 165 (JR158) contained a sunken 25' by 13' rectangular cellar with two wings and a set of six dirt quarter-spiral steps. Structure 165 and the East Palisade Extension were likely contemporaneous as the building's cellar formed an "L" around the palisade's eastern terminus. Both probably constituted part of the five-sided fortification to which John Smith alluded in 1608-09 (Barbour I:233, 325). One of Structure 165's likely corner posts was cut by Ditch 6 (1640-60) and a possible northern palisade extension (1608?).

Pit 1, Pit 3, and Structure 165 shared many characteristics that defined the Fort-Period. They were each oriented with palisade or bulwark features. Stratigraphically, these three sealed contexts were cut by a variety of later features, but themselves did not cut any earlier features. Their fill was distinctively early and generally similar in quantity and quality. Artifacts of nearly every material category from these features suggested pre-1620 use and deposition. The artifacts corresponded with historical descriptions of Fort-Period colonists living in a heavily armed frontier settlement, trading copper and beads for native food, and subsisting on wild animals, all before the tobacco boom of the late 16-teens and early 1620s. For example, in Pit 1, Pit 3, and Structure 165, the faunal remains were predominantly those of wild animals. The iron items included a high percentage of arms and armor. The ceramic assemblage was produced during the first ten years of the 17th century, and it included similar amounts of native and European vessels. The features contained significant copper finds, as well as relatively large quantities of glass beads. There were few tobacco pipes. Those found in any significant quantity—distinctive "Robert Cotton" pipes made of local clays and decorated with diamond carouches—were exclusive to these early features.

Fort-Period features included many items that signaled specific dates. Each contained multiple Irish pennies, minted exclusively in 1601 and 1602. Structure 165 and Pit 3 contained pipes with an "IR"

maker's mark that was produced from 1610-50. Fill from Pit 1 and Structure 165 included limestone and faunal remains indigenous to Bermuda. Since the first settlers to come to Virginia via Bermuda arrived in 1610, these features had to have been filled after that time. The collective absence of Jamestown Potter ceramics (TAQ) indicated that these features were sealed by 1630. Although Pit 1, Pit 3, and Structure 165 could have been filled during one of the massive fort clean-ups—De La Warr in 1610, Dale in 1611, etc.—the material and stratigraphic evidence cannot rule out that these feature might have been standing or open into the 16-teens. Overall, conservative date ranges for Pits 1 and 3 stretched from 1607-20. Structure 165, with its fort-extension alignment, ranged from 1608-20. All three of these features maintained a TPQ of 1610.

These three exclusively early features maintained important material differences. Proportionately, Pit 3 contained half as many faunal remains as Pit 1 and Structure 165. When compared with Pit 1 and Structure 165, Pit 3 had twice the percentage of iron and lead artifacts and the highest percentage of arms and armor of any feature at the site. Although links between feature fill and use are tenuous, these factors supported the theory that Pit 3 served as an expense magazine. Pit 1's 20.4 pounds of glass cullet distinguished it from other features and identified it as a prime locus of glass-making debris. Structure 165 was most distinctive in its total artifact quantity. Its assemblage contained over 69,000 items, nearly three times as many as Pit 1's collection—not including cullet—and six times more than Pit 3.

SE Bulwark Trench

The Southeast Bulwark Trench (JR73, 81, 82, 85-87, 105, 194), likely a dry moat around the nearby fort bastion, ranged in width from 2'1" to 5'3". It consisted of two parts: 1) a gradual arc that was concentric to the bulwark palisade, and 2) a segment that projected out at a 90° angle to the east and was cut by Structure 163. Since part of the trench paralleled the Southeast Bulwark Palisade, it was likely originally dug in 1607. The bulwark trench did not cut any sealed contexts and was cut by Ditch 7 (ca. 1630-50), Structure 163 (ca. 1630-60), and Ditch 6 (ca. 1640-60).

Strata in the bulwark trench included fill from two distinct time periods. This duality transcended different types of materials. The bulwark trench con-

tained many ceramic types and forms that were found in Pits 1 and 3 and Structure 165; but it also included part of a Jamestown Potter vessel that was produced after 1630. The trench was similar to Fort-Period features in its faunal-assemblage emphasis on wild animals, preponderance of native pottery, and abundant arms and armor; yet, it resembled Post-Fort contexts in its dearth of glass beads, minimal copper, and substantial pipe collection. Histograms of European pipestem bore diameters suggested that the feature was filled in 1620-50, while mean date and standard deviation calculations offered a date range of 1621-43 with a middle date of 1632. The pre-1620 component of this feature likely skewed the pipestem data. Pipe-bowl calculations were more reliable. Histograms suggested that the Bulwark Trench was open from 1610-60. Similar calculations regarding bowl-shape mean and variation (standard deviation) projected a 1614-47 date range with a 1630 middle date.

Signal dates failed to narrow the date range for the Bulwark Trench. The latest dated artifact out of the feature's fill was a French allegorical jetton minted in 1600. The large deposit of glass gull indicated that the Bulwark Trench was likely filled after 1608, when the first glass makers arrived at Jamestown Island.

Material and stratigraphic factors offered multiple TAQs for the Bulwark Trench. The lack of wine bottle glass intimated that this feature was filled before 1650 and the fact that it was cut by Structure 163 suggested that it was sealed by 1644. Overall, the Bulwark Trench was likely dug in 1607 and filled by the 1630s. On the basis of the presence of Jamestown Potter ceramics, the Bulwark Trench had a collective TPQ of 1630.

Post-Fort Period Features

The nine artifact-rich features attributed to the Post-Fort Period were uncovered at the south edge of the site near the river. These sealed contexts are discussed in stratigraphic order.

Ditch 7 (JR82, 83, 94), known as the Olive-Jar Ditch because of its abundance of Spanish coarseware, was a 26'2" by 2'5" ditch that cut both the Bulwark Trench and Pit 3. It was oriented 20° east of north, parallel to the nearby footings of Structure 163.

Ditch 1 (JR3, 4, 8, 9, 12, 13), the site's widest ditch, measured 42'4" by 6'6". It cut Pit 1 and the southern palisade wall and was cut by Ditches 2 and 3. Thirty

Figure 21. Archaeological site plan with Post-Fort Period Phase features in bold.



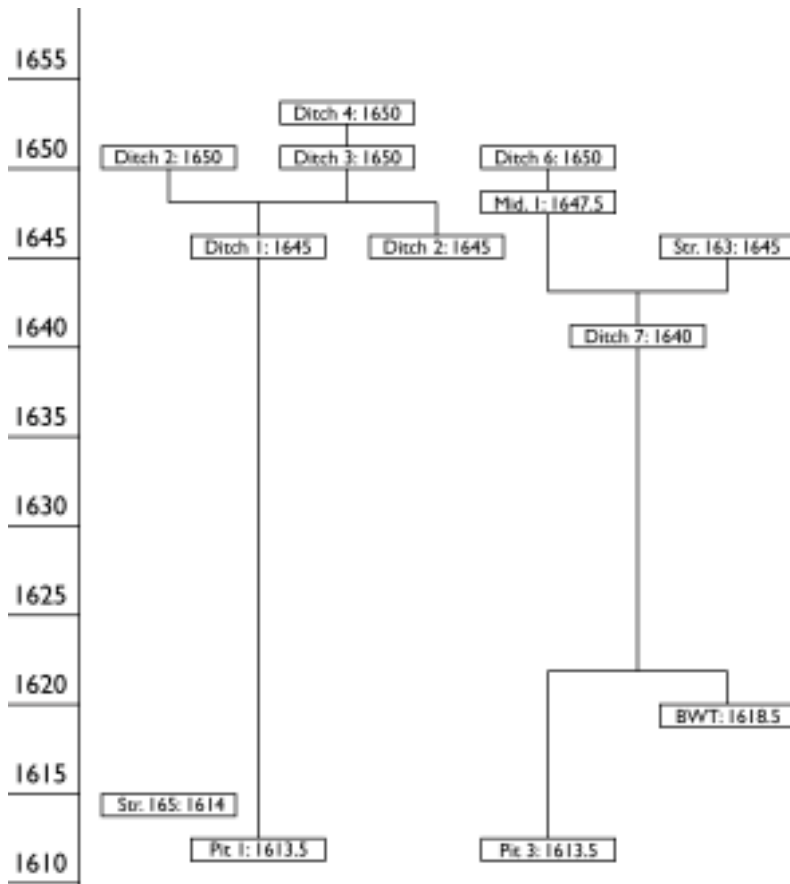


Figure 22. A modified Harris Matrix of the 13 artifact-rich Jamestown Rediscovery features. Each sealed context and its mean date are listed in stratigraphic relation to the others.

degrees east of north, Ditch 1 maintained a serpentine path somewhat perpendicular to Structure 160.

Pit 2 (JR4, 10-12) was a somewhat rectangular feature 19'4" north/south by 9'3" east/west. Cut by Ditch 3, it did not truncate any known features. Pit 2 was oriented with nearby Ditch 1.

Structure 163 (JR100), a 30' by 50' building with cobble footings and two brick chimneys, was located in the southeast corner of current excavations. It cut Ditch 7 and the Bulwerk Trench. The structure was adjacent to Midden 1, although the relationship between the two remains unclear. The building might cut the midden, or the midden might have been deposited while the structure was standing. The south robber's trench along the footings of Structure 163 removed the interface between the two.

Thirty feet east/west by 13'6" north/south and somewhat amorphous in shape, Midden 1 (JR83, 93, 94, 124) was a rich deposit of refuse. Located along the southwest corner of Structure 163, Midden 1 cut Ditch 7 and was cut by Ditch 6.

In between Ditch 1 and Pit 2, Ditch 3 (JR4, 12) was a 25'6" by 3'6" trench, oriented 25° east of north.

It cut Ditch 1 and Pit 2 and was cut by Ditch 4. Ditch 3, known as the Brick Bat Ditch, came to a stop before the north edge of Pit 1.

Ditch 4 (JR12, 55), also called the Sand Ditch, measured 10'9" by 2'5". It cut Ditches 1 and 3 and was oriented true north/south. Located at the southern edge of the site in between the two ditches it cut, Ditch 4 likely truncated part of the southern palisade wall as well.

The previously excavated part of Ditch 2 was 16'3" by 2'3". When combined with the section uncovered during the 1999 season, Ditch 2 (JR3, 8) measured 36'2" in total length. It cut Ditch 1 and was oriented 20° east of north.

Ditch 6 (JR94, 136, 137), a 112' long by 2'6" wide zig-zag ditch aligned 15° east of north, cut multiple earlier features. From south to north, it sliced through Pit 3, Midden 1, Ditch 7, the Bulwerk Trench, the Eastern Palisade Extension, and the possible North Palisade Extension. Its north terminus was adjacent to the historical churchyard fence line.

Post-Fort Period features shared many material similarities. For each sealed context, the European pipe assemblage consisted predominantly of stems with bores 8/64" in diameter (1620-50). Likewise an overwhelming majority of the collective European bowl shapes dated between 1610 and 1660. Pipemaker marks also temporally placed each feature in the second and third quarters of the 17th century. On the basis of the common occurrence of Jamestown Potter and Midlands Purple, Post-Fort Period features maintained, for the most part, a collective 1630-50 ceramic date range. Pipestem and bowl mean-date calculations and standard deviation-based date ranges offered additional temporal information for each of these features and pinpointed them within a 1630-60 chronology.

