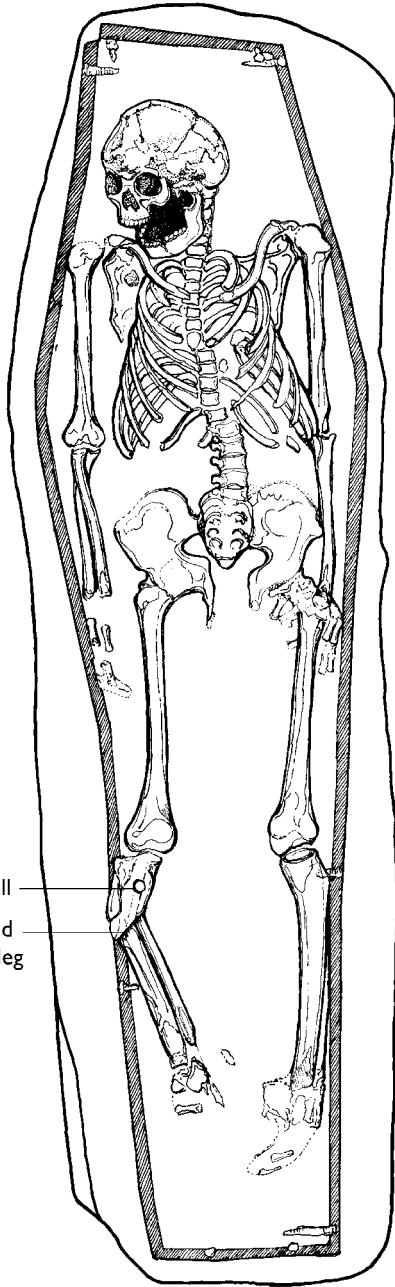


# 1996 Interim Report

on the APVA Excavations  
at Jamestown, Virginia



musket ball  
break and  
twist in leg

William  
Kelso

Beverly  
Straube

APVA *JAMESTOWN*  
REDISCOVERY

October 1997

THE ASSOCIATION FOR THE PRESERVATION OF VIRGINIA ANTIQUITIES

204 W Franklin Street, Richmond, VA 23220



Graphics and maps by Jamie E. May  
Design and production by Elliott Jordan

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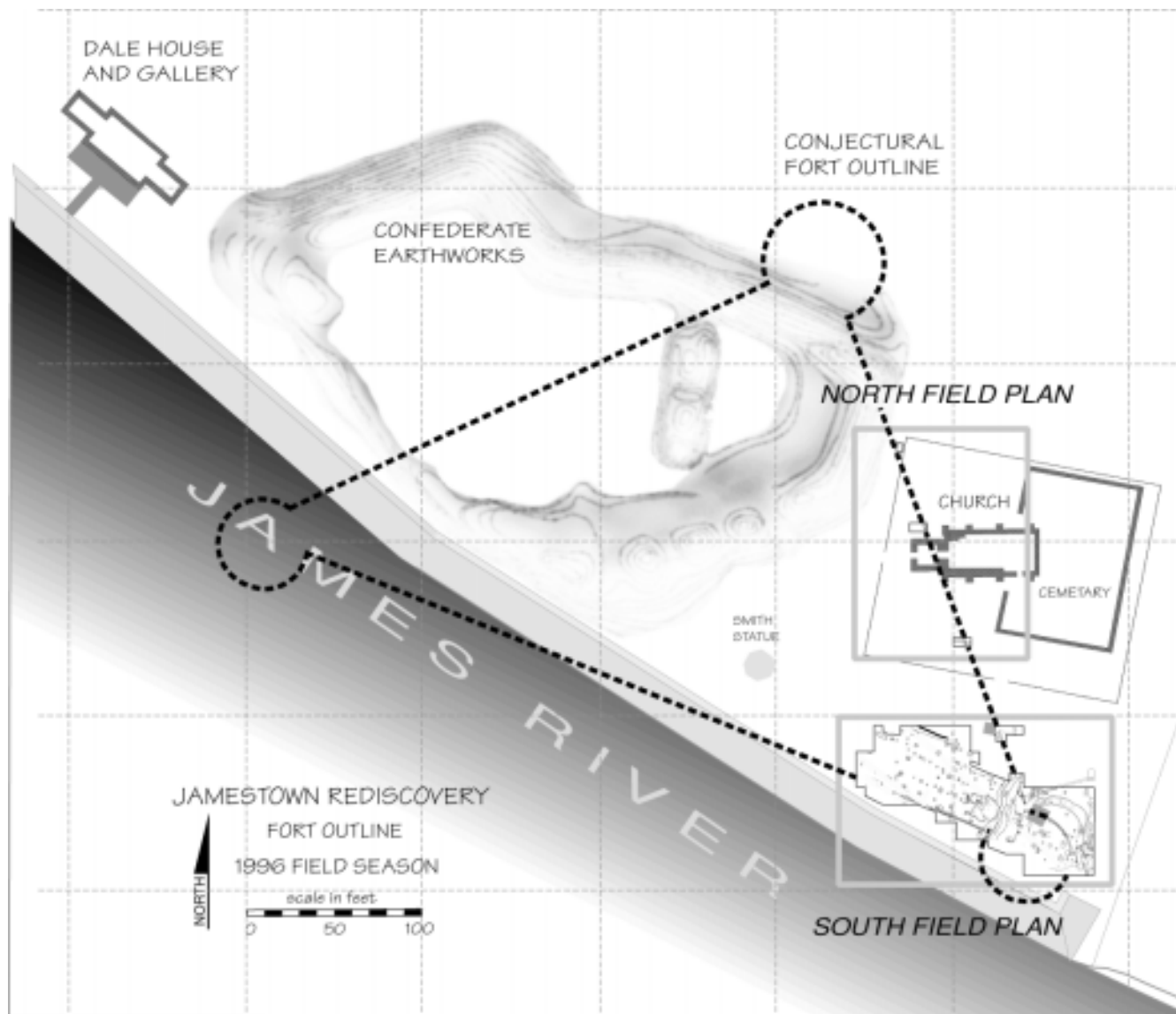
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# INTRODUCTION

Removal of the 8" to 1'2" of plow zone in the yard south of the church during the course of three digging seasons (1994-1996) uncovered a number of soil disturbances in the subsoil that prove beyond a reasonable doubt to be the remnants of James Fort, first constructed in 1607. These early 17<sup>th</sup>-century features include the footprints of the defense work, with sections of two fort walls (curtains) and part of a projecting corner defense (a bulwark or bastion), one of the fort's interior timber buildings, three

backfilled pits, a series of ditches and postholes, and a grave. (See site plan inside back cover of this report and Fig. 1). The plowed soil and the fill in these features held over 160,000 artifacts most dating to the first quarter of the 1600's. A surprising number of these objects were manufactured in the 16<sup>th</sup> century including arms, armor, pottery, coins and political tokens. Evidence of the very considerable manufacture of copper jewelry for trade with the Powhatans and of glassmaking was also found.



*Figure 1. View facing west of southeast corner of James Fort September, 1996 (left), superimposed reconstruction based on archaeological footprint (below).*



# 1996 EXCAVATIONS

## Southeast Bulwark

Removal of an average of 1' of plow zone from near the river bank seawall toward the church yard in 1996 uncovered a narrow trench curving from south to north (JR107-110), and a larger and deeper curved trench (JR82-87,104,105—dry moat) 9' to the north and east that mirrored the smaller trench. It is clear from the parallel nature of the palisade and dry moat trenches that they are parts of the same construction. There is every reason to believe that the narrow curved trench was originally dug to support palisades of side-by-side upright timbers. Like the south palisade uncovered in previous seasons, the curved narrow trench had straight sides and a flat bottom and is slightly wider than the vague postmolds that averaged about 7"-by-8" in irregular shape. The trench was 10" to 1'2" wide. Besides the occasional dark stains of decayed timbers the trench held a deposit of dark organic topsoil mixed with inclusions of subsoil clay. This type of soil signature would be produced by constructing the pali-

sade in a trench dug through topsoil into the clay and then packing that mixed fill back around the timbers.

Unlike the south wall line, the bulwark palisade trench, was relatively shallow. It ranged from 7 ½" deep into subsoil where it was cut by the foundation of the 1922 Pocahontas Monument base to ½" at a point where some sort of grading wiped it away nearest the river bank. Even allowing for the presumed missing topsoil this trench was not deep enough to support upright timbers. The south curtain trench also lacked depth at the west end, disappearing as it approached the river bank. It is therefore likely that all along and close to the original river bank, considerable original soil is missing, probably 1'6" to 2' or more. All along the south edge of the site excavation uncovered an increasingly deeper plowzone, while along the upper section of the curved palisade trench, what appeared to be a buried original topsoil actually survived below the plowed earth. The palisade trench cut through this

*Figure 2. Bulwark palisade ditch (JR107-110) during excavation of postmolds.*





Figures 3, 4, 5. Engravings and paintings of the churchyard at Jamestown before construction of the Civil War earthwork all suggesting that the shoreline was much higher before that massive earth-moving construction took place.





Figure 6. Western end of dry moat during excavation (JR 87) showing natural and mechanical backfilling layers in profile.

layer establishing that this was close to the original ground surface. Artifacts in the layer indicated that this topsoil had only ever been occupied by prehistoric people prior to construction of the palisade. In fact even the palisade trench itself held only Indian pottery, further evidence that this was constructed on historically virgin ground (1607).

The apparently confusing thick plowzone and survival of old topsoil can be explained, if an earth wall or rampart once stood over and along the curved palisade. The earth from digging the nearby entrenchment could have been thrown around the palisade to create an embankment. This bank then created the approximately 2' of soil necessary to support the palisade timbers. Creation of the entrenchment-rampart is, of course standard procedure in fort construction. In any event, that dirt rampart could explain the survival of original topsoil below the depth of the James Fort earthwork. The bank never allowed the plow blade to cut into the topsoil even as the plowing gradually leveled the earthwork. In other words, the later plowing, perhaps as much as 150 years in duration (ca. 1740-1890), gradually took down the remains of the rampart until it reached the old topsoil level and the last 7 ½" of the palisade trench. Fortunately, acquisition of the property by the APVA in 1893 ended cultivation or this

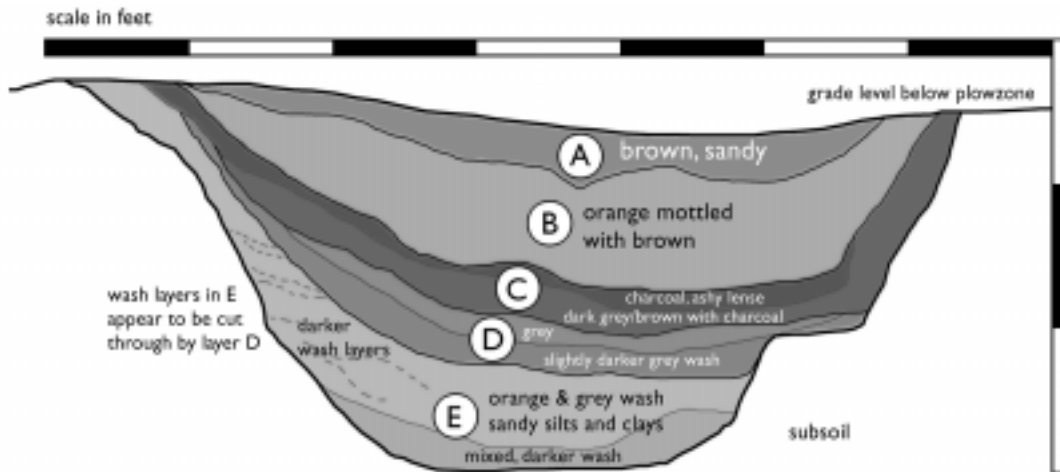
bulwark footprint would never have survived. This however does not explain why grading *erased* not only the topsoil but the palisade trenches along the riverbank.

Captain William Allen owned and farmed Jamestown Island during the middle of the 19<sup>th</sup> century. At his own expense, he had his slaves build an earthwork that the Confederate Army planned to use to help stop Union ships from sailing up the James and capturing Richmond. The surviving earthwork from that shore battery is imposing today with some banks still standing as high as 10' above the original pre-battery grade. The question is, where did the earth come from for its construction? The likely answer is from along the nearby river bank. Therefore some of the original James Fort makes up the banks of the CSA fort. In fact, there are reports that during the Civil War, fort builders found "old" burials and 17<sup>th</sup> century armor. It also makes sense militarily to grade the apparently eroded cliff down to water level, effectively eliminating cover for any Union amphibious landings. Pre-Civil War drawings of the church tower area clearly show dirt mounds, possibly left from James Fort, and the cliff before Allen's slaves apparently graded it away (Fig. 3, 4, 5). The Civil War grading theory is all the more plausible when considering the shallowness (2"-4") of posthole remains (JR111) found to the west or inside the palisade trench, again strongly suggesting overburden is missing. These postholes vaguely form an arc inside the palisade line. It is possible that they supported a wooden platform to mount cannon.

Not perfectly concentric to the palisade, the dry moat trench is more "banana" shaped in plan with a definite terminus on the northwest end near the Pocahontas monument. The trench ends at a place where the curved palisade could have ended at a gate. It was near the end of the trench to the west that another palisade trench (JR147E), found during the first few months of the 1994 excavation, took on renewed significance. This stain extended from the opposite side of the monument for only 15' where it was destroyed by a series of 17<sup>th</sup> century drainage ditches. Its position, in light of the position of the bulwark, finally identified this as another palisade line emerging from the bulwark at a 46° angle with the south palisade line. While two sides can hardly make an enclosure, this less than right angle alignment of the walls seemed likely to be two sides of a triangular enclosure.



Figure 7. Bulwark ditch section (JR87)



Additional excavations on that same alignment toward the church established that this palisade extended at least 180' north where excavations ended for the season. None of the fill in this line was excavated but probing indicted a depth of 2' below the original surface and a maximum width of 1'.

Removal of the fill in the dry moat determined its original uneven depth, how it was dug and filled, and that a wealth of artifacts wound up in its backfilling material. The trench near the monument was the deepest containing a clear sequence of its filling (Fig. 6, 7). At the bottom, rain-washed clay and decayed plant material (JR87F) slumped in from the rampart side as the top layers of clay on the bank, originally dug from the bottom of the trench, washed back in almost exactly from where they had been removed originally. The clay was capped by another wash layer (JR87E), then a "shelf" of soil on the south side beneath a possible second filling of wash,

(JR87D) suggested that this section of the trench was filled and dug a second time. Then organic topsoil-like fill alternating with mixed soil (JR87A,B,C) containing small lumps of subsoil clay filled the top of the entrenchment. This mixture of dirt probably resulted from the partial leveling of the rampart when the fort was abandoned. Natural washed clay would not produce lumps but shoveled soil would. To the east between the manual backfilling and the natural erosion levels, glassmakers evidently poured a hot layer of "dross" (waste produced during glass production—JR104D) at the northwest end of the trench (Fig. 8). The glass waste spilled in from the north, at a point near the gate which is assumed to be under the current Pocahontas Monument. It is logical to assume that a worker loaded some container with waste at a manufacturing site inside the fort, brought it through a gate, and then spilled the still molten waste into the partially open,

Figure 8. Layer of waste from glass production with complete borderware jug in situ in dry moat (JR104).



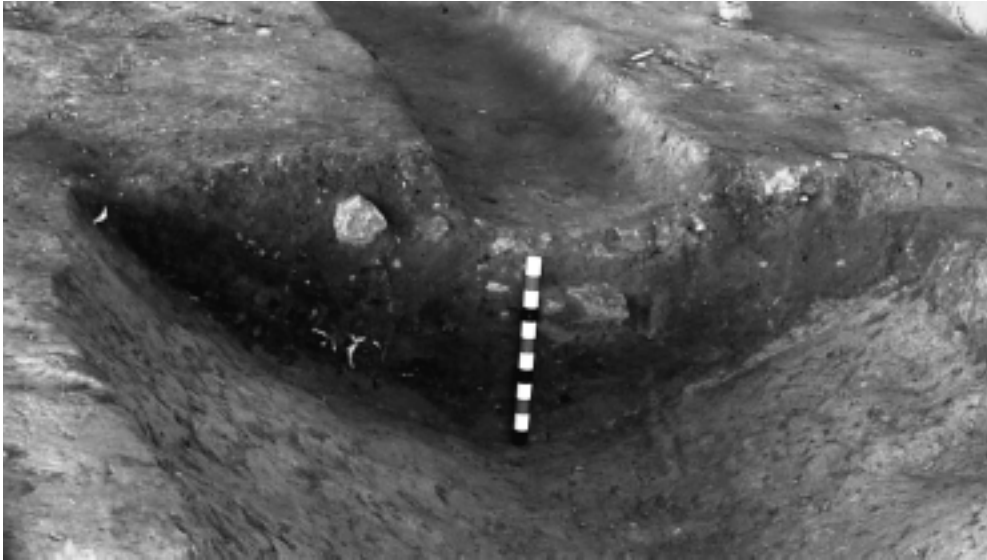


Figure 9. East-west profile through dry moat at JR81.

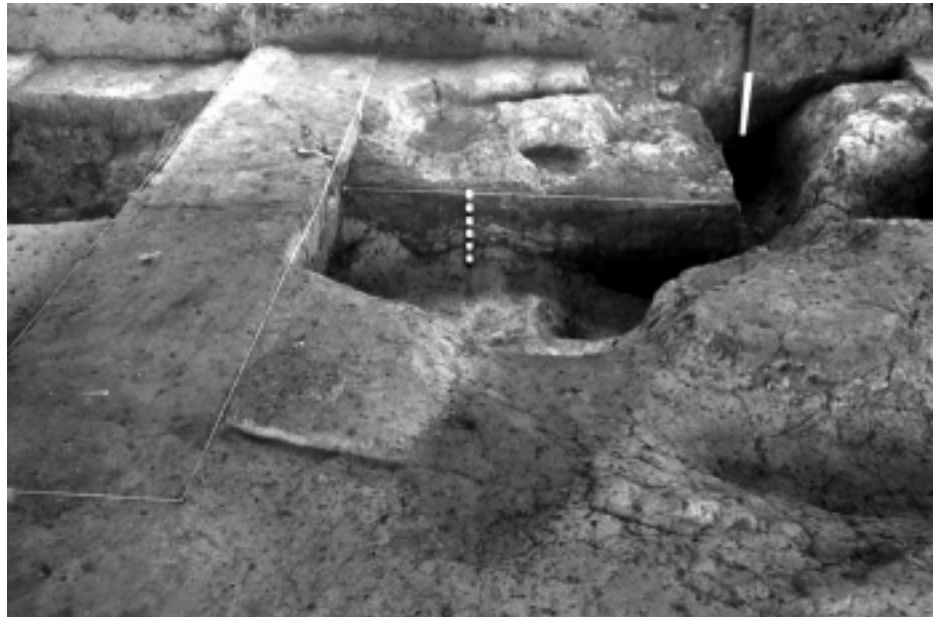


Figure 10. North-south profile through dry moat and its extension at JR 82.



Figure 11. North-south profile through dry moat extension (JR82) showing organic washed fill at bottom below backfill clay.

but beginning to erode, dry moat. The glassmakers arrived at Jamestown in 1608 when they made a “trial of glass to be sent home,” but glassmaking was moved off the Island to Glasshouse Point by 1609. Therefore, the dross deposit shows the dry moat stood open long enough to start to be back-filled with eroded silt from May 1607 to 1608.<sup>1</sup> Other evidence that glassmakers worked in the vicinity of the bulwark existed in the bulwark back-fill. High-fired refractory clay crucibles, with glass adhering to their inner walls, and fine river sand filled the top sections of the center section of the backfilled trench (JR86,105), possibly leftover raw material from the glassmaking process.

In another section of the dry moat (JR82), excavation exposed three episodes of original digging and backfilling: the first in the northern part of the excavation unit, the second an extension of the moat to the south and east, and the third yet further south (Fig. 10,11). Both of the earlier trenches could have existed and then been abandoned at about the same time or perhaps even dug at the same time by different crews slightly out of line with each other. It is also possible that the backfilling took place in each trench section at slightly different times yet they are still contemporary parts of the same bulwark.

To the south of the entrenchment, where the existing subsoil begins to slope, additional excavation uncovered a steep drop off towards the river. Removal of the fill in one of construction trenches left from the 1907 seawall construction (JR69) revealed 17<sup>th</sup>-century artifact bearing soil as deep as 7'. By the end of the 1996 season, excavation had only tested this disturbed area but even with that limited information it appears that the river eroded the original bank and the southern section of the bulwark. Dirt, rich with discarded animal bones and “trash” (JR93G), then filled the erosion scar. It appears that whatever removed the soil may have also destroyed the southern two thirds of the palisade trench and perhaps the outer entrenchment although excavations are incomplete in that area. In any case, it is clear that the curved palisade line, the concentric ditch, and probably at least three of the large interior postholes (however incomplete or disturbed to the south), represent the remains of the southeast bastion of James Fort. Also that partial digging of deep fill to the south uncovered what seems to be a large pit (Pit III, JR69), of yet unknown, extent which contained copper and military objects similar in nature to Pit I. Two copper

Irish pennies (1601, 1602) came from the Pit III fill.

## Strategic Palisade Tests

From the beginning, we planned *area excavation* starting at point A and progressing to point B then C and so on continuously connecting 10' square to 10' square as our discoveries led us. The spot testing and trenching of the 30's, 40's, and 50's was really a Phase II survey. That work certainly located many building foundations, wells, ditches, and pits throughout New Town on the National Park Service property, but the buildings and features were basically disconnected in time and space. The lesson from those earlier explorations was clear, we needed full view of a large area in order to “connect” whatever new things might turn up. This was the only chance we had to understand a continuous footprint of something the size of James Fort. But once the basic lines of the fort became clear, leaps of faith could be made. Knowledge of the angle of the east palisade was a perfect basis to correctly guess its course. Thus four separate non-continuous tests were made along the north line (JR88-91,98,101), two south of and two north of the reconstructed church (See map on page 9).

### Legislature Monument Test

Excavation first ventured to a place (JR88-90) predicted to be beyond the disturbances of the town drainage ditches some 15' from the south bulwark gate. The palisade line survived there directly in line, as it did in all of the four tests. (Fig. 12). There was also an effort to determine whether or not an outer entrenchment existed to the east of the palisade as it did paralleling the bulwark. The additional digging uncovered another larger and deeper trench, the fill of which contained prehistoric pottery (one fragment of Potomac Creek Ware), English Border ware, delftware, case bottle glass, and a jetton suggesting that it was filled during the first quarter of the 17<sup>th</sup> century. That being the case, it may be remnants of some expansion of the original fort but precisely in what way it added to the plan could not be determined by this small excavated area.