Post-Fort Period artifacts contrasted with Fort-Period assemblages in a variety of ways. The Post-Fort Period was dominated by domestic faunal remains, a high European to native pottery ratio, a wealth of European tobacco pipes, minimal arms and armor, and scant copper and beads. Four of the post-Fort

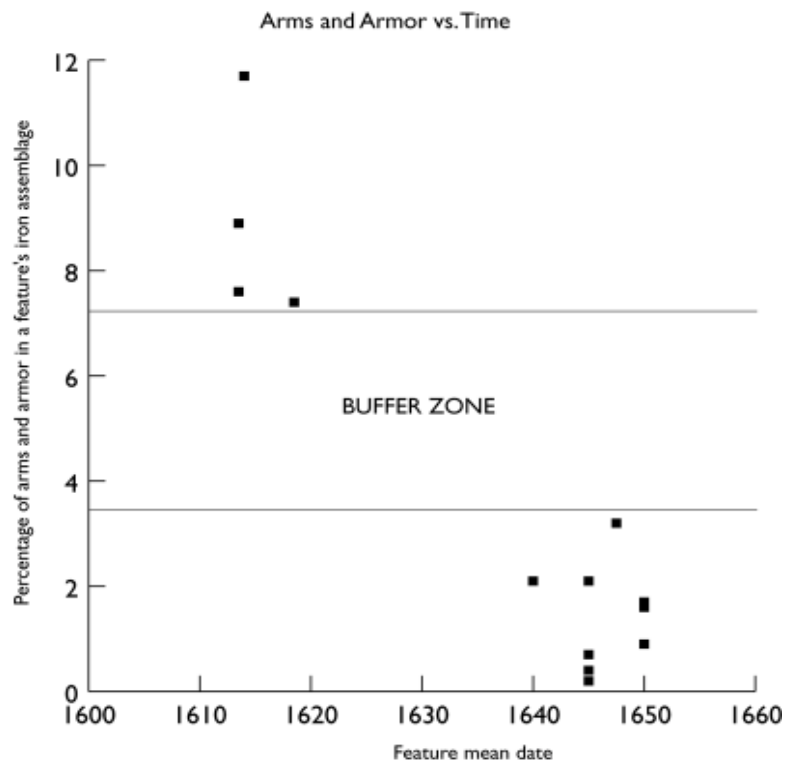
features (Ditch 1, Structure 163, Midden 1, and Ditch 6) included sherds of wine-bottle glass, although in each case it was only a few fragments. The presence of wine-bottle glass suggested that these features were open past 1650. Other feature-specific TPQs were determined by coins and pipemaker marks. Ditch 3

contained a 1629 German Sechsling. Both it and Pit 2 produced pipes with an “RC” pipemaker mark (TPQ 1640). Midden 1 included a 1636 English farthing. Ditch 7 contained an “EL” pipemaker mark (TPQ 1631).

| Master Context | Ditch 7 | Ditch 1 | Pit 2 | Structure 163 | Midden 1 | Ditch 3 | Ditch 4 | Ditch 2 | Ditch 6 |
|---|------------------|------------------|------------------|------------------|------------------|------------------|-----------------------|-----------------------|------------------|
| European pipestem: histogram (range) | 1620-80 | 1620-50 | 1620-80 | 1620-80 | 1620-80 | 1620-80 | IQ [1620-80] | IQ [1620-80] | 1620-80 |
| European pipe-stem: mean date; standard deviation | 1629; 1620-39 | 1627; 1617-37 | 1639; 1627-51 | 1640; 1628-53 | 1635; 1624-47 | 1636; 1624-49 | IQ [1632; 1621-43] | IQ [1653; 1640-66] | 1632; 1621-43 |
| Atkinson: histogram (range) | 1610-60 | 1610-80 | 1610-80 | IQ | 1640-80 | 1610-80 | IQ | IQ | 1610-60 |
| Atkinson: mean date; standard deviation | 1632; 1609-55 | 1650; 1634-66 | 1652; 1633-71 | IQ | 1656; 1643-69 | 1648; 1628-68 | IQ | IQ | 1642; 1630-54 |
| Pipemaker marks: date intersection | 1631-41 | 1640-41 | 1640-41 | 1628-43 | 1640-41 | 1640-60 | 1640-41 | - | 1640-41 |
| Pipemaker marks: date range | 1620-50 | 1619-60 | 1631-60 | 1628-60 | 1631-60 | 1640-60 | 1631-60 | - | 1631-60 |
| Overall modified TPQ | 1631 | 1650 | 1640 | 1640 | 1640 | 1640 | 1650 | 1650 | 1650 |
| Overall Date Range | 1630-50 | 1630-60 | 1630-60 | 1630-60 | 1635-60 | 1640-60 | 1640-60 | 1630-60 | 1640-60 |

Figure 23. Table summarizing temporal concordance of the site's Post-Fort features. The abbreviation “IQ” refers to an insufficient quantity of artifacts in a feature for the particular analysis. It suggests that the specific results are unreliable because of the small sample size.

Figure 24. Scatter plot of arms and armor frequency.



1994-99 MATERIAL SUMMARY

If the distinctions between Fort and Post-Fort features are real, then the artifact types should reflect these substantive temporal differences as well. They do, in fact, nearly every archaeological material maintained important formal distinctions between the Fort and Post-Fort Periods. Most emphasized change over time, although one isolated a spatial pattern as well. These material summaries, beginning with the items of highest frequency, offered insight regarding the entire collection. Quantitative measures, employed to standardize the way in which these patterns were identified, affirmed expected material changes and pinpointed new ones as well. These calculations also shed light on the rate of material change at Jamestown Island during the first half of the 17th century.

Specific date ranges established in the previous section of this report enabled the calculation of mean dates. Based on these chronological midpoints, scatter-plot diagrams demonstrated consistent temporal patterns for many material types between features. There were remarkably distinct differences between Fort and Post-Fort material assemblages. Each scatter plot revealed these two separate clusters. In every case, a clear buffer zone isolated the clusters from one another. This indicated that when the shift occurred, materials and their individual frequencies changed dramatically.

Certain statistical measures made these differences explicit. Correlation coefficients (r) quantified the strength of the relationship—the interdependence—between time and material. An r -value of 0 signified no linear relationship, 1 indicated a perfect positive correlation, and -1 revealed a perfect negative correlation. Squaring the correlation coefficient (r^2) determined the specific percentage of variability in a material that was directly accountable for the variability in a feature's mean date. For example, the correlation coefficient between the amount of armor in a feature's iron assemblage and time was -0.93288. This signified an almost perfect negative correlation, meaning that the percentage of armor in a feature diminished consistently (linearly) over time. The r^2 value was 0.870271, indicating that 87% of the variability in armor was directly linked to changes in time. Simply put, Fort-Period features had significantly more arms and armor in their iron assemblage than Post-Fort Period contexts. Histograms were also used to demonstrate similar patterns.

Material Types

Fauna

Faunal remains, which constituted 42.7% (69,492/162,794) of the artifacts recovered from the site's 13 richest features, demonstrated a clear temporal difference between Fort and Post-Fort periods. Features from the first decade of English settlement at Jamestown Island revealed that "wildlife contributed half of the colonists' meat diet."⁴ The role of wildlife in the lives of Post-Fort settlers diminished as it "contributed only 9%" to their total meat diet.⁵ Non-domestic faunal remains dominated Jamestown's Fort-Period assemblage, providing nearly twice the biomass of domestic animals for the colonists. The Post-Fort Period witnessed a dramatic shift in faunal emphasis. Domesticated animals became the overwhelming source of food, by a near 10 to 1 biomass ratio over wildlife.

Iron

Nails dominated the iron assemblage of the 13 features, making up between 5 and 35% of the total artifacts within each sealed context. Post-Fort Period features contained a higher percentage than the Fort-Period contexts. Nails did not constitute more than 14% of the total iron assemblage in any of the early features. In contrast, each of the later sealed contexts contained iron assemblages that were more than 14% nails. Regardless of the distinctive dividing line, the correlation between the percentage of nails in a feature and time was relatively weak ($r=0.57$, $r^2=0.33$). Thus, time and nail quantities were only loosely related.

Changes in arms and armor frequencies over time were far more distinct, with a noted drop off in these items through the first half of the 17th century. The correlation coefficient between the percentage of armor in a feature and its mean date was -0.81, indicating a significant inverse linear relationship between the two. A slight modification produced an even stronger correlation. Instead of determining the percent of the *entire* assemblage that consisted of arms and armor, the next calculation measured the correspondence between time and the percent of the *iron* assemblage that was arms and armor. With a correlation coefficient of -0.93 and an r^2 -value of 87%, this measure revealed a nearly perfect

inverse relationship. Furthermore, it isolated a distinct arms-and-armor buffer zone between Fort and Post-Fort Periods. Early-feature iron assemblages were at least 7.4% arms and armor, whereas later contexts consisted of less than 3.3%.

Glass

Fragments of case bottles dominated the non-cullet glass assemblage. The correlation between the percentage of case-bottle glass in a feature and time was strong: 0.76 with an r-squared value of 57.9%. It revealed a significant positive linear relationship. Fort-Period assemblages never included more than 10% case-bottle glass. In contrast, all Post-Fort features consisted of at least 11% case-bottle glass. Over half of Ditch 3's 5,455 artifacts were fragments of case bottles.

Figure 25. Scatter plot of case-bottle glass.

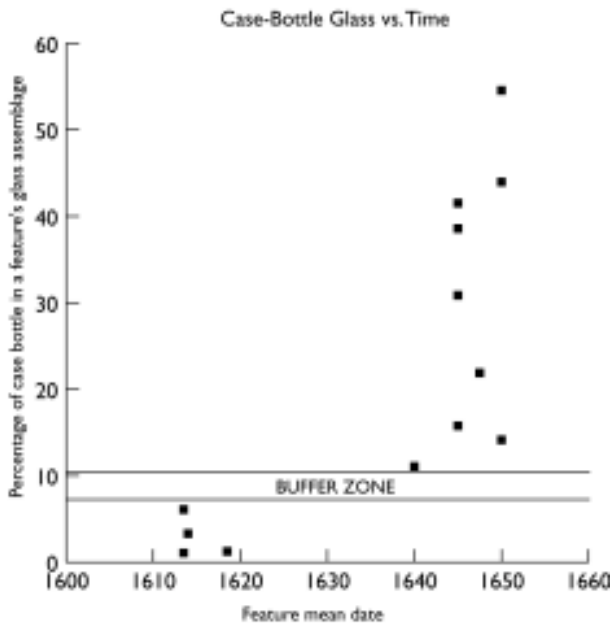
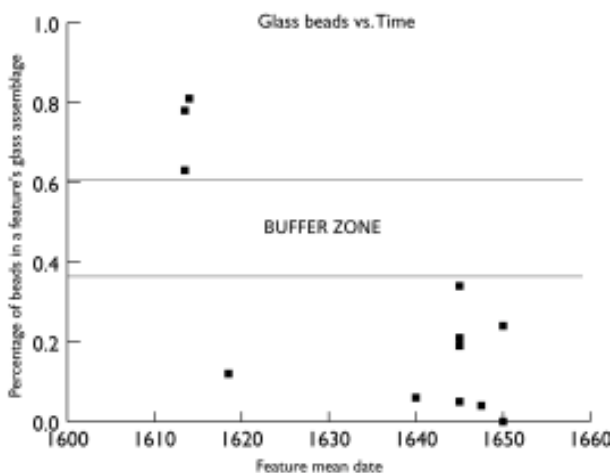


Figure 26. Scatter plot of bead frequency.



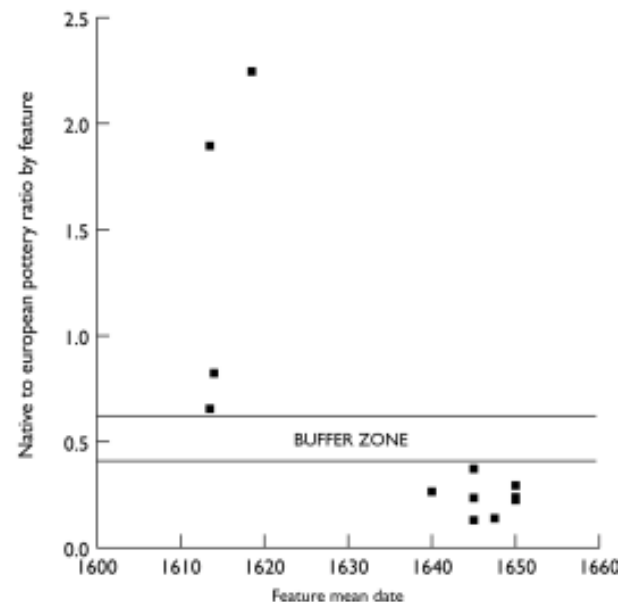
A mirror image of the case-bottle frequency, the total amounts and percentages of glass beads dropped significantly over time. Whereas nearly 0.7% of all Fort-Period features were glass beads, including a total of 560 in Structure 165, no Post-Fort Period feature contained more than 0.34%. The correlation coefficient between time and glass bead percentage was -0.80, signifying a strong inverse linear relationship. Both glass scatter plots, case bottle and bead, maintained a buffer zone in between Fort and Post-Fort features.

Pottery

The pottery assemblage included dramatic shifts over time as well. Although the percentage of ceramics in each feature remained relatively constant throughout the 17th century, there were dramatic fluctuations in the frequencies of certain pottery types. The proportion of pottery produced by the indigenous population to European-made pottery over time was an especially revealing measure. Fort-Period features had a much higher ratio than Post-Fort Period features. Early contexts maintained ratios of 0.66:1 or higher, while later ones were 0.38:1 or lower.

This trend was also evident when plotting the temporal distribution and quantity of native pottery and Jamestown Potter vessels. Whereas the percentage of native pottery in a feature's total ceramic assemblage gradually decreased over time, the same percentage for Jamestown Potter slowly increased after its emergence in 1630. Fort-Period ceramic assemblages were without Jamestown Potter and consisted of at least 40% native pottery. Post-Fort Period features each

Figure 27. Scatter plot of Native/European pottery ratio.