### Church Yard Interior Test

The first trench proved that a palisade line headed toward the churchyard. The next test (JR91) along



Figure 12. East palisade soil stain at Legislature monument (JR 88-90), view facing south.

that projected track near the church uncovered not only another run of the palisade line but what appeared to be a related posthole, where a support post may have once stood (Fig. 13). That was the same construction technique found along the south curtain. This section of the line struck an alignment that obviously was heading toward the center of the church tower, the only above ground remnant of original Jamestown. This, of course, placed the brick church foundations east of, and presumably outside, the fort. The two tests north of the tower strongly suggest that the tower was built on the site of the abandoned palisade line at exactly 150' from the southeast bulwark. If Strachey's 300' curtain dimension is accurate then for some reason, the tower was built exactly at the center of the eastern fort wall.

### North Church Tower Test

The traces of the palisade near the north side of the tower were the most vividly preserved of the line (JR 98). (Fig. 14) Timber impressions are clearly visible in the small section uncovered. Like the other trenches in the yard, it was clear that this was unplowed ground which meant that some of the original ground surface of James Fort lay there undisturbed since 1607.

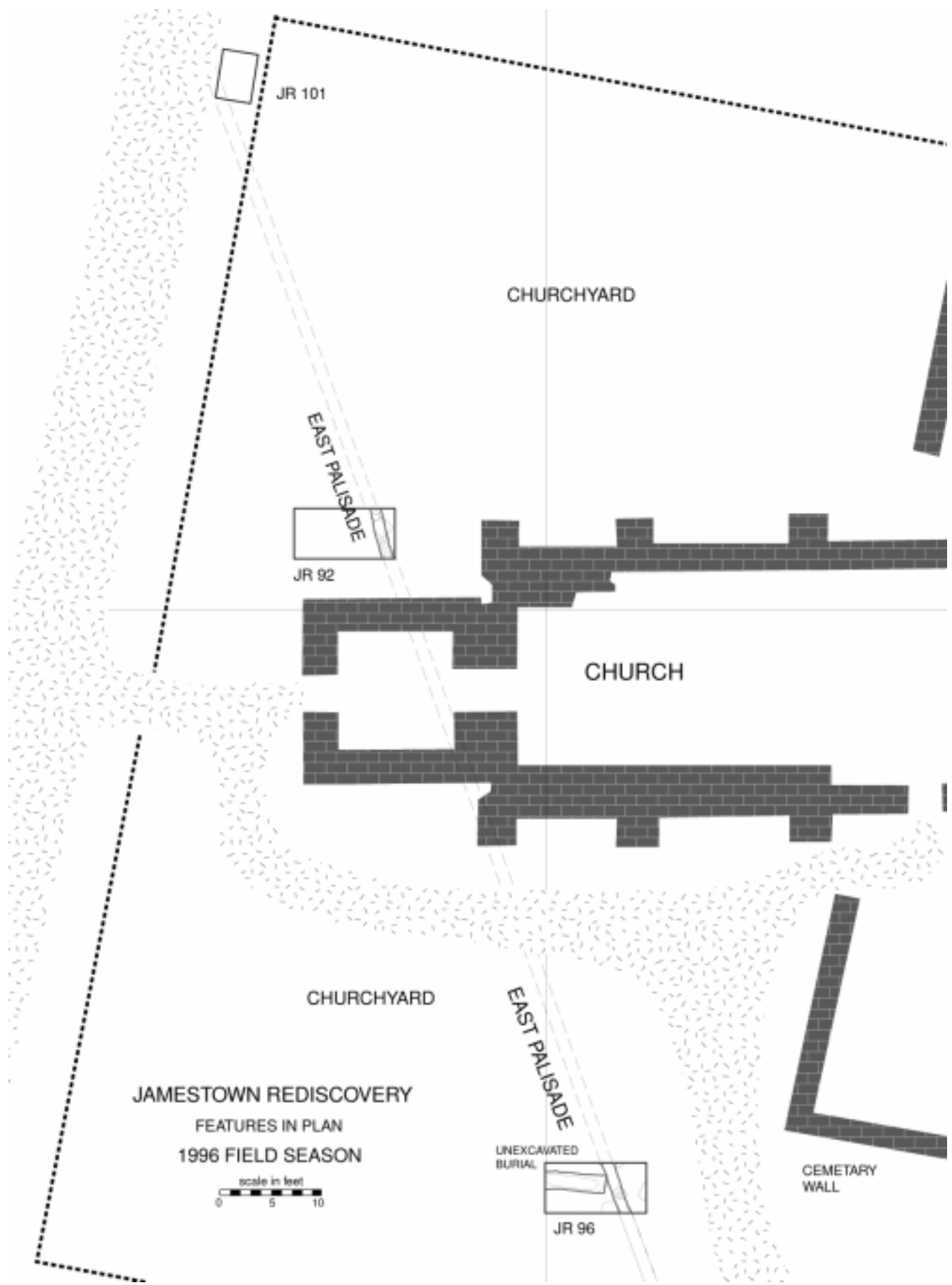
It is important to note that the palisade trench appears to be 2' deep here where respect for the sanctity of the burials on the church grounds must have kept plowing and grading clear of that area from the 17<sup>th</sup> century on.

### North Churchyard Test

A 2'-by-5' test (JR 101) was also made further along the projected palisade line just outside the iron churchyard fence where the grade drops to the gravel road in front of the church. It was reasoned that the grading necessary to put in and maintain the road would leave a cross-section of the palisade on the bank next to the graded surface. That proved not to be true as the bank was apparently created to level the churchyard inside its iron fence around 1907. The test also uncovered two deep electrical lines in a trench along the concrete curb of the road. However, below the electrical line trench a test core uncovered a heavy layer of burned wood subsequently radio carbon dated to 1560-1630. Removal of the charcoal uncovered more layers of 17<sup>th</sup>-century fill but no section of palisade directly in line with the church tower segment. Nonetheless, the age of the charcoal above this disturbance presents a possibility that debris from the fire of January 1608 exists

Figure 13. East palisade soil stain in south churchyard (JR 91).





undisturbed in this area as well.

## Burial JR102C

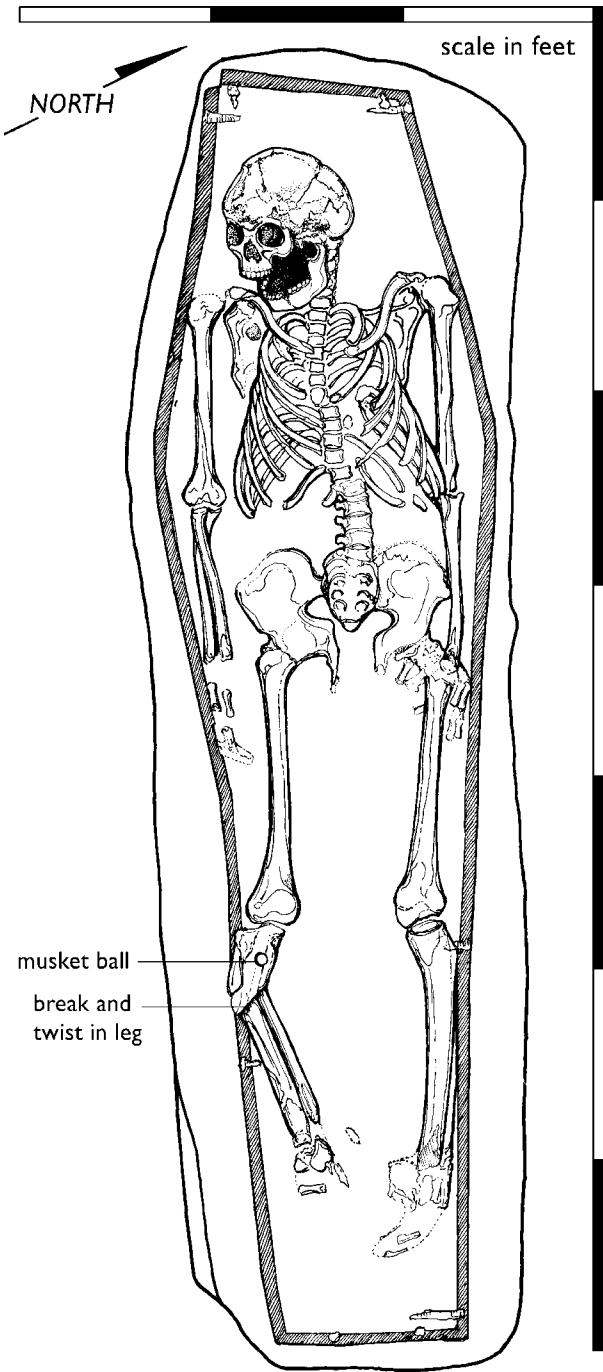
During the 1995 season a 2'6" x 7' soil stain oriented east-west in the extreme northwestern corner of the excavation, suggested the location of a burial. Excavation was postponed until September, 1996 when analysts became available for recording and interpretation. By that time the surrounding area had been backfilled with soil about 6" deep. Removal of the recent fill re-exposed the soil stain and subsequent removal of the upper levels of mixed fill in the stain (JR102A,B) revealed several nails, the first signs of a coffin. (Fig. 14, 15). Further excavation exposed the decayed soil of a wooden hexagonal coffin 1' wide at the head and foot and 1'9" at the elbow. Fill (JR102C) within the coffin was removed until fragments of the skull were exposed 2' below the original ground surface. Lack of nails along the center of the coffin indicated that it did not have a gabled lid. The quantity of prehistoric pottery, and the few historic artifacts including English borderware, an armor fragment, and a Neuva Cadiz glass bead, in the fill of the grave shaft (JR102A) suggest a *terminus post quem* of ca. 1607-10.

Excavation proceeded to about half the depth of the skeleton then the burial was removed within a matrix of the encasing clay essentially keeping the burial *in situ*. Further excavation could then proceed in a controlled environment in the laboratory where bones were exposed to the extent that most of the surfaces of the long bones were exposed but not moved. The skull, crushed during collapse of the coffin, was completely excavated, the parts numbered, and subsequently reconstructed by Dr. David Hunt at the Smithsonian Institution.

The skeletal remains were extremely fragile and soft. Preliminary analysis by Dr. Owsley established age at death of between 22 and 26 but further study showed that the wisdom teeth roots had not fully erupted, a state of development usually not present in an individual after age 19. Field and follow-up excavation revealed a 15mm ball ("20 bore" size that could be used in anything from a pistol to a musket) *in situ* immediately below the right knee and above a compound fracture of the tibia and fibia. Lab excavation recovered six irregularly shaped lead shot within what was subsequently revealed to be the probable entrance wound on the calf or back-



Figure 14. Burial JR102C before removal (above) and detail of leg wound (left).

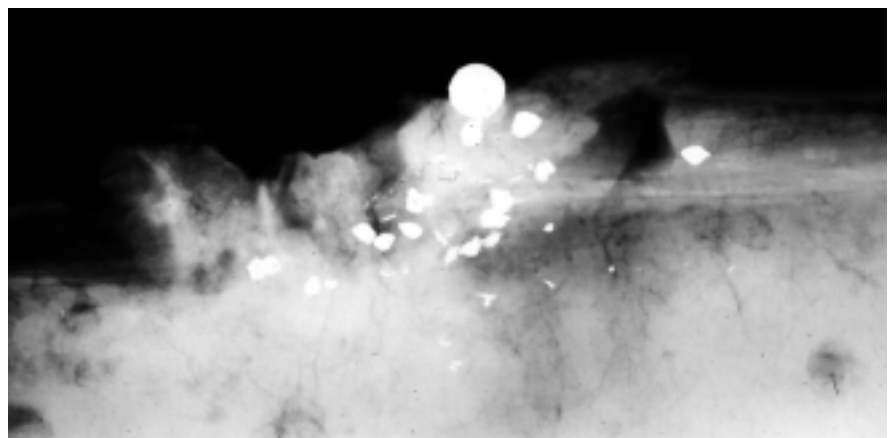


side of the leg. (Fig. 16) It was the opinion of Dr. Owsley that the individual died of the leg wound probably from blood loss through a severed artery at the fracture. X-rays show that as many as 21 smaller shot were also in the bone and in the area of the decayed muscle. The shot was distributed over a 5" area of the bone which may be a key to determining the distance of the victim from the weapon. Ballistic tests will be run to test this thesis. There were no other signs of *pre mortim* trauma but more excavation and examination are pending. (See Appendix I)

While digging south of the burial determined that there were no other graves in that direction, a soil discoloration to the north suggests another grave exists toward the churchyard. That being the case, it is possible that this is the area of the original churchyard burial ground. It is even possible that the rather strange outline of the post-in-the-ground building to the east found in 1995 is that of an early timber church. Excavations planned for the fall 1997 will focus in this area in order to explore that possi-

Figure 15. Burial JR102C.

Figure 16. X-ray of interior of burial 102C leg wound showing ball and shot .



bility.

# James Fort Rediscovered

## Military Footprint

What of the above evidence builds the case for the discovery of James Fort. First, the survival of the two palisade walls or curtains define a triangle (Fig. 17). The log postmolds, some 10" in diameter, indicate the walls were something more than a fence, which is also argued by the existence of the intermittent 11" diameter support posts. Moreover, the palisade trenches probe 2' deep in unplowed or ungraded areas (JR91,98) which approximates the depth of other 17<sup>th</sup>-century palisade trenches found in Virginia. It is also extremely significant that these two walls form acute angles to each other suggesting a triangular shape as is consistently described

by Percy, Smith, Strachey and illustrated on the ca. 1608 Zuniga Map. Perhaps more telling is that the two lines form a 46° angle which matches William Strachey's, 300'-by-300'-by-420' triangle if the bulwarks were as off center as the arc of the southeast bulwark palisade line indicates. The line runs to, and likely under, the church tower as well, the oldest above ground architectural ruin at Jamestown. It is true that the first reference to a brick church comes no earlier than 1639 but it is possible that the tower, which is presumed a later addition to the 1639 church, may in fact pre-date that later building. The third story loopholes and the position of the tower at the center of Strachey's 300' curtain combine to suggest that the structure served double duty as a keep in the "five square" James Town described by Smith in 1608. In fact a 40' section of a palisade (JR140-143) found extending at a right angle from the north bulwark gate might be part of that expanded plan. This is essentially a square palisaded area added to the eastern wall of the existing

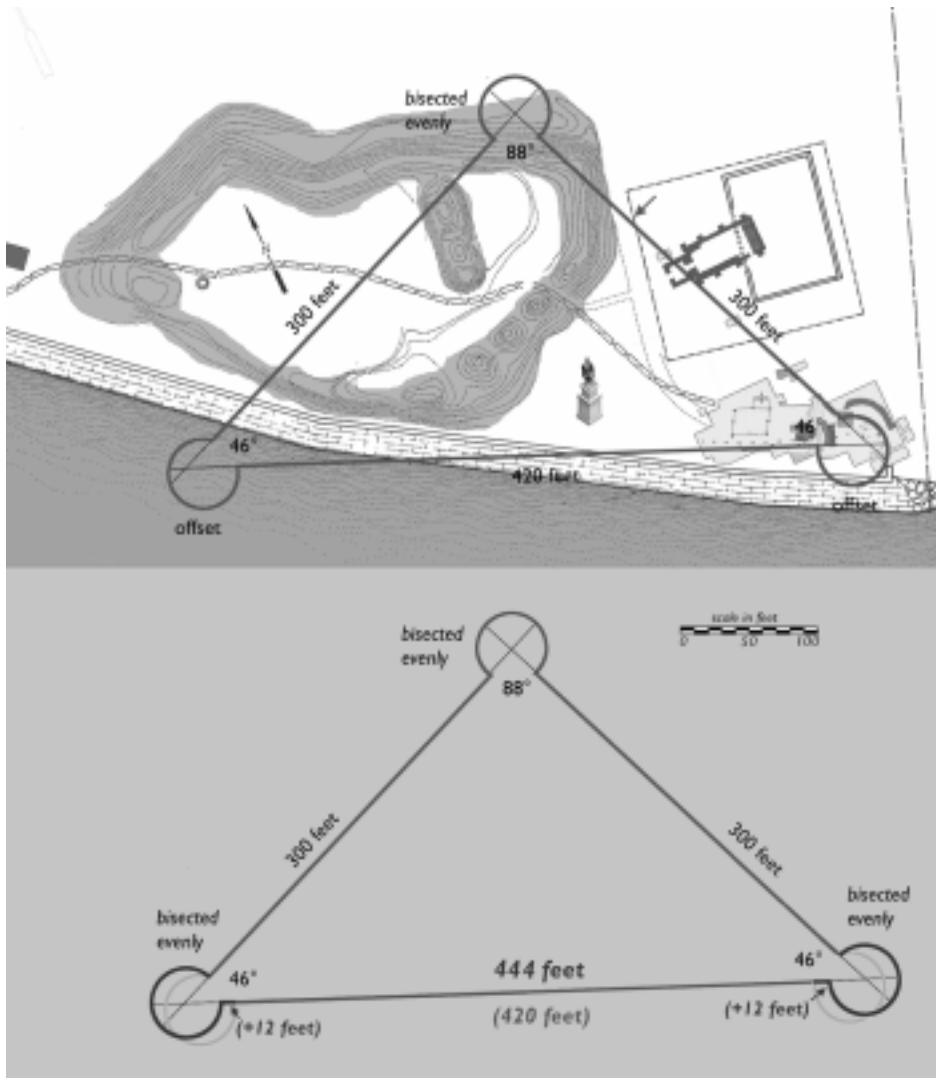


Figure 17. The predicted original position of James Fort in the churchyard/Civil War earthwork area based on open excavation at the south corner of the fort and tests along the east wall line. The diagram below the map shows how the archaeologically discovered off-centered bastion circle would shorten the south wall line enough to match exactly William Strachey's 420' measurement of 1610.



triangle. Also the early 17<sup>th</sup>-century ash layer found immediately overlaying the northeast palisade is perhaps an area hardest hit by the fire of January 1608. In any event, the curtain palisades are the oldest construction on the site as they should be as parts of the 1608 James Fort.

But in order for these palisades not to merely be parts of a strange triangular fenceline, they need to form a logical fort plan especially if it matches three eye witness descriptions and the Zuniga sketch. It must have bulwarks at “each corner.” Certainly the curved palisade ditch and its concentric entrenchment conform to such a plan. It is unlikely that any other type of palisaded enclosure would have these characteristics. Even though only a quarter of the bulwark survives, the complete arch suggested by the section of palisade trench found describes a circle about 50’ in diameter. This would contain enough space to mount the 5 or so cannon described by Smith.<sup>2</sup>

What may be even more than telling than these details is the relative off-set position of the reconstructed circle *vis-a-vis* the curtain walls. This meant that the bulwark extends its greatest distance toward the river. That makes sense according to directions in a 16<sup>th</sup>-century military arts manual. Since, ac-

ording to those directions, the water on the south of James Fort gave the defenses an advantage in that direction, the curtain on the side was supposed to be the longest and the bulwarks the “sharpest”.<sup>3</sup> Now if the other south bulwark is equally oriented more to the south, and the north bulwark oriented symmetrically to cover equally the northeast and southeast curtains (and perhaps oversized as the Zuniga map suggests), then the south wall becomes shorter than the angles would describe, short enough to match Strachey’s dimension exactly.

## Chronology

The evidence for James Fort is even stronger because of the age and types of the artifacts found in fortification features, the plowzone, or in the mixed fill of slightly later features. Many of the latter features cut through early deposits and therefore contained older material mixed in with their fill. The dating of the various parts of the fort based on the objects found with them establish the earliest possible date for its construction.

Of course coins rank at the top of any list of datable finds. Sixteen coins have been recovered across the entire site from sealed pits to plowzone

Table 1. Coins from Jamestown Rediscovery through 1996.

Context	Coin	Date	How dated
12X (Ditch 3)	English Shilling, silver	1560	Mint mark
12T (Ditch 3)	English Threehalfpence, silver	1579	Dated
12D (PZ)	English Halfgroat, silver	1583-1603	Range
1P (Pit 1)	English Halfgroat, silver	1590-1592	Mint mark
69E (Pit 3)	Irish Penny, copper	1601	Dated
69F (Pit 3)	Irish Penny, copper	1601	Mint mark
81A (PZ)	Irish Halfpenny, copper	1601	Dated
124F (Pit3)	Irish Penny, copper	1601	Dated
1Q (Pit 1)	Irish Penny, copper	1601-1602	Range
12T (Ditch 3)	English Sixpence, silver	1602	Dated
42A (PZ)	English Sixpence, silver	1602	Dated
2D (PZ)	Irish Penny, copper	1602	Dated
3BS (Pit 1)	Irish Penny, copper	1602	Dated
11D (PZ)	Dutch Stuiver, silver	1610-1619	Dated (partially)
51A (PZ)	English Farthing, copper	1613-1636	Range
4M (Ditch 3)	German Sechsling, silver	1629	Dated

ranging in date from 1560 to 1629. The length of time of circulation would be impossible to establish especially considering distance from the country of origin and whether they had any value whatsoever on the Virginia frontier in the first few years of settlement. In any event, the mean date of manufacture, 1600, certainly suggests that they were lost or discarded during the first few years of settlement, 1607-1610 as other artifacts suggest.

Tables II & III indicate the range of ceramics recovered from Pit 1.<sup>4</sup> The overall occupation range where the most types would have been in circulation at the same time is 1600-1625 (Table 2). However, an analysis of specific types and forms with tighter dates (Table 3) narrows the date range to 1600-1610. Analysis of the 38 complete clay tobacco pipe bowls from all contexts produced a mean manufacture date of 1620 and the collection includes 6 bowls manufactured in the period 1580-

1610. Also it is interesting to note that the oldest bowls all had a relatively small stem hole diameter (Table 4).

The evidence of the manufacture of glass melted in crucibles as well as the quantity of cullet and glass slag must date to the time 1608-09 when the German glassmakers arrived and made a sample of glass at Jamestown before moving to the mainland glass-house.<sup>5</sup>

The final proof of James Fort reflected in the artifact assemblage was the overwhelming number of military objects recovered. Excavation produced 3704 military objects (Table 5). There can be no doubt that the predominate nature of the occupation was military.

So the footprint of the palisade together with nature and age of the artifacts identifies the APVA churchyard site as James Fort beyond a reasonable doubt. Still to date, only about 5% of the projected triangular fort site has been uncovered.

Table 2. Identifiable wares in Pit 1 based on Museum of London date ranges.

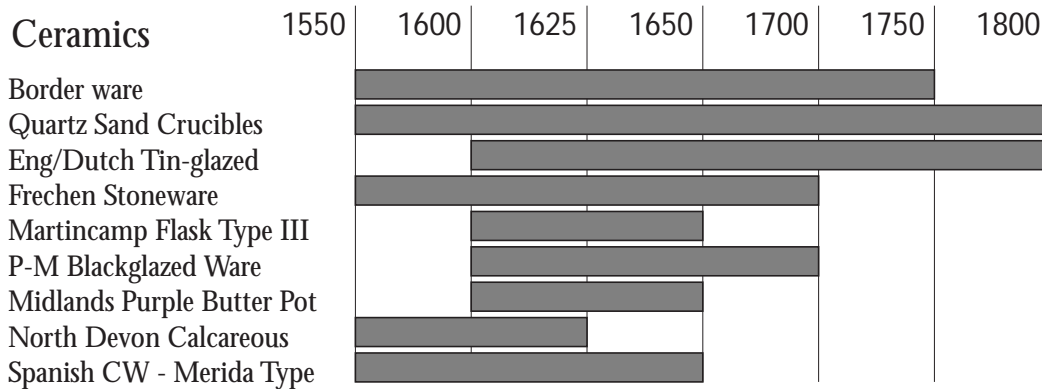


Table 3. Identifiable wares in Pit 1, refined dates based on forms and decoration.