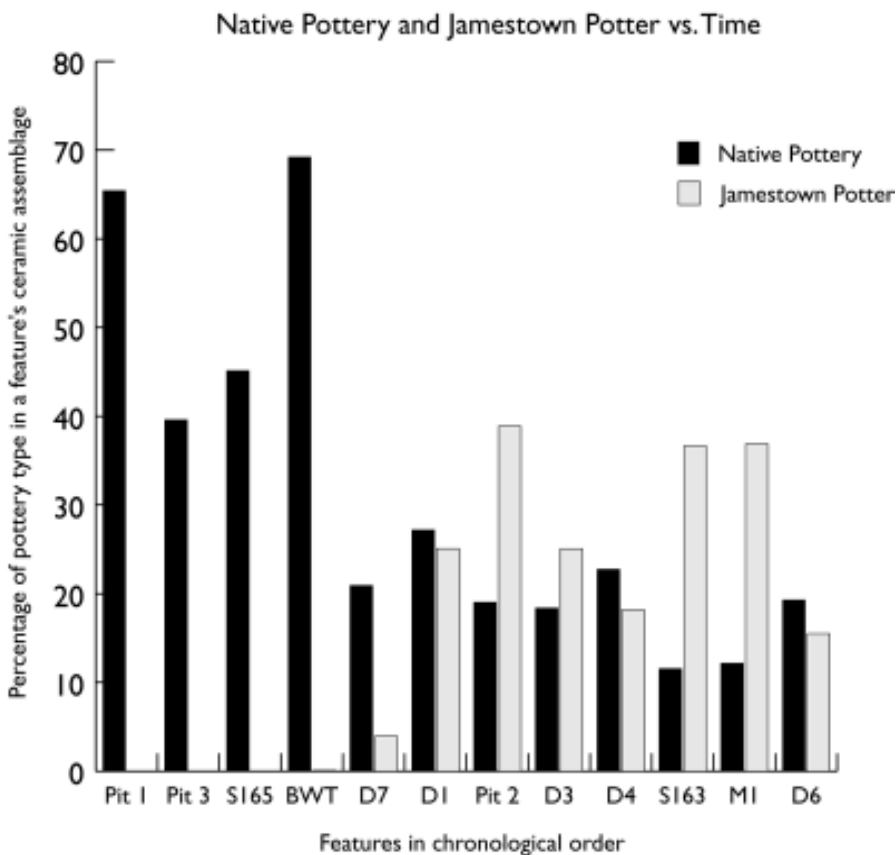


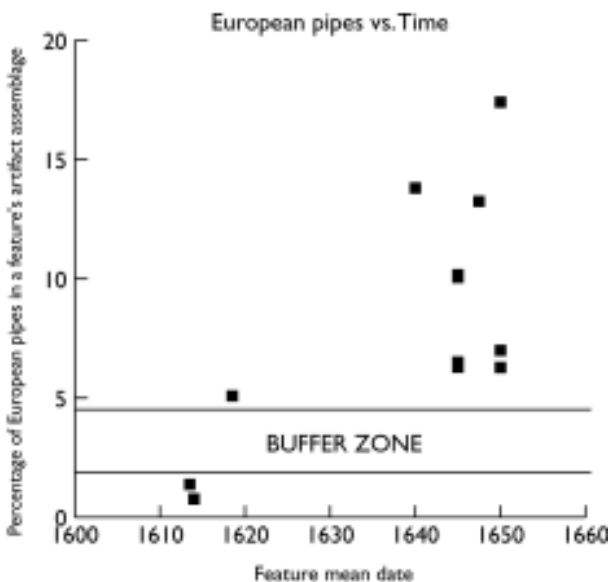
Figure 28. Histogram of Native Pottery and Jamestown Potter frequencies.

included Jamestown Potter fragments and contained less than 26% native pottery.

Pipes

Pipe quantities and percentages pinpointed Jamestown's tobacco boom of the late 16-teens and early 1620s. Features with a TPQ before 1620 contained minimal pipes—less than 1.5%—while those

Figure 29. Scatter plot of European pipes.



with post-1620 TPQs had a total artifact assemblage that was at least 5% tobacco pipes. In addition, distinctive “Robert Cotton” pipes were only found in Fort-Period features.

Atkinson and Oswald pipe-bowl type identifications were useful in two different studies. First, a seriate analysis of pipe bowl types revealed a smooth chronological pattern with no gaps through the 13 features being studied. Second, mean dates based on Atkinson/Oswald pipe-bowl chronologies were far more precise and accurate than Binford mean dates based on pipe bore diam-

eters. Twice as precise, these measures placed the mean date within 7 years of the actual mean date as opposed to the Binford mean date, which was off by an average of 14. They were also twice as accurate, identifying a mean date within the feature's actual date range 100% of the time (8 for 8) as opposed to Binford's 44% (4 for 9). Furthermore, Atkinson/Oswald pipe-

Figure 30. Presence/absence seriate analysis of European pipe bowls based on Atkinson/Oswald form typologies. “X” denotes presence.

| | 1-3 1580-- 1610 | 4-8 1610-- 1640 | 9-12 1640-- 1670 | 13-15 1660- 1680 |
|----------------|-----------------------|-----------------------|------------------------|------------------------|
| Pit 3 | X | X | | |
| Bulwark Trench | X | X | X | |
| Ditch 7 | X | X | X | X |
| Ditch 1 | | X | X | X |
| Pit 2 | | X | X | X |
| Midden 1 | | X | X | X |
| Ditch 3 | | X | X | X |
| Ditch 6 | | X | X | |

bowl chronologies successfully measured pre-1620 contexts, which Binford dates could not.

Copper

One of the most distinct temporal patterns among materials found in excavated artifact-rich deposits concerned copper. Whereas many of the earlier scatterplots emphasized a linear relationship between time and a specific material, the copper scatter plot offered an even stronger curvilinear relationship. A binomial expression— $y = 1.023x^2 - 13.625x + 1657.831$ —fit the data set nearly perfectly. The coefficient of multiple determination (or analogous r^2 -squared value) was over 80%, indicating that at least four-fifths of the variation in the amount of copper in a feature was due to time. This strong correlation led to the creation of a dating tool—the copper quotient or CQ. If the amount of copper in a feature and the

total number of artifacts in the sealed context are known, then the mean date of the feature can be reliably projected.

This method, created on the basis of *Jamestown Rediscovery's* 13 artifact-rich features, was tested on two archaeological sites off of the island in Jamestown's hinterland. Both were occupied within the 1607-57 temporal parameters of the equation, established by Jamestown Island's known English settlement date (1607) and the y-intercept (1657). At the Reverend Richard Buck Site (44JC568) in historical Neck of Land, the copper quotient offered a mean date (1647) within the established site date range (1630-50). Furthermore, it placed the site's three wells in correct chronological order (3-1-2), a sequence verified by various stratigraphic, material, and seriate analyses.⁶ Results from the George Sandys Site (44JC802) in Kingsmill Neck were equally promising. Although this site might be as early as the 1620s or as late as 1650, it was most likely occupied from 1628-38.⁷ The copper quotient pinpointed the site's mean date as 1636. With such encouraging results, this dating tool will be used on other nearby sites in the future.

Figure 31. Scatter plot of copper and correspondent binomial function.

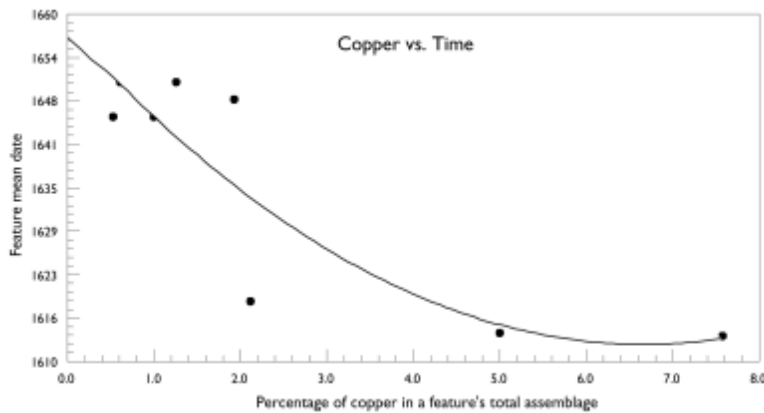


Figure 32. Map of Jamestown's hinterland.



Oyster Shell

Oyster-shell frequencies pinpointed an unexpected spatial pattern that ignored temporal factors. At least 0.77% of the artifacts in features to the east of gridline E9750 were oyster shell, whereas the highest oyster shell-frequency for features west of E9750 was 0.30%. Proportionately, sealed contexts to the east of that gridline contained twice as many oyster shells as their western counterparts. All 13 features followed this spatial gradient. Furthermore, sealed contexts from both time periods—Fort and Post-Fort—were part of this pattern. Pit 3 and Structure 165 contained over 2% oyster shell, but Pit 1 had only 0.30%. Structure 163, Midden 1, and Ditches 7 had over 1.5% each, but Ditches 1-4 and Pit 2 combined for less than 0.20%. The spatial pattern revealed that throughout occupation in this area, oysters were only used and deposited in quantity on the east half of the site.

Overall Patterns

Strong relationships exist between many of the site's artifact types and time. In almost every case, individual materials either drop off significantly through the years or increase in number dramati-

cally. There was little gray area or inconsistent fluctuation in these measures. The pattern is summarized as follows:

- 1) Fort-Period deposits were typified by wild fauna, high concentrations of arms and armor, minimal case-bottle glass, prominent glass bead assemblages, a high concentration of native pottery, an even amount of native and European pottery, few pipes, the only "Robert Cotton" pipes, and substantive copper debris.
- 2) The Post-Fort Period consisted of domestic fauna, few arms and armor, substantive case-bottle glass, minimal glass beads, lower native pottery frequencies, a ceramic assemblage dominated by European vessels, large deposits of pipes, no "Robert Cotton" pipes, and few copper items.

These 10 material measures also emphasized the temporal uniqueness of the Bulwark Trench. Six criteria identified it as having been filled during the Fort Period, including dominant wild fauna, substantive arms and armor, minimal case-bottle glass, similar amounts of native and European pottery, substantive deposits of native pottery, and the presence of "Robert Cotton" pipes. Yet the minimal glass beads, presence of Jamestown Potter ceramics, substantive pipe assemblage, and minimal copper suggested that it was

Figure 33. Archaeological site plan with oyster-shell spatial gradient.



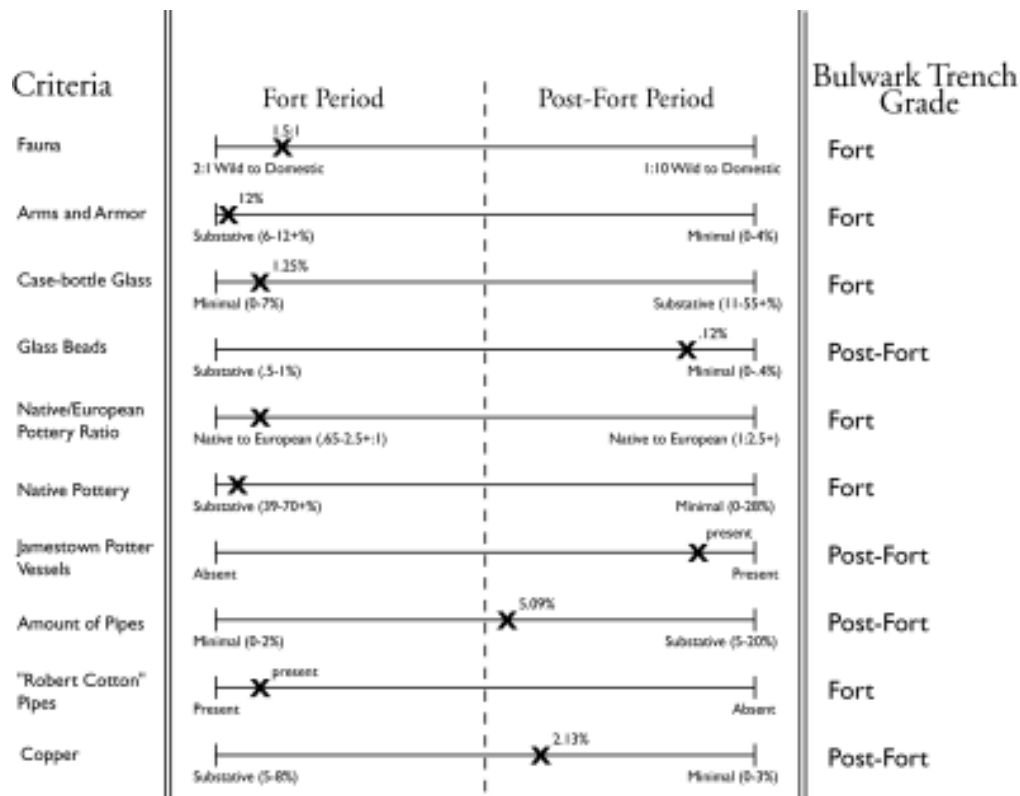


Figure 34. Sliding scales of 10 criteria used to differentiate Fort and Post-Fort phases. Each "x" marks the material value of the bulwark trench. These charts emphasize the bulwark trench's unique measures.

open into the Post-Fort Period.