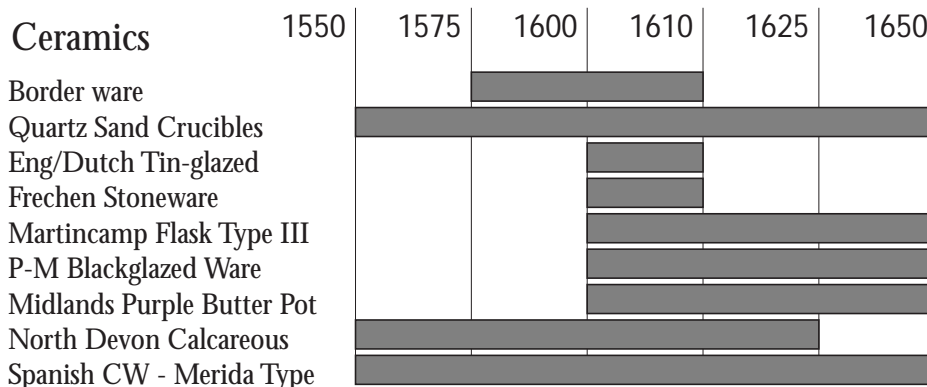


Table 4. Complete English clay tobacco pipe bowls.

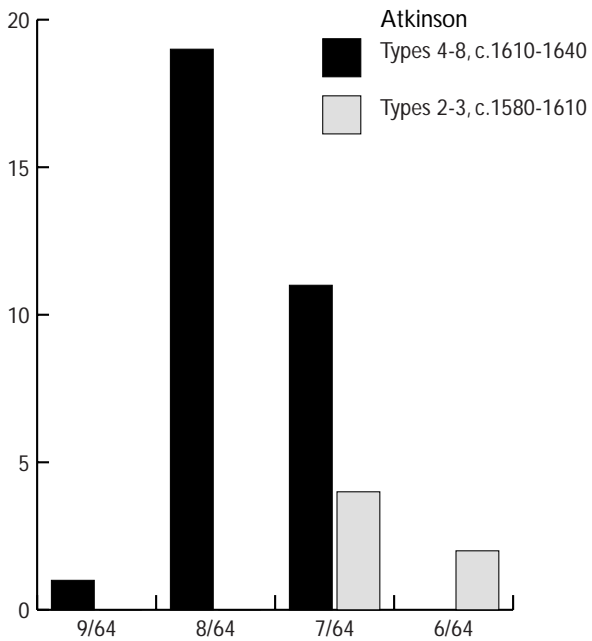


Table 5. Military artifacts from Jamestown Rediscovery through June 1997.

Ammunition	
223	Ball measuring over 10 mm in diameter
2807	Shot
12	Shot for small artillery: 8 for falcon, 3 for falconet, 1 for serpentine
161	Sprue
1	Bandolier Bag
126	Bandolier Pieces (representing at least 30)
9	Gunflints (1 artillery-sized)
9	Bullet Molds
Armor	
65	Pieces
11	Backplate pieces
61	Breastplate pieces (1 complete)
12	Brigandines (5 of which are concretions of several plates)
1	Gorget
10	Helmet pieces (1 complete)
47	Jackplates
Edged Weaponry	
6	Dagger parts
2	Pikes
33	Sword parts
66	Sword hangers
7	Scabbard pieces
Firearms	
25	Firearms pieces (at least 8 matchlocks represented; 1 snaphaunce pistol; 1 snaphaunce)
6	Musket Rests
2	Ramrods
1	Worm
1	Scourer
1	Worm



# SELECTED ARTIFACTS

## Outmoded Arms and Armor

Reference is often made to the Virginia Company record of old armor, “unfitt for any moderne service,” that was bestowed upon the colony by James I from his royal armory following the massacre of 1622.<sup>6</sup> Other documentary evidence has shown that this qualified generosity toward Jamestown is not singular to the king but is a pattern that was begun by the Virginia Company itself. While the group of investors who were backing Jamestown appear to have been quite generous in supplying souls for Virginia, they were equally stingy in provisioning these individuals once they had arrived. The records are replete with requests from the colony, especially for food and clothing. As early as 1608 John Smith recounts the colony’s problems in receiving adequate supplies “to get wherewith to live, and defend our selves against the inconstant Salvages.”<sup>7</sup> In August 1611, George Percy writes to his brother in London that the colony’s store is “affording no other meanes then a pound of meale a day and a little Oatmeale.”<sup>8</sup> And, as late as May 1621, council member Captain Nuce complains to Sir Edwyn Sandy, treasurer of the Virginia Company, that “the half yeere, for wch onely we were victualled, since our landinge, is now almost expyred; sure I am, our pvisions are expended, and yet wee here of no supplie.”<sup>9</sup>

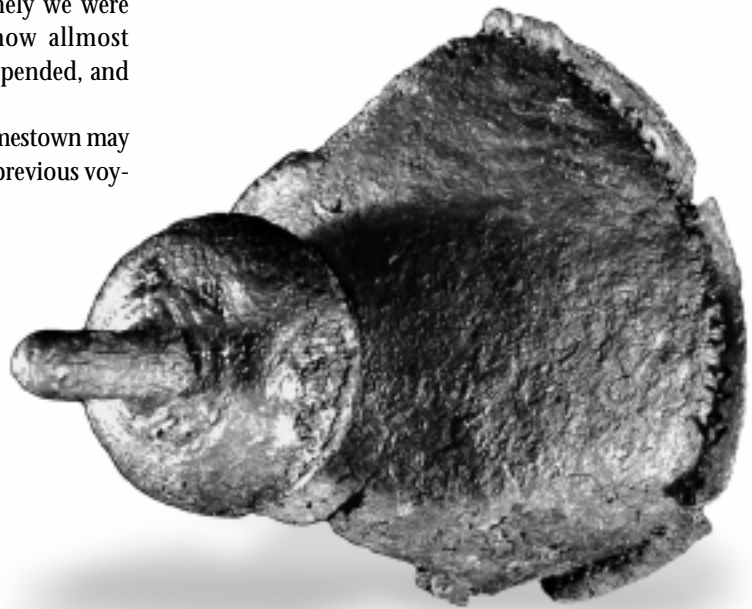
Some of the supplies acquired for Jamestown may in fact be unused stores recycled from previous voy-

ages. John Smith, for instance, is recorded as complaining four months after arrival in Virginia about the rotten tents they had to use.<sup>10</sup> Recent excavations have uncovered further indications of this practice. Leaden devices known as cloth seals have been excavated that were once clamped on fabrics manufactured in England under Elizabeth I’s reign. These textiles would have been made at least four years before the founding of Jamestown, which is an unusually long time for this valuable commodity to remain unused. This suggests that the cloth was out of circulation for a number of years, most likely as part of the shipment of another voyage of exploration.

Two artifacts recovered from the recent excavations, a buckler boss and a breastplate, are particular representations of the aforementioned practice of equipping the colonists with obsolete military equipment.

A buckler is a small leather shield used from the 13<sup>th</sup> through the 16<sup>th</sup> centuries. Three different categories of shields were used during this time. The first type was large enough to provide shelter for a soldier as it stood upon the ground. The second shield, referred to as a target, was to wear upon the arm. It was secured upon the forearm by two leather straps. Smaller than these types, the buckler was a shield to be held in the hand. “The buckler was

*Figure 19. Iron central element or boss to a small hand-held shield known as a buckler. The buckler would have been made of leather with metal reinforcements. By the early 17th century, its use as a military weapon was dying out.*



used in the left hand, in conjunction with a sword held in the right, for fencing.”<sup>11</sup> It is usually round, about 11 - 14” in diameter, and is slightly concave in shape towards one’s opponent. The leather foundation is reinforced with metal and has a central iron boss with a projecting spike. The latter was used to parry blows from an opponent or even break his blade.<sup>12</sup>

The terms *shield*, *target*, and *buckler* may have been used interchangeably in the 17<sup>th</sup> century. A 1622 record seems to be making a distinction in listing 500 “Targetts & Bucklers” among the “unserviceable” arms in the Tower of London available for the Virginia Company.<sup>13</sup> On the other hand, John Smith’s claim to have once used his Indian guide as a buckler best describes the forearm protection of a target. According to Smith’s account, while under attack from 200 Indians, Smith bound the Indian “to his arme with his garters, and used him as a buckler.” Smith survived to be taken prisoner with only a wound to the thigh but the fate of his hapless human shield is unknown!<sup>14</sup>

By 1607, the buckler was considered an archaic weapon in England. The “poking fight of rapier and dagger” was to blame for the “dearth of sword and Buckler fight.”<sup>15</sup> Italian fencing schools in the mid 16<sup>th</sup> century championed use of the long piercing blade of the rapier used in conjunction with a dagger in the non-sword hand to block thrusts. This technique gained widespread popularity among English swordsmen. The buckler provided little defense against the thrusts of the lengthy rapier and was abandoned by the 1570s.

While breastplates are not uncommon finds on early 17<sup>th</sup>-century Virginia sites, it is unusual to find one dating from the 15<sup>th</sup> century. One such breastplate was recovered from within the fort area and repre-

sents the earliest example of plate defense excavated in Virginia.

The breastplate, which protected the front upper torso, was an integral part of the armor worn from the 15<sup>th</sup> through the 17<sup>th</sup> centuries. Because the breastplate was made to reflect the style of civilian male clothing, it is easily datable. The early breastplates, such as the one found in James Fort, were very rounded with a short bottom flange, mirroring the current fashion of the cloth doublet or jacket. Later, following changes in the doublet, the breastplate develops a pronounced central ridge, running from the neck to the waist, and the lines become elongated, forming a very pronounced “V” to the front. The ridge, not only provides a glancing surface to the blow of a sword or pike, but is an interpretation in steel of the effect made by the row of tiny round brass buttons running down the front of the doublet. The high V-shaped bottom of the breastplate is copying the cut of the doublet which accommodates the short puffy breeches that were in vogue.