With these established temporal parameters, attempts were made to differentiate larger features into more temporally discrete phases. These measures were first used on the sub-pits of Pit 1. Whereas the fill of Sub-pits B, C, D, and E contained somewhat uniform layers, these strata cut the discrete fill of Sub-pit A. Consequently, Sub-pit A was tested against the other sub-pits along six of the previously discussed criteria. Four of the measures were dismissed because they were either presence/absence indicators or repetitive. The results were inconclusive. Half of the measures suggested that Sub-Pit A was filled first, and half hinted otherwise. Case-bottle percentages, native/European pottery ratios, and arms and armor frequencies were higher in Sub-pit A than B, C, D, and E. However, copper quotients, pipe percentages, and bead counts were lower. Overall, Pit 1 contained no

discernable temporal gradient between its sub-pits.

Using the same technique on the Southeast Bulwark Trench, vertical and horizontal distinctions were sought. First, strata from across the length of the feature were linked, resulting in nine total layers. These were then tested with the established criteria. Again, there was no evidence of a temporal gradient. Case-bottle glass, beads, and ceramic ratios were consistent from top to bottom. Copper quotients, pipe percentages, and arms and armor frequencies inconsistently shifted back and forth from Fort Period to Post-Fort Period levels throughout the stratigraphic sequences. Horizontal investigations produced the same negative results. There were no discernable temporal differences between the curve of the bulwark trench and the section that projected to the east.

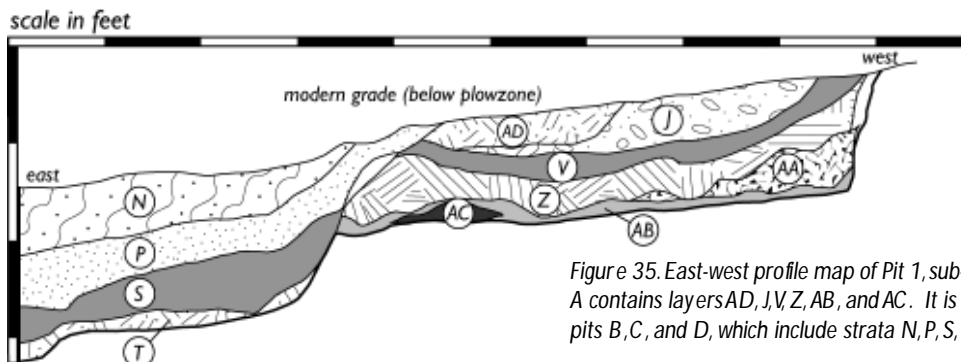


Figure 35. East-west profile map of Pit 1, sub-pit A. Sub-pit A contains layers AD, J, V, Z, AB, and AC. It is cut by Sub-pits B, C, and D, which include strata N, P, S, and T.

Buffer Zones, Gradualism, and Punctuated Change

The fact that these criteria failed to pinpoint an internal temporal gradient within the bulwark trench was meaningful. It suggested that behavior and material assemblages at James Fort did not change gradually, but rather were marked by sudden shifts. Well-established and soundly tested chronologies based on gradual material change—like pipe-stem bore diameters, wine-bottle form, etc.—should not result in automatic assumptions of gradualism and default dismissals of punctuated change. Although the form of the artifact type might change gradually over time, the quantities of these items often surged or dwindled dramatically. The buffer zones between the Fort and Post-Fort Periods for each of the site's materials revealed significant change. The bulwark trench's extreme measures—it usually provided percentages well above or below the Fort/Post-Fort buffer zone—suggested that the material shifts at Jamestown Island were sudden. If a gradual material transition existed between the Fort and Post-Fort periods, the bulwark trench assemblage should contain material percentages somewhere in between the two. For example, previous calculations showed that during the Fort-Period native pottery dominated the ceramic assemblage (averaging 50%), whereas only 20% of the ceramics from Post-Fort contexts were indigenous wares. Since the bulwark trench was filled in between these periods, a theory of gradual change posits that this transitional feature would maintain a native pottery measure somewhere in between 20-50%. To the contrary, 70% of the trench's ceramics were of native origin. Most of the other measures were equally extreme and confirmed punctuated change either between Fort-Period features and the bulwark trench or between the bulwark trench and Post-Fort Period.

The idiosyncratic measures of the Southeast Bulwark Trench did not reflect its transitionality. To the contrary, it demonstrated the feature's temporal distinctiveness. The only feature open during the 1620s, the Southeast Bulwark Trench and its material assemblage revealed punctuated change at the site between Fort and Post-Fort periods. A closer look at trade-

good assemblages and weapons supported this notion of a distinct Bulwark-Trench Period. It should be noted that the Bulwark-Trench Period was characterized by the make-up of its fill and refers less to the spatial and stratigraphic form of the feature.

Diachronic Trade Patterns

Previous analyses separately spotlighted four general materials exchanged between the English and Powhatans at Jamestown: 1) copper, 2) glass beads, 3) native pottery, and 4) wild fauna. Historical records included references of these items being passed back and forth through intercultural exchange. Whereas the natives desired copper and beads, the colonists sought food, which frequently was delivered in or with pottery. However, some of these items were not culturally exclusive. The colonists, many of which were adroit hunters, undoubtedly procured some of the wild fauna themselves. Likewise, it is difficult to distinguish in *Jamestown Rediscovery* archaeological contexts between English arms intended or destined for native hands and weapons whose primary purpose was for the settlers' defense. Since quantitative measures by their very nature do not dwell on individual idiosyncrasies that may reflect exceptions instead of rules, the aforementioned exchange categories serve to identify general trade patterns.

Fort and Post-Fort Periods were consistent in each of the trade-good measures. Earlier time frames equated with high percentages for all four criteria, and the later period maintained lower ones. To the contrary, the Bulwark Trench was decidedly split. It included low measures for copper and beads, but high indicators for pottery and wild fauna. This distinction corresponded with an important aspect of historical exchange—direction. The English traded copper and beads *to* the indigenous population. They received native food and containers (pottery, baskets, etc.) *from* the locals. The Fort-Period's material assemblage indicated that 1607-20 was a time of bilateral exchange, with goods moving both to and from the English (copper and beads <—> native pottery and wild fauna). The period from 1630-60 revealed virtually no trade at all. The interim Bulwark-Trench Period suggested unilateral exchange, with goods only moving to the English and not to the natives. Native pottery and wild fauna entered the English settlement, but there were no longer archaeological signs of the copper and beads that had been once offered as compensation.

Furthermore, both native pottery percentages and wild fauna increased during the Bulwark-Trench Period, before dropping substantially in the Post-Fort Period. The shape of the curve when plotted demonstrates two distinct patterns: one drops immediately *during* the 16-teens and '20s (copper and beads), the other dips *after* the '20s (native pottery and wild fauna).

The sequence of bilateral exchange to unilateral exchange to nonexistent exchange reflected the overall deterioration of relations between the two groups in the first half of the 17th century. Initial amicable trade and gift exchange gave way to war and theft, and ultimately to the English destruction of the Powhatan chiefdom. In fact, exchange-based transgressions often resulted in strained relations.⁸ The high percentage of arms and armor during the Bulwark-Trench period further bolstered this notion of intercultural strife during the 1620s. Although contemporaneous historical accounts contained individual momentary exceptions to this general pattern, the archaeological record offered a broader and more representative overview.

The Bulwark-Trench Period was not mutually exclusive with the Fort and Post-Fort Periods. It did however include drastic differences in the material assemblage. The evidence of unilateral exchange suggested that this period of taking and not reciprocating began sometime after the 1610 English declaration of war on the indigenous population. It continued past the 1622 Algonquian Uprising and into the 1630s. Ultimately, the exclusive Fort and Post-Fort Period chronology was broadened to include a Bulwark-

Trench Period from 1610-30. Mixed Fort/Post-Fort measures and trade goods obtained through unilateral exchange characterized the Bulwark-Trench Period.

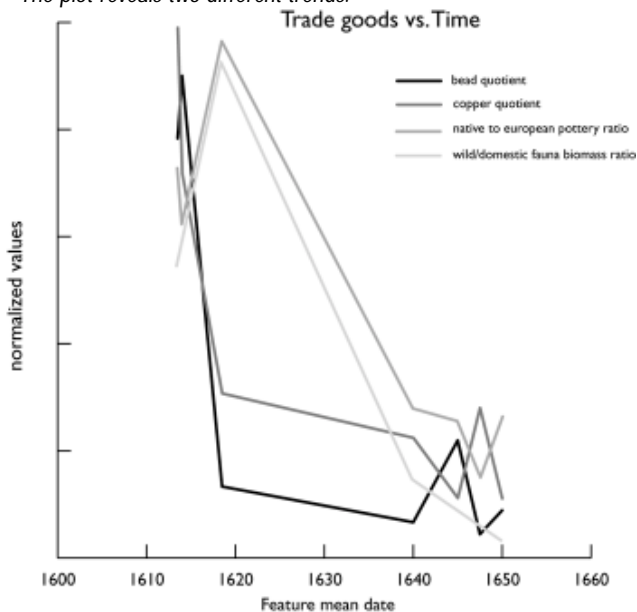
Analyses Of Plowzone Artifacts Excavated From 1994-97

Spatial analyses of Fort-Period and Post-Fort Period artifacts uncovered in the plowzone offered insight into the daily lives of Jamestown colonists. The debris pattern of Fort-Period materials demonstrated the settlers' disposal practices. It also suggested additional living areas within the fort and identified a transformation in the fort's overall layout. In addition, the studies distinguished spatial patterns between the two periods.

Since plowzone varied in depth across the site, simple artifact totals per 10' square unit did not necessarily equate with artifact densities. In order to prevent areas with a deeper plowzone or those truncated by modern features from skewing the analysis, the absolute plowzone volume for each unit was determined. A Fort-Period artifact-density quotient (FQ) was then calculated by dividing the number of each unit's Fort-period artifacts by its total plowzone volume.

The Fort-Period assemblage consisted of artifact types that dominated the fill of the site's three earliest, most dense, and best dated features: Pit 1, Pit 3, and Structure 165. These sealed contexts defined the Fort Period. The artifact-type list included: Border ware, cannon balls, copper scraps, crucibles, drug jars, European ball-clay pipestems with bores 9/64" in diameter, fish hooks, Frechen stoneware, flint, jettons, lead cloth seals, lead shot and sprue, Martincamp, musket rests, olive jars, and projectile points. It was important to guard against the possibility that some of the less precisely dated artifact types, like flint, lead, and fish hooks, might have later components. These could contaminate the temporal measures. Thus, a second artifact-density quotient was calculated using material found almost entirely in early contexts. Whereas the first measure included types that were found in abundance in Fort-Period features, the second measure consisted of types more exclusive to initial English occupation at Jamestown Island. The second measure (FQ2) was based on counts of copper scraps, Border ware, crucibles, drug jar, European pipes with bore diameters 9/64", Frechen stoneware, glass beads,

Figure 36. Normalized scatter plot of English/Powhatan trade goods. The plot reveals two different trends.



Martincamp, musket rests, and olive jar. The contour maps that resulted from each set of calculations were virtually identical, indicating that the former artifact group was as temporally sound as the latter.

One of the expectations at the outset of the analysis was that units over rich features would contain high early-artifact densities. This was based on past and current plowzone testing techniques in archaeology that allow professionals to survey and locate sites. However, the breadth and thoroughness of *Jamestown Rediscovery's* open-area excavations made the identification of plowzone hotspots over fully exposed and tested features redundant.

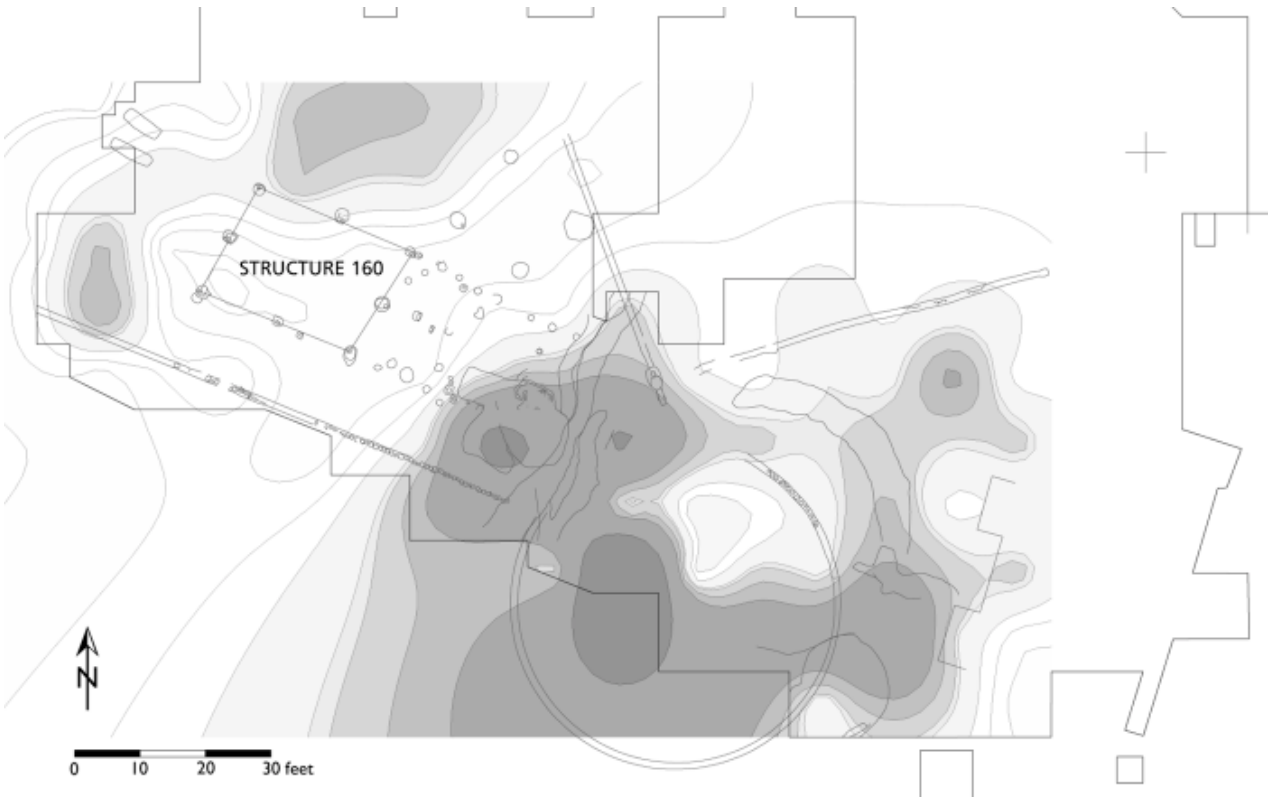
The spatial distribution of early artifacts at James Fort did much more than reiterate feature boundaries. The contour maps of Fort-Period debris in the plowzone depicted a trio of spatial patterns with regard to previously established feature boundaries. Contour lines that ran parallel to the edges of a feature respected that sealed context, indicating that the feature likely dated to the Fort Period. Contour lines that ran perpendicular to and through the edges of a feature ignored that sealed context, suggesting that it was not used and filled during the Fort Period. The three patterns were as follows: First, the location of early refuse conformed to the edges of Structure 160. It also pinpointed Pits 1

and 3 and the southeastern bulwark palisade and trench. Second, it partially followed the border of the southern palisade wall and the eastern palisade extension. Third, the debris pattern respected neither the triangular fort's east curtain, nor Burials 1 and 2.

Structure 160 was thought to be a Fort-Period earthfast structure on the basis of its alignment with the fort and the absence of late artifacts from its postholes and postmolds. The early debris pattern respected its boundaries, substantiating its Fort-Period designation. Plowzone units above Structure 160 contained few early artifacts inside the building's rectangular plan. The structure did, however, have a 10-20' wide ring of dense early plowzone refuse surrounding it. The swath of early debris was present on the south, west, and north sides of the structure. The central gap in refuse continued 16' eastward, suggesting that it extended an additional pole to the east. Initially identified as an 18'9" by 25'6" building, this analysis indicated that the structure's long axis was nearly twice as long as once thought. A subsequent re-examination of nearby postholes resulted in a similar conclusion.

Plowzone units sealing the area to the northeast of Structure 160 also had a ring of debris encircling a zone with virtually no early artifacts. This refuse-

Figure 37. Archaeological site plan with Fort-Quotient contours. Darker shading reflects high artifact densities; lighter areas signify lower artifact densities.



free area was centered on three large postholes, which formed three sides of a 10' square. The spot where the fourth corner should be is currently sealed and disturbed by a large tree stump.

The ring of debris around Structure 160 suggested that its early colonial inhabitants deposited their garbage outside of the building in traditional 17th-century broadcast refuse fashion. Archaeologist James Deetz, when writing specifically of early colonization in New England noted this general pattern, asserting that, "all waste materials were simply thrown out, and often at what to use would be an alarmingly short distance from the door."⁹

The timing between documented massive fort clean-ups in mid-1610 and 1611 and the ring of debris around Structure 160 was difficult to determine. The contour maps might reflect earlier broadcast refuse that remained following the holistic cleanings, or it might showcase additional debris dumped after 1611.

In general, the early debris aligned much more with the eastern palisade extension and the southern palisade than with the original eastern palisade. The refuse contours ran relatively parallel, albeit somewhat meandering, to the southern wall and eastern extension, yet perfectly perpendicular to the east curtain. This distribution intimated that the southern wall and eastern extension served as more substan-

tive boundaries that were used longer than the east curtain.

Excavation of parts of the east curtain revealed possible evidence of the wall's having been dismantled relatively soon after it was constructed. This was in direct contrast to the posts that formed the southern palisade and eastern extension, which showed no signs of having been extracted.¹⁰

Thus, multiple lines of evidence suggested that the east curtain was very short lived—first the excavations' nebulous stratigraphic results, and second, the early refuse pattern in the plowzone. The assumed plan of the palisades, combined with Captain John Smith's claim that James Fort was five-sided by 1608-09, had always led scholars to believe that the triangular fort was augmented with a rectangular addition on one side, likely the east.¹¹ Past reconstructions had left the original eastern wall standing within the five-sided fort. To the contrary, archaeology indicated that the east curtain did not serve as a meaningful barrier inside of the five-sided fort and was dismantled soon after the fort was transformed.

Spatial analyses of Post-Fort Period artifacts from the plowzone were also performed. This calculation, the Post-Fort quotient or PFQ, was based on many items. They included European pipes with bore diameters 7/64 " or 8/64", Jamestown potter vessels, majolica, marbled slipware, Midlands Purple, North

Figure 38. A portrait of the extended fort at Jamestown Island, painted by artist Sydney King in the 1950s. The Fort-Quotient contours suggest, to the contrary, that colonists dismantled the original eastern palisade before adding the fort extension to the east.



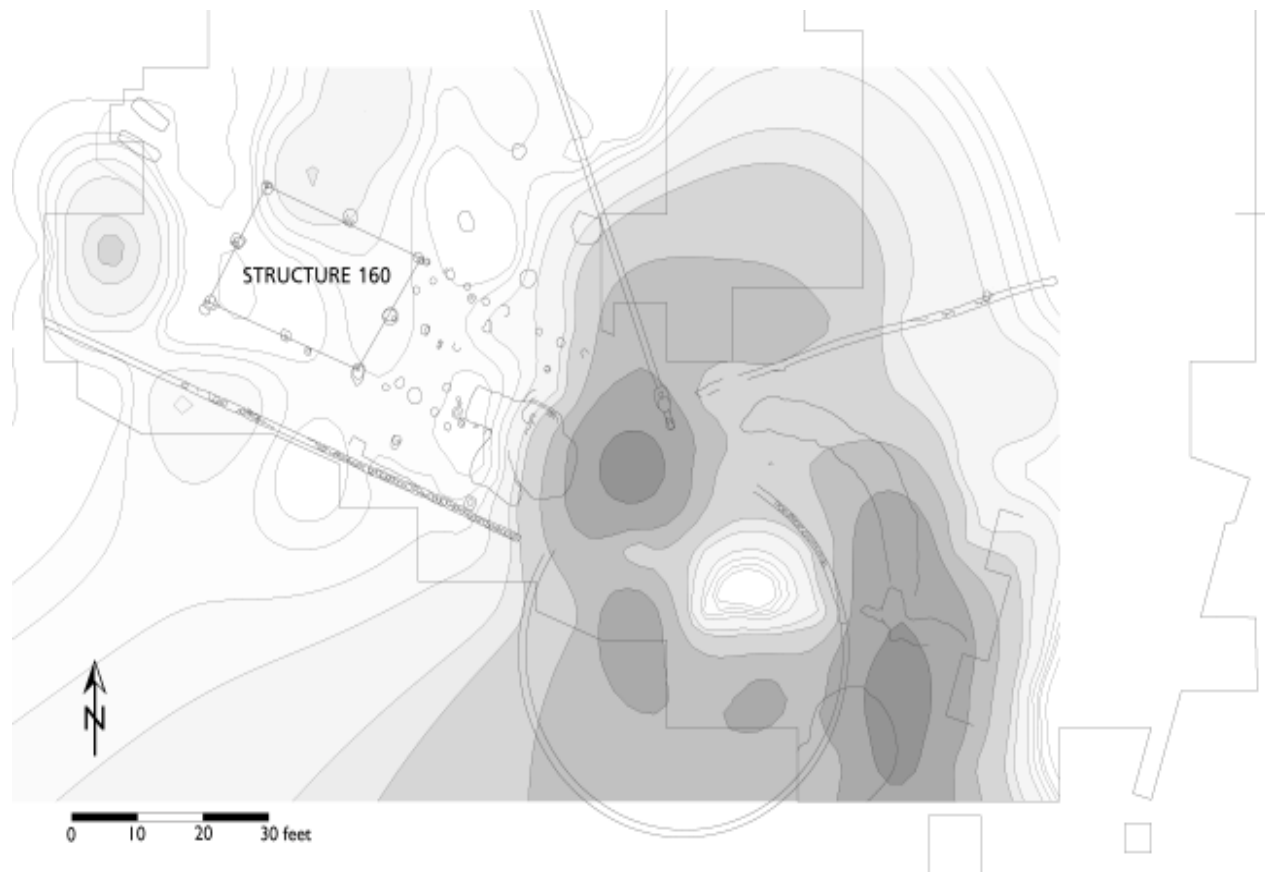


Figure 39. Archaeological site plan with Post-Fort Quotient contours. Darker shading reflects high artifact densities; lighter areas signify lower artifact densities.

Devon Gravel-Tempered, and sgraffito. As before, plowzone hotspots pinpointed the dense features they once sealed. Post-Fort features that were identified included the central ditches (1-4), the eastern ditches (6 and 7), Midden 1, and the Bulwark Trench. The Bulwark Trench was the only feature identified by the FQ and PFQ measures, further verifying its filling during both Fort and Post-Fort periods. The later fill did not respect any one of the other Fort-Period features, including Pits 1 and 3, and all of the palisade lines. The contour lines also ignored Burials 1 and 2. Furthermore, the PFQ calculations suggested that a large Post-Fort feature, approximately 40-50' in di-

ameter, is under the platform walkway in between the eastern and western halves of the site.

That the later measure did not identify a ring of refuse in the vicinity of Structure 160 was an important verification for this procedure. The area in question contained little plowzone due to a modern roadbed that years earlier had been cut through the site. Structure 160 coincidentally shared a common alignment with the road. Thus, it was unclear whether the FQ spatial pattern resulted from early 17th-century debris or the modern plowzone alterations. However, since the road cut did not affect the PFQ, it was safe to assume that the FQ was unaltered as well.

Figure 40. Corncob pseudomorph recovered from Structure 165.