The excavated breastplate is of the very rounded 15<sup>th</sup>-century type. The neck and underarm edges that would normally be rolled for the wearer’s comfort show signs of being cut down. This has resulted in the breastplate being very narrow through the

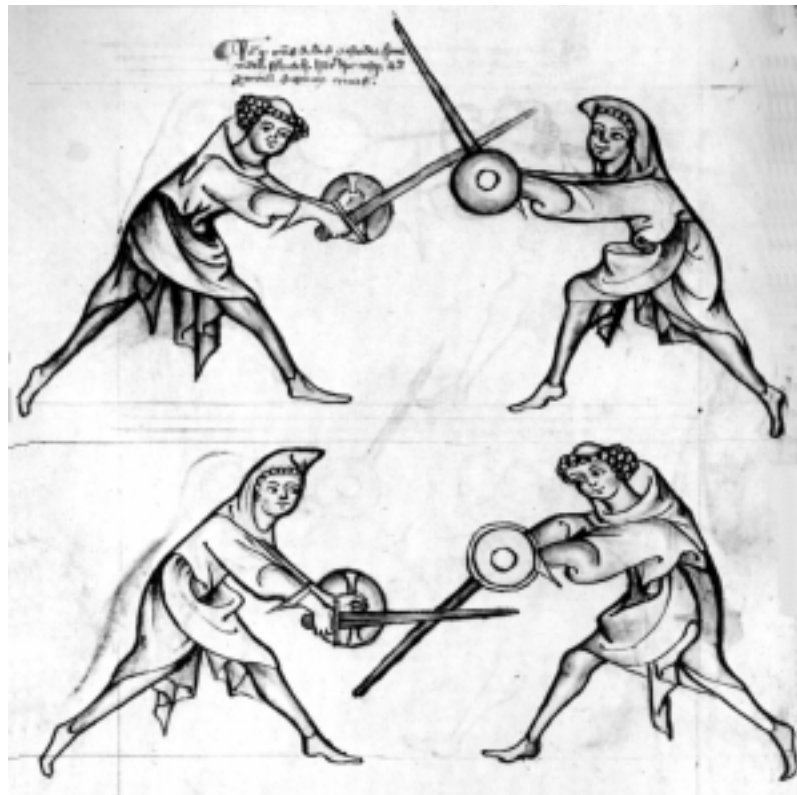


Fig 20. South German fencing manual dating about 1300, illustrating the use of sword and



Figure 21. Fifteenth-century breastplate (left) from James Fort. Late 16th- or early 17th-century breastplate excavated at Jordan's Journey, Prince George County, Virginia (above) showing the contrasting pronounced ridge and V-shaped bottom.

chest area, perhaps providing a better fit for the Jamestown soldier lucky enough to wear it.

## Medical Men At Jamestown

Eight medical men were among the colonists who arrived in Jamestown during the first year of settlement. These individuals, consisting of two physicians, four chirurgians (surgeons), and two apothecaries, represent the tripartite nature of the healing profession in the early 17<sup>th</sup> century.

Both of the physicians arrived at Jamestown in 1608 with the First Supply. Physicians comprised a small medical elite of university graduates. Their training in philosophy, theology, and the arts as well as the sciences prepared them for the role of “dietician, spiritual counsellor and general confidant rather than that of medical practitioner in the strict sense of the word.”<sup>16</sup> The latter was reserved for the “craftsmen” professions of apothecary and surgeon and yet the physician remained the first choice among the wealthy for preserving and restoring their health.

One of the physicians was a German, Johannes Fleischer, born in Breslau in 1582.<sup>17</sup> He earned his philosophy and medical degrees in 1606 at the

University of Basel where he contributed to the botanical work *Theatri Botanici* of Casper Bauhin, published in 1623. Fleischer died at Jamestown in the midsummer of 1608, so he had little time to study Virginia's flora. His epitaph reads: “he surveyed what the German soil produced in terms of plants; what in America flourished, he viewed, too, and thereby perished.”<sup>18</sup>

Walter Russell, Doctor of Physicke, was identified on the manifest as a gentleman. He was an educated man as indicated by his authorship of Chapter 5 of the *Proceedings* by John Smith.<sup>19</sup> It is in this account of a June 1608 exploration of the Chesapeake Bay that Russell records his role in treating Smith's wound from a stingray with a “preservative oile,” “having neither Surgeon nor surgerie.”<sup>20</sup> Smith was apparently standing in shallow water and flamboyantly showing his men how to catch fish by spearing them with a sword. This method was apparently quite successful for they “took more in a hour than they could eat.” Smith was removing one unfamiliar fish from his sword when it pierced his wrist with its “poysoned sting.” Within four hours the painful swelling from the sting had progressed from his hand into his body. Not thinking that he would survive, Smith directed the men to prepare his grave on a nearby island which they named “Stingeray Ile after the fish.” “Yet by the helpe of a

precious oile Doctour Russell applied,” Smith recovered from his pain sufficiently to eat the stingray for dinner!

The apothecary, like the pharmacist of today, supplied the medicines prescribed by the physician. While the lower classes had to self-medicate using home-made remedies harvested from the herb garden, the wealthy used the services of an apothecary for their exotic potions, salves, spices and aromatic wines<sup>16</sup> which had to be distilled, powdered, and blended into various restorative preparations.

Two apothecaries, Thomas Field and John Harford, arrived in Jamestown on the First Supply in January 1608. Nothing more is known of these men, but they probably spent a good deal of their time exploring Virginia’s flora for new and proven remedies. The methods used to concoct these remedies were derived from cooking techniques as well as other processes involving dyeing, alchemy and metalworking.<sup>22</sup> The medicines were then stored in colorfully-decorated cylindrical jars, a practice followed since the 14<sup>th</sup> century according to contemporary illustrations of apothecary shops. These “drug jars” consisted of tin-glazed earthenware which was hand-painted on the exterior. The early examples exhibit a polychrome palette and reflect motifs seen on majolicas from Moorish Spain and Italy. By the early 17<sup>th</sup> century these jars were most commonly painted in cobalt blue upon a white background in patterns of concentric circles and mid-girth crosses.

Training for apothecaries required no university course work and was customarily accomplished through a term of apprenticeship. Although not accorded the high status of the physician, the apothecary ranked among the mercantile elite in England through the formation of guilds which protected and regulated the profession.

Surgeons also received training through apprenticeship and, like the apothecary, were considered craftsmen. In fact, the word “chirurgion” is based on two Greek roots meaning “hand” and “work.”<sup>23</sup> A surgeon’s most important prerequisites were to



Fig 22. Christus als Apotheker (*Jesus as Apothecary*), by unknown artist, depicts five colorful earthenware jars traditionally associated with storing medicinal preparations, ointments, and salves. The constricted foot on these vessels reflects French tin-glazed earthenware drug jars dating c.1600.

have well-shaped hands with long small fingers and “his body not quakyng”,<sup>24</sup> for to him fell the task of cutting into the human body. While socially inferior to the university-trained physicians, surgeons had a solid economic base in their alignment with the barbers, who were permitted to let blood and pull teeth as well as provide haircuts and shaves. In 1540 the Company of Barber-Surgeons became the first acknowledged medical guild in England.<sup>25</sup> There is a single barber, Thomas Couper, identified as arriving in Jamestown in 1607. Perhaps this indicates that the roles of barber and surgeon were considered distinct entities in early Jamestown.

Of the four surgeons in the fledgling colony, we know the least about William Wilkinson, who was among the “first planters” in May 1607, and Post Ginnat who is listed with the First Supply in 1608.



Figure 23. Spatula mundani devised by English surgeon John Woodall in the early 17th century.



This is probably because their return to England was requested by the Virginia Council in May 1609.<sup>26</sup> Chirugian Anthony Bagnall, Gentleman, is first mentioned as accompanying John Smith on his second explorations into the bay beginning July 24, 1608. During this trip he received arrows through both hat and sleeve in a skirmish with the Nansemond Indians and successfully treated an Indian prisoner that had been shot in the knee and left for dead.<sup>27</sup> He was evidently quite proficient with a firearm for he is credited, along with John Smith and another man, with “killing 148 foules [fowl] with three shots.”<sup>28</sup>

Thomas Wotton, gentleman chirurgeon, arrived with William Wilkinson and together they comprised the medical team for the colony for the first eight months. Wotton appears a couple of times in the records with the authors offering differing opinions about his competence. Smith credits him through “his skilfull diligence” with the recovery of “most of the souldiers.”<sup>29</sup> Edward Maria Wingfield not only refused “to deliuer him money to furnish him wth drugges and other necessaryes” but also denied Wooton’s request to reside on the pinnace anchored in the James River “haueing many of or men lyeing sick & wounded in or towne, to whose dressings by that meanes he slacked his attendance.”<sup>30</sup> Wooton appears to be trying to avoid the “unhealthy humors” of Jamestown by living offshore on the ship.

A surgeon’s tool from the first years at Jamestown has been recovered from Pit III. It is a *spatula mundani*, so named by 17<sup>th</sup>-century surgeon John Woodall who takes credit for devising it and who illustrates it in his 1617 edition of *The Surgeon’s Chest*. In 1613 Woodall was employed as surgeon-

general to the East Indian Company. Among his many duties he was specifically charged with equipping the surgeons’ chests for sea voyages. The repetitive nature of this duty led Woodall, “being wearied with writing for every Shippe the same instructions a new,” to write his textbook on medicines, treatments, and instruments. Prior to 1613 Woodall resided in London where he was largely engaged in treating plague victims. It was during this time that Woodall apparently sent an equipped surgeon’s chest, probably containing a *spatula mundani*, to the Jamestown colony by way of his servant George Lisle. This is recorded in a list of instructions to Sir Thomas Gates from the Virginia Council in May 1609:

*There beinge one George Lisle servant to John woodall and sent ouer by him with a Chest of Cheurgery sufficiently furnished we require you to giue yor licence to willm wilson his fellowe yf the said George Lisle doe stay with you to come backe in this passage the better to enfourme vs what medicines and drugges are fittest to be pvided for the vse of the colonie against ye next supply.*<sup>31</sup>

The dual-purpose iron tool is just over 12” long and consists of a spatula on one end. This is opposed by a split and widened “spoon” with a rounded terminal knob. The term *mundani* comes from the word “mundify or mundifie” which is identified in a 1604 dictionary as meaning “to make clean.”<sup>32</sup> The tool’s purpose is “to serve upon any occasion of extreame costiveness...so that no purging medicine neither upward nor downward administered or taken will work.”<sup>33</sup> The “spoon” end of this instrument was to be used to withdraw the “hard excrements” whereas the spatula was probably for stirring

Figure 24. Illustration of tools for the surgeon’s chest, taken from John Woodall’s *The Surgions Mate* published in 1617. The *spatula mundani* is depicted on the lower left.

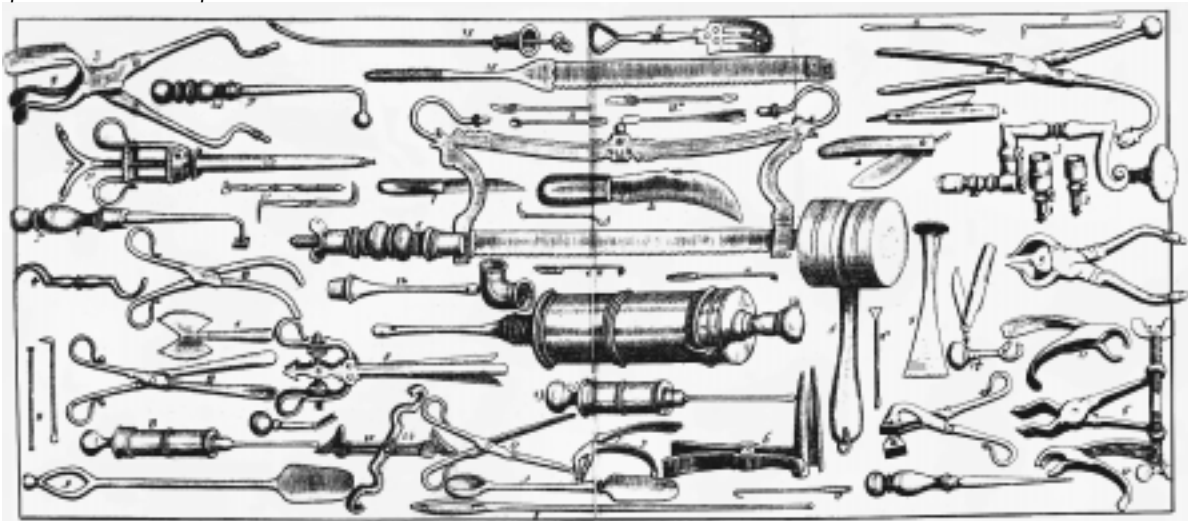




Figure 25. (left) Silver English coins which have been clipped to create small change. Top: Shilling dated by mint mark to 1560-61. Bottom: Half groat dated by mint mark to 1590-92.