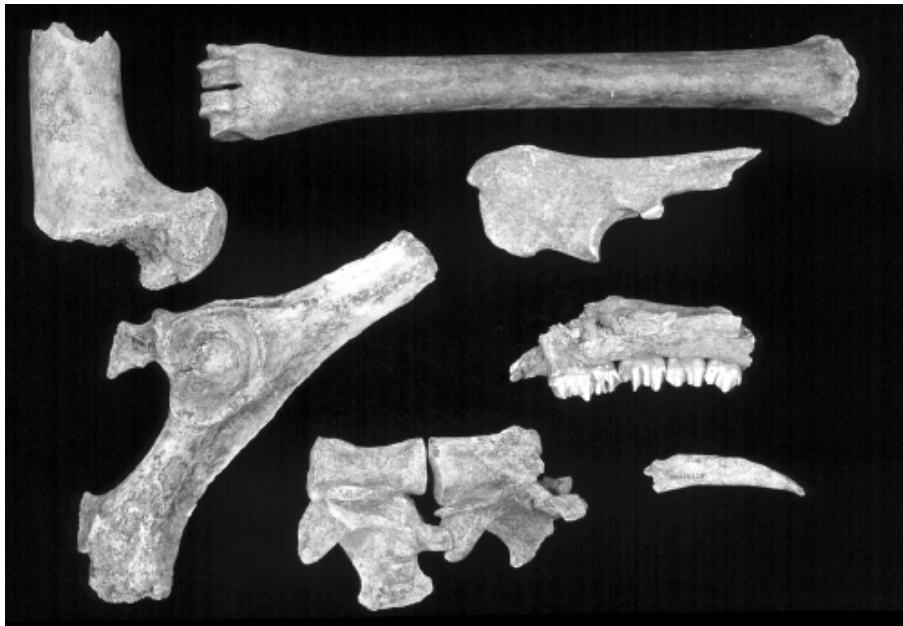
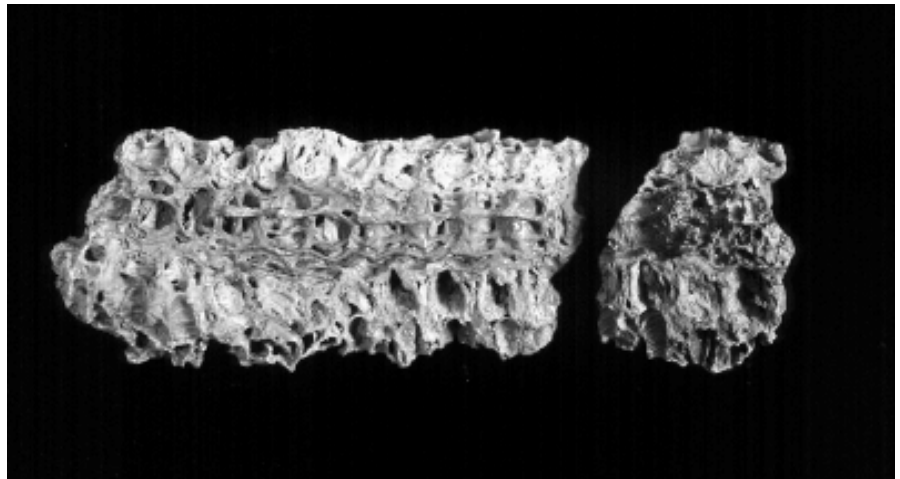
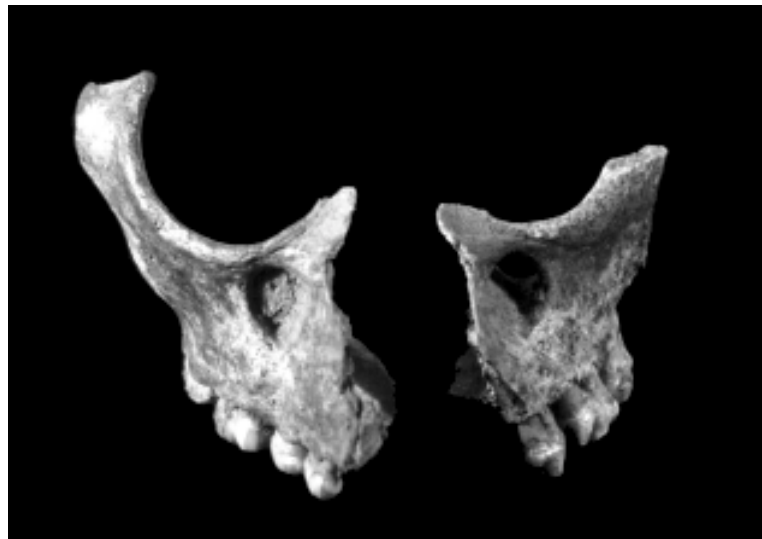


Figure 41. A few of the ninety-one elements of deer recovered from James Fort.

Figure 42. Raccoon skull from Pit 1. Forty-three elements from raccoon were identified from pits 1 and 3 and the bulwark trench of James Fort.



SELECTED ARTIFACTS

But their victuall is their chiefest riches . . .

Previous interim reports have discussed artifacts from the site that reflect trade between the colonists and the indigenous population. These have focused on the copper ornaments and glass beads that the colonists contributed to the intercultural exchange, but what about evidence of the goods they received in return?¹² The artifacts selected for this report will examine some of the materials excavated from the colonial contexts that may have found their way into the fort as gifts or trade items from the Indians.

Food

The historical records tell us that food was the foremost object of trade for the settlers during the first few years of settlement. In fact, the governing council of the Virginia Company planned it that way. Their men were not to waste time laboring in agriculture when, for a few cheap trinkets, they could obtain sustenance from the Indians.¹³

The most common foodstuff the colonists mentioned obtaining from the native people was corn. In the first few years, the Jamestown settlement became very dependent upon corn for survival, often taking it by force from Indian groups who were reluctant to barter. Unfortunately, organic materials such as corn have little chance of surviving in the ground, so the archaeological record does not reflect the importance of this material to the early settlement. Only one fragment of an ear of corn has been excavated during the Jamestown Rediscovery excavations. It survived as a pseudomorph, or an “iron” corncob, created by corrosion products of metal artifacts that had been buried with the corncob taking the form of the kernels as they decayed.

At times, the Indians also brought the colonists meat from the wide range of wild fauna that they hunted. John Smith writes that during one stretch of 16 days “the Countrie people brought us . . . 100. a day, of Squirrils, Turkyes, Deere, and other wilde beasts.”¹⁴ A faunal analysis of some of the discarded food remains within the fort has identified that within the first ten years of settlement, “wildlife contributed half of the colonists’ meat diet.”¹⁵ Some of this food was undoubtedly the result of trade with the Indians, but, lacking distinctive butchery marks that would signal native tools and/or techniques, there is no way

to distinguish it from food the colonists acquired themselves. Certainly, many of the colonists would have been adept at hunting. We have indications of this from both the excavated evidence of hunting weapons such as crossbows and snaphaunce fowlers, and the documentary record. At one point John Smith even leaves a colonist at Powhatan’s home at Werowocomoco for the express purpose of shooting fowl for the chief.¹⁶ On the other hand, when relations were good with the local Indians, the colonists appear to have relied on the native supply of food while they turned their energies elsewhere. For example, William Strachey, who was only in the colony for one year, 1610–1611, tells us that the racoon is “excellent meat . . . we kill often of them, **the greatest number yet we obteyne by trade.**”¹⁷ Forty-three elements from the analyzed fauna were identified as racoon, which were useful to the natives not only for their meat but also for their furs. Powhatan himself wore a robe “made of Rarowcun skinnes, and all the tayles hanging by.”¹⁸

Native American Pottery

An unexpected indication of Indian involvement in the exchange of goods is to be found in the Indian pottery excavated from James Fort. The excavations have uncovered over 11,000 sherds of Indian-made pottery from colonial contexts. These ceramics are in the process of being analyzed by temper and surface treatment so statistics are not currently available for all of the material,¹⁹ but, even without these data, it is quite evident that the majority is of a Late Woodland type known as Roanoke ware. This pottery is named after the island in North Carolina where it was first defined by J.C. Harrington, mixed with European artifacts, in a late 16th-century ditch of the English settlement of Fort Raleigh.²⁰ Roanoke ware is known widely in the outer Coastal Plain of southeastern Virginia and northeastern North Carolina²¹ and is the type of pottery produced by the Pasbeheghs and other Indian groups surrounding Jamestown.

Traditionally the ware has been dated ca. 1500–1625, although radiocarbon dates from the recently reported Great Neck Site in Virginia Beach, Virginia (VB7) suggest an even earlier beginning date in the 15th century.²²

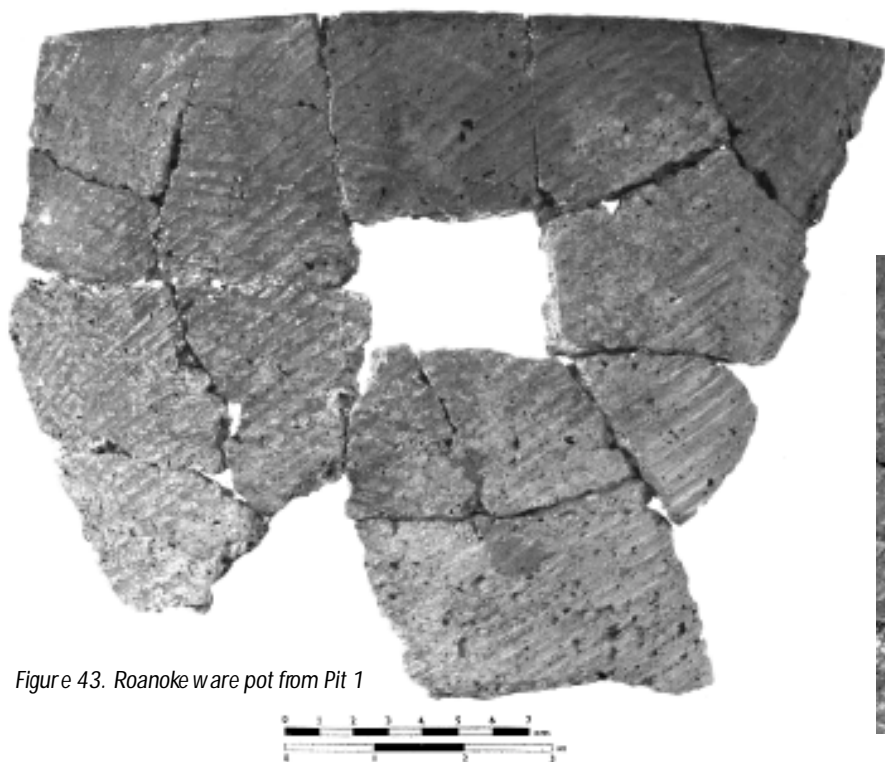
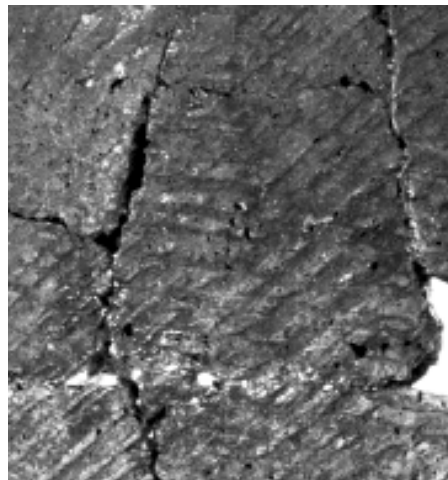


Figure 43. Roanoke ware pot from Pit 1

Figure 44. Simple-stamped surface treatment created by a fiber wrapped paddle.



Roanoke ware is shell-tempered and its only decoration is simple stamping, which is sometimes obscured by smoothing of the surface.²³ Simple-stamping consists of overlapped impressions from a fiber-wrapped paddle, which, unlike cord-marked pottery, yields a pattern with crisp, straight edges.

Temper and surface treatment analyses have been completed for the Indian pottery from one James Fort context—Pit 1. This is a sprawling 20' x 16' feature consisting of five sub-pits, some of which were probably dug by the colonists for daub. It appears to have been filled no later than 1610. Ninety-five percent of

Figure 45. Round bottomed cooking pot set "uppon an heape of erthe to stay (it) from fallinge" in which the Indians are cooking a fish/corn stew. Thomas Harriot "A Briefe and True Report of the new found Land of Virginia: the complete 1590 edition with the 28 engravings by Theodor de Bry" (New York, Dover Publications, Inc., 1972), 60.



the 736 sherds of Indian pottery which could be typed within this feature was shell-tempered. Over half (55%) were shell-tempered and simple-stamped.

Among the Roanoke ware are many sizeable sherds, some mending together, that appear to be part of one large fire-blackened cooking pot. The rim diameter of the pot is at least 32 cm and the body is a consistent thickness of between 7 and 8 cm. The stamping has been applied in a diagonal orientation from, and over the top of, the rim which is straight in profile. From the number of large sherds that mend together, the pot appears to have been broken shortly before deposition and, thus, represents the earliest-known instance of European use and discard of a Native American vessel.²⁴

Another example of the colonists using Indian pottery can be seen in the bulwark trench surrounding the fort. This pottery occurs in the first sequence of trench fill, which dates to ca. 1610 based on the artifacts and the butchered remains of horses. Normally a food taboo, horsemeat was eaten by desperate colonists during the Starving Time of 1609-1610.²⁵

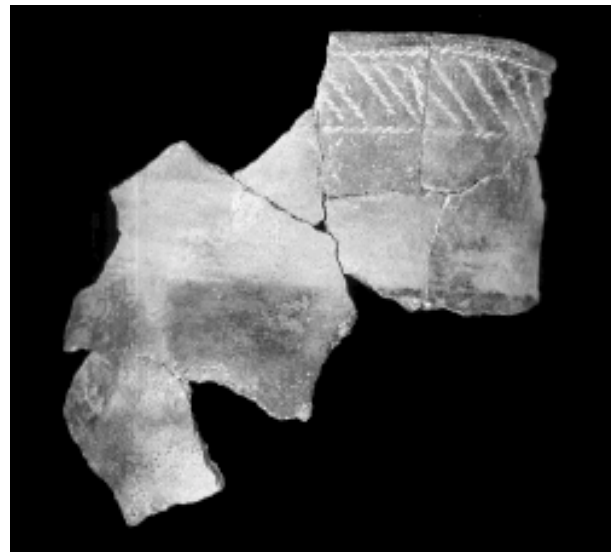
The pot in the bulwark trench, represented by several large sherds, is interesting for two reasons. The first is that it is of a non-local ware type known as Potomac Creek, first named by William Henry Holmes in 1903 after the site upon which it was found.²⁶ Potomac Creek was the site of Patawomeke, the major village of the Algonquian Indians by the same name with whom John Smith traded in the summer of 1608 during his explorations of the Chesapeake Bay. The colonists maintained friendly relations with the Patawomekes in the following years and depended frequently on them for supplies of corn. Perhaps Potomac Creek is most famously known as the area from which Captain Samuel Argall kidnapped Pocahontas in 1613, with the assistance of the Patawomeke chief Japazaws.

Potomac Creek pottery has its greatest concentration in “the inner coastal plain of the Potomac River”²⁷ but it is also being found west to the Piedmont and south into Henrico County.²⁸ It is not common in the Tidewater area, but it is not a surprising to find it at James Fort considering the important role the Patawomekes played in the native trading network as well as in supplying the colonists. The name *Patawomeke* itself means *trading center*,²⁹ which the village became as a result of its location along “the great natural trade route of the Potomac River, connecting Chesapeake Bay and the Appalachian Mountains.”³⁰

Figure 46. Table of Native American Ceramics from Pit 1.

| CERAMIC TYPE | COUNT | % |
|----------------------------|-------|-----|
| Shell-Temper | | |
| Cord-Marked Surface | 5 | 1 |
| Fabric Impressed Surface | 21 | 3 |
| Simple-Stamped Surface | 257 | 35 |
| Plain Surface | 95 | 13 |
| Plain/Scraped Surface | 3 | >1 |
| Unidentified Surface | 259 | 35 |
| Net-Impressed Surface | 2 | >1 |
| Cord-Wrapped Dowel Surface | 1 | >1 |
| Simple/Smoothed Surface | 1 | >1 |
| Sand-Temper | | |
| Plain Surface | 3 | >1 |
| Indeterminate Surface | 6 | 1 |
| Sand/Crushed Quartz Temper | | |
| Plain Surface | 3 | >1 |
| Simple-Stamped Surface | 1 | >1 |
| Unidentified Surface | 14 | 2 |
| Cord-Marked Surface | 1 | >1 |
| Shell/Sand Temper | | |
| Indeterminate Surface | 4 | 1 |
| Plain | 1 | >1 |
| Indeterminate Temper | | |
| Indeterminate Surface | 59 | 8 |
| TOTAL | 736 | 100 |

Figure 47. Potomac Creek pot from bulwark trench.



Potomac Creek pottery, which is dated from ca. 1200 to the 17th century, consists of small to large vessels with globular bodies and straight or everted rims.³¹ The fabric is composed of “compact, hard clay tempered with 20 to 25 percent crushed quartz (or occasionally with other local rocks) and/or medium to fine sand grains.”³² There are two major types recognized within the ware distinguished by surface treatment: Potomac Creek Cord-Marked and Potomac Creek Plain. The vessel in the bulwark trench is the latter type, which is the most common variety in the 17th century.³³ As on some Potomac Creek Plain vessels, the rim of the Jamestown pot has been impressed with a cord wrapped dowel. The horizontal and diagonal markings are in a band around the rim.

The most interesting thing about the Potomac Creek pot is that it has obvious residues from the cooking of food. A sherd from the pot was submitted to Harvard University’s Archaeometry Laboratories for testing to see if the residues could be identified. Doctoral candidate Eleanora Reber combined techniques of gas chromatography/mass spectrometry and light stable isotope analysis to extract and ascertain the identity of any lipids contained in the sherd.³⁴ Lipids are the fats and fat-like compounds that occur in living organisms. When food is cooked in unglazed pottery the lipids and water soluble compounds are absorbed into the walls of the vessel where they are protected from chemical degradation by the clay.

Ms. Reber determined that the Potomac Creek sherd from James Fort contained fatty acids, cholesterol and sitosterol, a plant compound. Analysis of the molecular makeup of the sherd points to a C4 plant, which indicates corn as “maize is the only C4 plant in the eastern and midwestern United States.”³⁵ In addition, the presence of nitrogen in the sample suggests a small amount of meat or meat from an animal quite low on the food chain, such as deer. The pot from the bulwark trench, in other words, once contained a mixed stew of meat, probably deer, and corn that was cooked within the vessel. It is quite likely that the Indians brought the pot into the fort either already containing prepared food or with the intent of cooking a meal for the colonists at the fort. Once the contents were consumed, the colonists would have had no use for a round-bottom cooking pot and would have discarded it.

There are many references in the historical records to the Indians bringing food to the colonists. At times, as when John Smith states that “the Indians brought us great store both of Corne and bread ready made,”³⁶

the meals were precooked before they were brought into the fort. These foodstuffs may have been carried in the pots that had been used to cook them. The pots were then left with the colonists rather than carried out again.

But there could be other explanations for the occurrence of Indian pottery in use within James Fort. There are indications from the historical records that there were Indians living in the fort and working for the colonists. Until Captain Yeardley returned to England in 1617 for instance, he is said to have kept an Indian to shoot fowl for him and that “divers other had Salvages in like manner for their men.” In the words of the colonists: “thus we lived together as if wee had beene one people.”³⁷ While this is only referring to “men,” it is very likely, with the dearth of women colonists in the first few years, that female Indians were also living in the fort. A letter from Don Pedro de Zuñiga, the Spanish ambassador to London, written to the King of Spain suggests that by 1612 there were 40 or 50 such intermarriages between the English and the Indians. These alliances do not appear to have been officially condoned by the church as Zuñiga relates that “a zealous minister of the [colonists’] sect was seriously wounded in many places,”³⁸ because he reproached the men for this practice. The “zealot” Zuñiga was referring to may have the interim minister between the Reverend Robert Hunt, who died in 1608, and the Reverend Richard Buck who arrived in the colony in 1610. This individual has gone unnamed in the records but he was described in November 1609 as “somewhat a puritane” and very unpopular with some of the colonists who refused “to go to his service & to heare his sermons.”³⁹ A minister preaching strict morality regarding fraternization with the Indians would gain little respect from the men who had found comfort and pleasure from such relationships. The official policy may have been against comingling with the natives who were viewed as uncivilized savages, but it was only “as a culture the natives were alien; as men and women they were not.”⁴⁰

If there were a number of Indian-Colonist couples living in and around the fort, it would make sense that there would be Indian women preparing food in their customary manner. But while this may help to explain the presence in the colonial contexts of the Roanoke ware cooking pots, which were produced by the local Indian groups, it does not clarify the occurrence of Potomac Creek pottery made over 100 miles away. Perhaps the presence of this ware is more the result of traditional aboriginal exchange, which served

not only to distribute goods over wide areas but also to cement bonds between the different Indian groups.⁴¹ It is known from the records that the Powhatan traded materials with the Patowomekes, for at the time Pocahontas was kidnapped she was at the Patowomeke village, “to exchange some of her fathers commodities for theirs.”⁴² There is no reason why pottery could not be part of this exchange of goods. A Potomac Creek vessel would be different, and thereby something special, to a member of a group making shell-tempered wares. As a somewhat prized pot, it may have been chosen by the Powhatans from their retinue of vessels as an appropriate container in which to carry food to the colonists for a special feast.

Projectile Points

Another class of artifacts recovered in the excavations has been mentioned in the records as being presented to the colonists by the Indians—arrows. On John Smith’s 1608 exploration of the Chesapeake Bay, he was presented “venison, beares flesh, fish, bowes, arrows, clubs, targets, and beareskins” by the Massawomeck Indians. On the same trip the Susquesahanock Indians “came downe with presents of venison, Tobacco pipes, Baskets, Targets, Bowes and Arrows”⁴³ and an Indian delivered “a Quiver of Arrowes” to Smith “as a present.”⁴⁴ Could some of the projectile points that have been found in and around the fort site possibly be the result of these gifts?

A study of the hafted bifaces that had been recovered from the James Fort excavations between 1994 and 1998 was undertaken for the project by Dennis Blanton, Veronica Deitrick, and Kara Bartels of the William & Mary Center for Archaeological Research.⁴⁵

This study not only recorded the shape and material of the points to determine date and origin, but also examined the artifacts for breakage patterns that might reveal function.

The sample was evenly divided between triangular bifaces which were dated to the time of contact, and other types which represented earlier occupations at the site ranging from the Late Archaic (4000 BC) to the Middle Woodland (AD900) (Figure 2). The triangular points were further separated into two groups, one measuring more than 3.3 cm and the other less than 3.3 cm in length, since size has the potential for indicating function. The 79 small-sized triangular bifaces are probably true points for arrows whereas the 16 larger ones are more likely cutting tools.

Nine different lithic materials were recorded for the triangular points. Locally available quartzite and quartz are the most common materials for both sizes comprising 79% of all the triangular points. This is hardly surprising, nor is the metavolcanic material, also found locally, which was used for one small triangular point. But the other raw materials recorded in the assemblage—jasper, dark chert, and orthoquartzite—are “extremely rare if not altogether absent in local gravels.”⁴⁶ The closest sources for these lithics are the outer Coastal Plain (Eastern Shore and Virginia Beach) for jasper, the mountainous Appalachians for dark chert, and northeastern North Carolina for orthoquartzite.⁴⁷

Examination of the breakage patterns on the small triangular points produced some interesting results relative to function. Blanton et al. noted that “the small triangular points made of jasper and dark chert, both non-local materials, have been recovered intact significantly more often (47%) than those made of

Figure 48. Non-local triangular projectile points from James Fort.

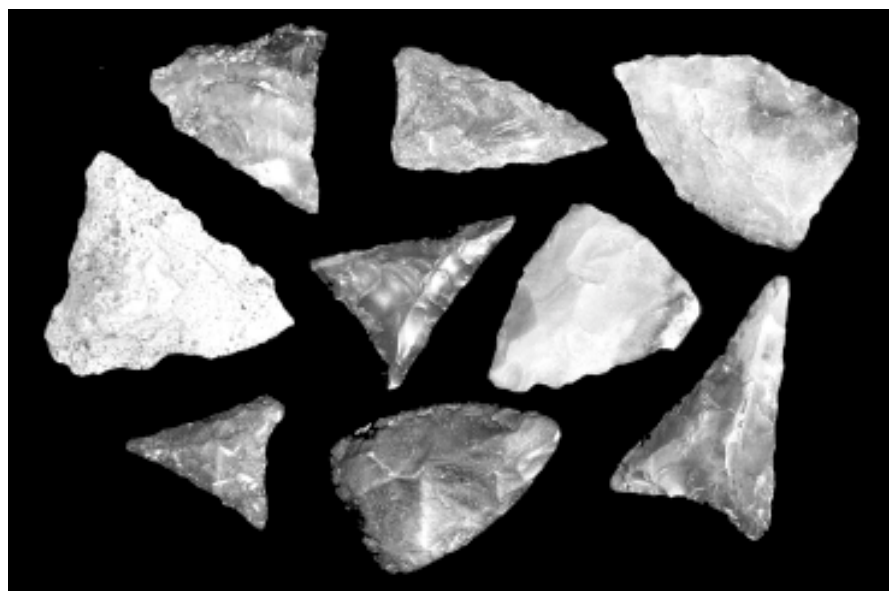


Figure 49. Table of Native American hafted bifaces by type and material.

| TYPE | COUNT | % |
|------------------|-------|-----|
| Small Triangular | 79 | 42 |
| Dark Chert | 4 | |
| Jasper | 11 | |
| Metavolcanic | 1 | |
| Orthoquartzite | 3 | |
| Quartzite | 40 | |
| Quartz | 20 | |
| Large Triangular | 16 | 8 |
| Dark Chert | 1 | |
| Quartzite | 13 | |
| Quartz | 2 | |
| Contracting Stem | 12 | 6 |
| Jasper | 1 | |
| Metavolcanic | 1 | |
| Quartzite | 9 | |
| Quartz | 1 | |
| Savannah River | 7 | 4 |
| Quartzite | 7 | |
| Side Notched | 6 | 3 |
| Quartzite | 5 | |
| Quartz | 1 | |
| Stemmed | 3 | 2 |
| Quartzite | 2 | |
| Quartz | 1 | |
| Miscellaneous | 8 | 4 |
| Quartzite | 5 | |
| Quartz | 3 | |
| Unidentifiable | 59 | 31 |
| Dark Chert | 1 | |
| Light Chert | 1 | |
| Orthoquartzite | 1 | |
| Quartzite | 46 | |
| Quartz | 10 | |
| TOTAL | 190 | 100 |

other materials (11%).”⁴⁸ This could be an indication that these higher quality non-local points were not intended as ordinary projectiles but were given special treatment. Rather than representing arrows that had been fired into the fort during times of Anglo-Indian unrest, they may have found their way into colonial contexts as gift arrows. This is an area of study that will be pursued in the future. Specifically, patterns of distribution within the excavation area will be plotted for all the Native American artifacts to see how they, and specifically hafted bifaces, relate to each other and to the early colonial material.