Figure 26. (right) Silver English coins fashioned into ornaments, probably for Indian trade. Top: Sixpence cut into a rectangular pendant framing the date 1602. Bottom: Halfgroat of Elizabeth I, minted between 1583 and 1603, which has been rolled into a bead.

preparations and for applying ointments and plasters.

Woodall suggests that fecal impaction is a result of scurvy, although modern medical knowledge does not attribute significant constipation to a deficiency of Vitamin C. It is probably much more likely that this condition was caused by a diet low in fresh fruits and vegetables and by taking large amounts of the opiat laudenum,<sup>34</sup> one of the only effective painkillers known at the time. Woodall extols the virtues of laudenum for “even when through extremitities of paine, the parties are at Deathes doore, or almost madde with the vehemencie of the same, this precious medicine giveth ease presently.”<sup>35</sup> Laudenum is particularly prescribed for the “cure of that lamentable disease called Dissenterie, or the bloody fluxe.” Dysentery, along with typhoid and salt poisoning, are believed to have been the primary causes of death in the first few years of the colony.<sup>36</sup>

## Coins And Coin Weights

Coins are rare but welcome finds on archaeological sites, for they are among the few artifacts that bear dates. A coin found within a context thereby provides the archaeologist with an undeniable *terminus post quem*, or date after which that deposit was made. But coins can reveal information beyond date.

Sixteen coins and four coin weights have been excavated from the site thus far. This is a very high number for such a small excavation area and indicates the colonists' need for currency even in what

was essentially a barter economy. Only seven of the coins are English, the other eight are Anglo-Irish or continental coins.

Six of the English coins are silver and are from the reign of Elizabeth I, ranging in date from 1560 to 1603. These coins include a shilling, two sixpences, two halfgroats, and one threehalfpence. Three of the coins have been clipped to divide them into specie of lesser value. This was a necessary and common practice in England because there was a chronic shortage of money in low denominations which encumbered small monetary transactions. Clipping pieces off of coins was an easy way to make change for, unlike today, the intrinsic value of the metal was equal to the worth of the coin. A halfgroat, worth 2 pence, has been halved into a penny piece, the threehalfpence has been halved to make a coin worth  $\frac{3}{4}$  of a penny, and the shilling, normally worth 12 pence, has been cut into a wedge worth only about  $1 \frac{1}{2}$  pence.

Two of the silver coins have been modified to wear as ornaments, perhaps representing items intended for trade with the Indians. One sixpence has been cut into a rectangular pendant and pierced so as not to obscure the date 1602. A halfgroat has been rolled into a bead in a similar fashion as the copper beads that the colonists were making for trade and that have been recovered from the site. Removed from the conventional market place, these coins are now more valuable to the colonists who altered them as jewelry for barter than as legal tender.

A single copper English farthing ca.1613-1636 was found in the plowzone. The only discernible

markings on it are *REX* for James I or Charles I and a crowned harp. It is possibly a Harrington farthing. English coins were made in only gold or silver until 1613 when James I granted a patent to Lord Harrington to produce copper royal farthings. The patent passed to the Duke of Lennox and the coins continued to be made in the reign of Charles I under the control of the Duchess of Richmond and then Lord Maltravers. These coins “brought enormous profits to the patent holders, but did not prove popular with the general public”<sup>37</sup> and were discontinued by Parliament in 1644.

The seven Anglo-Irish coins consist of six copper pennies and one copper halfpenny minted in England between 1601 and 1602. These coins were made for use in Ireland and did not have wide circulation in England. They would have been greatly devalued in the English marketplace for the English coinage in this period included silver pennies and halfpennies. Ireland had need of these small copper coins, which exchanged at a significant premium for “small silver denominations had been absent from the Irish currency since early in Henry VII’s reign.”<sup>38</sup>

It has been suggested that these Irish coins found their way to Virginia in the pockets of individuals who had either seen military service in Ireland or had been involved with the English settlement of Ireland in the early 17<sup>th</sup> century. It is much more likely that these pennies and halfpennies helped satisfy the need for small change. Just as with Ireland, it was cheaper and more convenient for the English crown to provide the new colony with low denomi-

nations in copper rather than silver. Or the answer may lie with the Indians penchant for copper. These practically worthless copper coins would make valuable items to trade for corn and other foodstuffs.

Two silver coins from the Continent have also been excavated from the site. This is not unusual because the need for small change, already mentioned, led to the widespread use of coinage from the continent. These coins are also representative of the cosmopolitan nature of trade and travel in the early 17<sup>th</sup> century.

The continental coins include a German sechsling and a Dutch 2 stuiver piece. The sechsling, which is dated 1629, was issued in Lubeck, Germany. Lubeck was part of the Hanseatic League which was a union of towns involved in the east-west trade of the Baltic. The Hanseatic league was formed for the promotion and protection of commerce and by the 15<sup>th</sup> century dominated European trade. Lubeck merchants were very active in trade all over the world and were particularly involved in the slave trade with the New World.<sup>39</sup>

The Dutch stuiver was minted in Zeeland, in the northern Netherlands, and dates to the second decade of the 17<sup>th</sup> century. It bears the date 161- with the last number obliterated. These coins were issued as emergency coinage by the seven northern Dutch provinces during their 80-years war with Spain.

No gold coins have been excavated from the site but, based on the presence of four coin weights for English gold coins, they were part of the currency at Jamestown. Weights were necessary to verify the

Figure 27. Irish copper pennies and halfpenny (bottom center) excavated from within James Fort.



Figure 28. Dutch silver two stuiver piece dating to the second decade of the 17<sup>th</sup> century.





Figure 29. Early 17th-century weight and scale box (above) from Amsterdam.

values of coins. Since the value of a coin depended upon the intrinsic worth of its gold, silver, or copper it was a common practice to clip the coins for the metal. This illegal practice was not always detectable on the hammered coins made before 1662 which, unlike the later machine-made coinage, were not finished with a milled edge.

Coin weights portray the obverse, or front side,

Figure 31. Illuminated manuscript (above) from the Mary Tudor Prayer Book illustrating Queen Mary touching for the "King's Evil." All Tudor and Stuart monarchs participated in this healing ceremony.

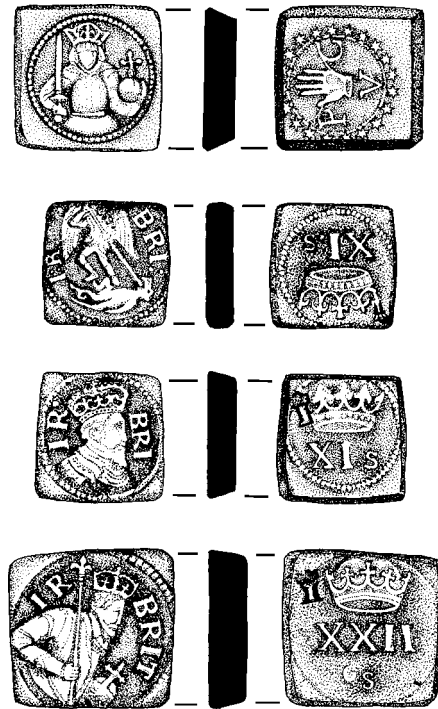
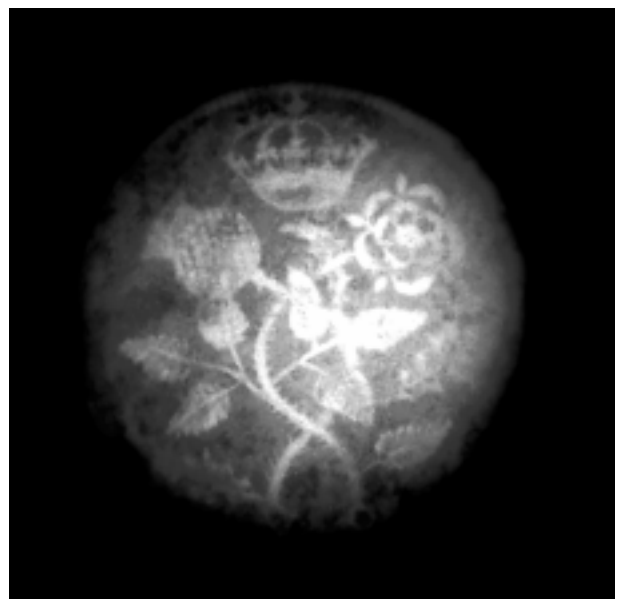


Figure 30. Brass weights for English gold coins (below). From top to bottom: Weight for the gold ryal which was struck during Elizabeth I's reign between 1583 and 1592 and valued at 15 shillings. The hand mark on the reverse signifies that the weight was struck in Antwerp. 2nd from top: Weight for the gold angel depicting St. Michael slaying a dragon. The angel was valued at 11 shillings from 1612-1619. 2nd from bottom: Weight for the gold unite (22 shillings) illustrating the half-length torso of James I with orb and scepter. Bottom: Weight with the bust of James I for the gold double crown worth 11 shillings.

Figure 32. X ray of the King's Touch token (right) excavated from Ditch I within James Fort.



of the coin they represent. This was done to enable easy identification and was especially necessary for the largely illiterate population of the time.

All of the weights recovered from the site are square and, although round weights were introduced during the reign of James I, three are for Stuart coins. The only Elizabethan weight is for the gold ryal worth 15 shillings. It is stamped with a hand, indicating that it was made in Antwerp, and bears the maker's initials "PVG." The Elizabethan ryal was issued between 1583 and 1592.

The three Stuart weights all date between 1612 and 1619 and may have formed part of the same set. Coin weights were sold in portable boxed sets complete with scales. The weights are for an angel, worth 11 shillings, a unite valued at 22 shillings, and a half-unite of 11 shillings. They each bear a deeply stamped secondary impression of a crowned *I*, for King James, which may be the mark of the government official validating each weight's accuracy. This practice started with a 1491 statue of Henry VII causing all standard brass weights and measures to be stamped with a crowned *H*. Weights bearing the crowned *C* from Charles I's reign, 1625-1649, are also known.

## A "King's Touch" Token?

Two coin-like copper objects were recovered from the site that may relate to an English practice that originated in the 14<sup>th</sup> century and that imbues the monarch with godlike powers of healing. The objects, which are stamped on one side only with an intertwined rose and thistle under a crown have been identified as "King's Touch" tokens.<sup>40</sup> The touch of the King (or Queen) was believed to cure the "King's Evil" or scrofula, a disease of the lymph glands. The King would lay his hand upon the diseased area and bless the afflicted in a ritual set down in the *Book of Common Prayer*. The diseased person would then be given a "touch-piece" as a token of the ceremony.

The rose and thistle motif identifies the token with James I who used this motif on the halfgroat, penny and halfpenny to acknowledge the amalgamation of England and Scotland.<sup>41</sup> Three other King's Touch tokens have been found in the Jamestown area in contexts of the 1620s and 30s.<sup>42</sup> Although all the Stuart rulers exercised the gift of touching, these tokens most likely do not represent a ceremony for the Kings Evil in Virginia. Like the Irish coinage, they probably represent inexpensive copper items for the Indian trade.