Clay tobacco pipes

As mentioned earlier, clay tobacco pipes were also among the items offered by the Indians in trade. The early narratives describe the important role played by tobacco in native rituals, whether it was cast into the river to pacify storm-roughened waters or thrown into fire during a religious ceremony.⁴⁹ Tobacco also appears to have been a meaningful part of the social ceremonies in the Indian culture. Ralph Hamor relates that the first thing Powhatan did when he visited him in 1614 was to offer him a “pipe of Tobacco.” The pipe of tobacco as a symbol of friendship was graphically demonstrated to the colonists on one of their first encounters with native peoples after arriving in May 1607. At the village of the Appomattox they encountered a chief “with his Arrow readie in his bow in one hand, and taking a Pipe of Tobacco in the other.” Although they could not understand what the man was saying, the English clearly understood the choice they were being offered and “made signes of peace.”⁵⁰

George Percy, who is the author of this account, described the pipe that was offered to him during one smoking session with the Indians. It was “made artificially of earthe as ours are, but far bigger, with the bowle fashioned together with a piece of fine copper.”⁵¹ The addition of copper to the bowl may signify a special ceremonial pipe, as these are not represented among the large number of Indian-made tobacco pipes in the Virginia archaeological record.

Two native-made tubular clay tobacco pipes have been excavated during the Jamestown Rediscovery Project which may indicate gifts from the Indians. One, from a plowzone context (JR348A) has a rounded smooth surface. The lip rim is rounded inwards and formed so that the bowl opening appears squared. There is interior charring from use. The bowl is 35 mm long and the stem is incomplete.

The other pipe (JR158AP) comes from a ca. 1610 context within Structure 165. It also has a smoothed surface and there are signs of burnishing. The bowl has been cut hexagonally and the bowl rim flattened. The interior bowl diameter is 16 mm. The pipe, which is incomplete, measures 96 mm long.

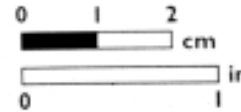
As Percy had observed, the bowls of these tubular pipes are much bigger than the small pear-shaped white ball clay pipes that were made in early 17th-century London. The English bowls are thought to have been small because tobacco was rather expensive and the cost to fill a full Indian-sized bowl would be prohibitive to most smokers. But it may also relate to the strength of the tobacco that was being smoked. The *nicotiana rustica* that the Virginia Indians were growing was very strong and, as one colonist described it, “of a biting tast.”⁵² Perhaps a couple of draughts was all one could comfortably manage. “The fuming vapor of tabacco,” noted one early 17th century author, “will cause some to be drunke & to have a reeling giddiness in their heads.”⁵³ The Indians’ use of larger bowls may relate to their greater tolerance of the weed or, more likely, to their attitude towards pipes. They may not have viewed pipe bowls as personal possessions but as instruments to be shared during the social activity of smoking.

While these tubular pipes are typical Late Woodland Algonquian examples, there is another locally made pipe bowl from the same layer in Structure 165 that is an anomaly. It is a hand-molded and burnished effigy pipe. There are only two other effigy pipes known from colonial contexts in the Chesapeake. One is a salamander effigy from a ca. 1635-45 site in Newport News, VA,⁵⁴ and the other is a human effigy from Pope’s Fort in St. Mary’s City, Maryland. The latter is from a ca. 1645-55 context and bears an ornate rouletted design.⁵⁵

The pipe from Structure 165 consists of the bowl only, which measures 38 mm in length. It has thick walls but a very narrow bowl opening with a diameter of 12 mm. The top rim of the bowl has been flattened and an ear has been pulled up above the rim on each side. On the front of the bowl, facing the smoker, simple incised lines demarcate a face with two almond-shaped eyes, a band at the forehead and around the chin line, and two bands down the nose. A small hole has been punched on either side of the face but they do not penetrate the interior wall of the bowl. So, the



Figure 50. Indian-made tubular clay pipe from Structure 165.



purpose of the holes was not for the effect of having smoke pouring from the ears but rather for hanging or possibly for suspension of a “bridle.” It has been suggested that the effigy is representing a bridled horse⁵⁶ and, indeed, there is an additional pad of clay that has been added to the back of the bowl as if to represent the arch of a horse’s neck.

Prior to the 1610 seal date of this context there were several horses at Jamestown. John Smith records that when he left in the fall of 1609 there were “six Mares and a Horse,”⁵⁷ which became sustenance for the starving colonists over the following winter. This is probably the first time the Powhatans had seen horses and Smith records that they were in great awe of these animals, just as they were the colonists’ firearms and military prowess. The Indians worshiped horses as they did “all things that were able to do them hurt beyond their prevention.”⁵⁸ It makes sense that they would use the image of something feared on a tobacco pipe

Figure 51. Pipe bowl made out of the local clay in the form of a bridled horse.



since tobacco is such an important part of their rituals to placate evil forces.

Tenter Hooks

Another type of artifact that has been found in the fort excavations was not directly traded between the colonists and the Indians but it may represent goods that were. These artifacts are small L-shaped hooks known as tenter hooks. Randle Holme, 17th-century chronicler of material culture, states that “the Tentry hook, is a nail with a crooked head, yet sharp pointed, that it may strike into any thing hung upon it.”⁵⁹ In England, tenter hooks were used primarily by the textile industry to stretch cloth as it was drying. Cloth, particularly wool, required washing and fulling (or thickening) as part of the finishing process. “Fulling not only mats the fabric, but shrinks it considerably too.”⁶⁰ The fabric was hung up for drying on wooden tenters which “consisted of a line of posts with housings to support horizontal rails. Pairs of rails, each with a row of tenter hooks, were set between the posts, the hooks in the upper rail pointing upwards, and in the lower rail downwards, thus enabling the tension of attached cloth to be adjusted.”⁶¹

It is not considered that the colonists were involved in producing cloth at Jamestown. The lucrative textile industry was highly regulated in England and competition from the colonies would not have been tolerated by those involved. It is probably for this reason that the Virginia Company sent no sheep—from which wool and thereby textile could be derived—among the domestic animals. Instead, the 40 tenter hooks that have been excavated thus far, were probably being used to stretch and dry animal skins that the colonists were receiving in trade from the Indians. Furs were a welcome commodity in London and the colonists were encouraged to trade for them. One 1610 attempt by the Virginia Company to guide the colonists towards lucrative exports listed “Bever skynnes beinge taken in Winter tyme will yealde good profitt, the like will otter Skynnes.”⁶² The mariners dropping off the colonists at Jamestown realized the marketability of the country’s animal skins and would trade illegally for “otter skins, beavers, raccoon furs, bears’ skins, etc.”⁶³ One sailor reputedly sold £30 worth of furs

in England at a time when the colony had acquired none.⁶⁴ This black-market dealing totally upset the colonists’ balance of trade with the Indians by overvaluing the native goods which, in turn, contributed to the demise of the already crumbling intercultural relationship.

Figure 52. Iron tenter hooks possibly used for stretching the hides of animals obtained in trade by the colonists.

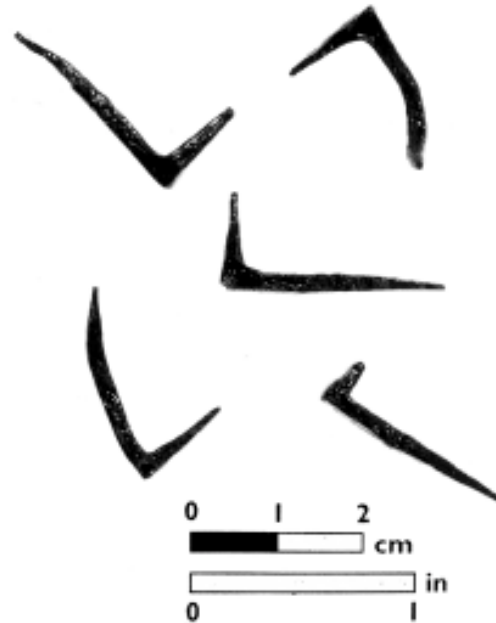
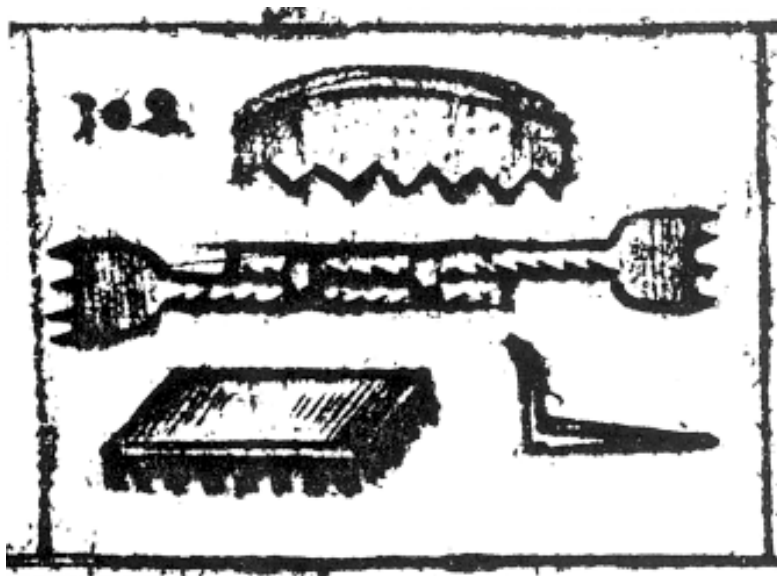


Figure 53. 12. Drawing of a tenter hook from Randle Holme’s “The Academy of Armory & Blazon.”



Conclusion

The 1999 Interim Report for the *Jamestown Rediscovery* project had two general goals. It endeavored to add to the detailed analyses of the APVA's James Fort site and to provide information for regional, even global, studies in archaeology. This study, although in-

herently preliminary, synthesized last year's excavations and summarized the major features and materials uncovered from 1994-99. The methods and theories presented here continue to be tested at the site and in the laboratory on a daily basis.

Archaeological investigations at the site continue into the 21st century.



Notes

- 1 Nicholas Lucchetti and Beverly Straube, *1997 Interim Report on the APVA Excavation at Jamestown, Virginia* (Richmond, VA: The Association for the Preservation of Virginia Antiquities, 1998), 6.
- 2 *Ibid.*, 14-15.
- 3 Ivor Noel Hume, *Guide to Artifacts of Colonial America* (New York: Vintage Books, 1969), 91.
- 4 Joanne Bowen and Susan Trevarthen Andrews, *The Starving time at Jamestown: Faunal analysis of Pit 1, Pit 3, the Bulwark Ditch, Ditch 6, Ditch 7, and Midden 1*, ms. on file APVA Jamestown Rediscovery Center, 1999, 7.
- 5 *Ibid.*
- 6 Seth Mallios, *Archaeological Excavations at 44JC568, the Reverend Richard Buck Site* (Richmond, VA: Association for the Preservation of Virginia Antiquities, 1999).
- 7 Seth Mallios, *At the Edge of the Precipice: Frontier Ventures, Jamestown's Hinterland, and the Archaeology of 44JC802* (Richmond, VA: Association for the Preservation of Virginia Antiquities, 2000).
- 8 Seth Mallios, *In the Hands of 'Indian Givers': Exchange and Violence at Ajacan, Roanoke, and Jamestown*. (Ph.D. diss., University of Virginia, 1998).
- 9 James Deetz, *In Small Things Forgotten* (New York: Anchor Books, 1996), 172.
- 10 Lucchetti and Straube, *1997 Interim Report*, 4.
- 11 Phillip Barbour, *The Complete Works of John Smith (1580-1631)*, Vols. 1-3 (Chapel Hill: University of North Carolina Press, 1986), I:233, II:325.
- 12 Beverly Straube and Nicholas Lucchetti, *1995 Interim Report* (Richmond, VA: The Association for the Preservation of Virginia Antiquities, 1996); Lucchetti and Straube, *1997 Interim Report*.
- 13 See discussion in William Kelso and Beverly Straube, *Jamestown Rediscovery VI* (Richmond, VA: The Association for the Preservation of Virginia Antiquities, 2000), 33-35.
- 14 Barbour, II:212.
- 15 Bowen and Andrews, 7.
- 16 Barbour, II:199.
- 17 William Strachey, "The Historie of Travell into Virginia Britania," eds. Louis B. Wright and Virginia Freund (1612; Nendeln/Liechtenstein: Kraus Reprint Limited, 1967), 124.
- 18 Barbour, II:150.
- 19 Randolph E. Turner, III of the Virginia Department of Historic Resources is kindly doing this analysis for the APVA Jamestown Rediscovery Project.
- 20 J. C. Harrington, "Plain Stamped, Shell Tempered Pottery from North Carolina," *American Antiquity*, 13:3 (1948), 251.
- 21 Margaret C. Blaker, "Further Comments on Simple-Stamped Shell-Tempered Pottery," *American Antiquity*, 17:3 (1952), 257-258.
- 22 According to Mary Ellen Norrisey Hodges ("Native American Settlement at Great Neck: Report on VDHR Archaeological Investigations of Woodland Components at Site 44VB7, Virginia Beach, VA, 1981-1987," *Virginia Department of Historic Resources Research Report Series No. 9* [Richmond, VA: VDHR, 1998], 195), "the three radiocarbon dates from Great Neck overlap at two standard deviations in the range A.D. 1410-1490"
- 23 Dennis Blanton, personal communication, 1994.
- 24 Randolph E. Turner, III, personal communication, 1995.
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