## Complete Vessel

Complete ceramic vessels are rare finds on archaeological sites of colonial Virginia. This is because most of these predominantly earthenware and stoneware objects were used on a daily basis to store, prepare, and consume food and beverages. Regular use subjected these artifacts to a far greater chance of breaking than vessels that were meant solely for display or were saved for ceremonial purposes. This is consequential for the archaeologist because ceramic objects tend to break and be discarded within a very short time after purchase. Ceramic history has been well researched and much is known about the dates of production and the forms and decoration of the various wares available during the colonial period. This knowledge of date and function

Figure 43. A complete Border ware drinking jug excavated from within the bulwark ditch of James Fort.



makes ceramics one of the most valuable classes of artifact for the archaeologist to use in interpreting a site.

In the fall of 1996 a complete vessel was uncovered during excavations in the bulwark ditch. This remarkable find is an early 17<sup>th</sup>-century Border ware drinking jug. The Border ware potteries were located in the border area (hence the name) of Hampshire and Surrey counties in England. They were the chief suppliers of earthenwares to London during the 16<sup>th</sup> and 17<sup>th</sup> centuries.<sup>43</sup>

The jug consists of very thinly potted buff earthenware which has been roughly covered over the upper half with olive green lead glaze. Despite the pouring spout located opposite to the handle, documentary evidence suggests this form to be a drinking vessel for a single serving of wine or beer.<sup>44</sup> The liquid would literally be poured down the throat! Many of these drinking jugs were excavated from the site of the Inns of Court in London. This institution, where students read the law, maintained detailed accounts in which “beer pottes” from the Border ware potteries were frequently mentioned. These vessels had to be replaced frequently as a result of breakage – sometimes from the students ex-

pressing displeasure with their professors – and theft. The high replacement rate led to the request in 1615 that

*every Bencher and Utter Barrister's Clerk shall provide a pot about the size and quantity of the green pots now used in the House at their own charges, and that they shall not carry away any of the green pots.*<sup>45</sup>

While it can not be said for sure that the Border ware drinking jug found in the bulwark ditch was a container for beer as in its traditional usage, it is known that beer was a standard commodity on all the English ships at the time. That it was not plentiful in the colony in the early years seems certain as it is one of the items the sailors on each incoming vessel could exchange with unscrupulous colonists for unauthorized access to Indian “fures, baskets, mussaneekees, young beastes or such like commodities.” By the late 1620s, the colonists were brewing their own beer. John Smith records that “for drinke, some malt the Indian corne, others barley, of which they make good ale, both strong and small.”<sup>46</sup> Foundations of a brewery dating to this time period were uncovered during excavations in the 1950s in the New Towne area of Jamestown.<sup>47</sup>

# Appendix I

## Bioarchaeological Research at Jamestown

Douglas W. Owsley

### National Museum of Natural History, Smithsonian Institution

The discovery of two burials within the confines of James Fort offers an exceptional opportunity to obtain information about the earliest English Colonists in the New World. Bioarcheologists from the Smithsonian Institution have assisted with the recovery of these remains and are in the process of analyzing them. This study is part of a larger effort to systematically document human skeletons from seventeenth century archaeological sites in Maryland and Virginia.

To date, few reports deal with the bioarchaeology of early Colonial period. Two unpublished examples are Lawrence Angel's analyses of 41 burials from Carter's Grove and Flowerdew Hundred (Owsley 1990). Bone preservation was generally poor, and as a result many remains were not examined in the laboratory but only in the field. An earlier study by George Neumann (1958) of Indiana University described a skull from a seventeenth century burial excavated by the National Park Service in 1940 at Jamestown. Bone preservation was good, allowing description of the craniofacial morphology following the now outdated conceptual framework of typology. Professor Neumann's study defined a "type" specimen for Indians of the Powhatan Confederacy. However, reanalysis of this skeleton as part of our study highlights advances in osteological and forensic anthropological methods and experience, including improved capability in determining ancestry. The remains are not Native American as originally suggested, but instead are African.

Recent studies by Verano and Owsley (1991) and King and Ubelaker (1996) provide good examples of current bioarchaeological methodology as applied to the analysis of a small number of seventeenth century burials. Systematic analysis of a larger sample is required in order to obtain comprehensive bioanthropological and biohistorical information for the Middle Atlantic region. This work is in progress and involves osteological and forensic analysis of re-

cently excavated skeletons from Jamestown and Historic St. Mary's City, Maryland. Our study at Jamestown includes examination of previously recovered remains curated by the Association for the Preservation of Virginia Antiquities and the Colonial National Park. Although few in number, these additional remains contribute supplemental information and include four individuals of African descent. The development of this database will allow temporal and regional comparisons based on a standardized data recovery format.

Each skeleton is being inventoried, measured, and examined to obtain age, sex, ancestry, cranial and postcranial measurements, and skeletal and dental pathology. The measurements will be added to a reference database being developed for Native American and Historic period populations. Craniofacial morphology has a strong genetic component. Thus, measurements taken on the crania can be compared with other groups to establish genetic relationships as a means of identifying remains of unknown affiliation. The postcranial measurements can be used to estimate body build and stature.

Specific objectives of the data collection process are as follows:

1. Each set of human remains is inventoried to determine the number of individuals represented, completeness, taphonomic observations relating to preservation, and demographic information. When there is evidence of commingling, either in the field or the museum, the remains are being sorted when possible to separate and reassociate the bones of each individual.
2. The bone and dental inventories and paleopathology data are then computerized, which will facilitate curation and subsequent statistical analysis. For example, the frequency of different types of dental or bone pathology, such as carious lesions, abscessing, or antemortem tooth loss in the dentition, or the frequency of specific kinds of injuries and fractures can be calculated.
3. Complete crania are measured using the format adopted more than a decade ago by Smithsonian and University of Tennessee physi-

cal anthropologists. Multivariate comparisons with this reference database can help determine racial identification.

4. Photographs are taken of the more complete crania, dentition, and unusual examples of skeletal pathology or anomalies. Radiographs are also taken as an aid in the diagnosis of pathology.

Comprehensive analysis requires a team approach in order to complete these objectives in a reasonable period of time. In this regard, an experienced team has been assembled to work on this project. For example, the osteological analysis of JR102C has benefitted from expertise provided by Dr. David Hunt (reconstruction of the fragmentary cranium), Parvene Hamzavi, M.A., and Karin Bruwelheide, M.A. (osteology), Roy Clark and Dana Kollmann, M.A. (photography), and Sharon Long (facial reconstruction).

Highlights from the analysis of the JR102C skeleton can be summarized as follows. This nearly complete skeleton is that of a male aged 17-19 years old. The remains were examined in the field and in the laboratory while still partially encased in matrix. The skeleton was only partially excavated at the beginning of the osteological analysis, which allowed the skeleton to be cleaned and stabilized while recording observations.

This male was positioned on his back and buried in a hexagonally-shaped coffin. The burial was oriented in an east-west direction with the feet to the east and the face turned slightly to the south. The legs were extended and the arms positioned at the sides with the forearms rotated so that the radii and ulnae cross and the hands are pronated. The left hand rests on the proximal portion of the femur.

Positioning within the coffin indicates the body shifted toward the headboard, likely during transport or while being lowered. In addition, the left shoulder is higher than the right, and there is post-mortem curvature of the spinal column, as the middle thoracic vertebrae deviate to the left and the lower spinal column curves to the right.

Fragments of a small pin made of copper or brass was present on the left parietal, and the surrounding bone has a small oval-shaped green stain. Stains of this type often occur with pins associated with the use of a shroud. However, in this case the appearance of the body, and particularly that of the legs, does not support this conclusion. Shrouds secure the legs, which brings the ankles and knees close

together. In this case, the legs, and especially the knees, are widely separated.

The bones of the cranial vault were crushed and warped, and the bones of the midface were fragmented by the collapse of the coffin lid. Extensive reconstruction was necessary in order to restore the cranium in preparation for the facial reproduction completed by Sharon Long.

The postcranial remains are in fair condition with postmortem fracturing and deterioration of the epiphyseal ends of the long bones. Long bone length measurements were difficult to obtain due to this damage, although some measurements could be taken *in situ*. The individual was only moderately robust as the muscle attachment areas are not especially developed in the arms or legs. This individual does not appear to have been regularly involved in heavy physical labor. The arms, particularly the humeri, seem relatively more robust than the femora. The right humerus is larger than the left, suggesting right handedness. Additional measurements need to be taken after the bones are completely removed from the soil matrix.

Three mandibular teeth have carious lesions. The distal half of the right mandibular first molar has been destroyed by caries, which has allowed the second molar to drift mesially. The right second molar has both occlusal and mesial interproximal cavities. Similarly, the crown of the left second molar has been destroyed by a cavity, and the tooth was abscessing.

The death of this individual was the result of a gunshot wound that shattered the proximal metaphysis of the right lower leg. A lead ball shot measuring 15 mm in diameter was found on the tibia during recovery and remains *in situ* on the medial surface of the bone. Radiographic examination of the leg while still in the soil indicates the presence of more than 15 smaller shot embedded in the bone and the soil underlying the proximal tibia. The impact site was on the posterior surface of the lower leg below the knee. The diameter of the lead shot scatter was approximately 12 cm, indicating the musket was behind the victim, but nearby.

Additional work is necessary in order to more completely describe the skeleton and the injury. Ballistic tests are needed in order to determine the approximate distance from the source. Comparison of the biological profile with historical records may determine the identify of this individual.



## References.

King, J. A., and D. H. Ubelaker

1996 Living and Dying on the 17th Century Patuxent Frontier. The Maryland Historical Trust Press, Crownsville, MD.

Neumann, G. K.

1958 Notes on an Indian cranium from Jamestown, Virginia. In: Archaeological Excavations at Jamestown Colonial National Historical Park and Jamestown National Historic Site, Virginia. J. L. Cotter. Arch. Res. Ser. No. 4. Appendix B, pp. 213-217. National Park Service, Washington, DC.

Owsley, D. W.

1990 The skeletal biology of North American historical populations. In: A Life in Science: Papers in Honor of J. Lawrence Angel, J. E. Buikstra, ed. Center for American Archeology, Scientific Papers 6, pp. 171-190.

Verano, J.W., and D.W. Owsley

1991 Using osteological research in archaeology: examination of a 17th-century burial from Chischiak Watch, York County, Virginia. Notes on Virginia 37(Fall): 35-38.



# NOTES

- <sup>1</sup> Nicholas Lucchetti and Beverly Straube. 1995 *Interim Report, Jamestown Rediscovery* (Richmond VA: Association for the Preservation of Virginia Antiquities, 1996), 46-47.
- <sup>2</sup> Philip L. Barbour, ed., *The Complete Works of Captain John Smith (1580-1631)* (Chapel Hill: The Univ. of North Carolina Press, 1986), 2:325.
- <sup>3</sup> I've, *Practise of Fortification*, epistle dedicatorie.
- <sup>4</sup> Straube and Lucchetti, 5-6, 17-24.
- <sup>5</sup> Straube and Lucchetti, 46-47.
- <sup>6</sup> Susan M. Kingsbury, ed., *The Records of the Virginia Company of London* (Washington: Government Printing Office, 1906), 3: 676.
- <sup>7</sup> Barbour, 2:189.
- <sup>8</sup> George Percy, [1611] "Letter," *Percy Family, Letters and Papers*, IX (1608-1617), f.173, as quoted in John W. Shirley "George Percy at Jamestown, 1607-1612," *The Virginia Magazine of History and Biography* 57 no. 3 (1949): 239.
- <sup>9</sup> Kingsbury, *Records*, 3:456.
- <sup>10</sup> Barbour, 1:35.
- <sup>11</sup> Ifor Edwards and Claude Blair (1982) "Welsh Bucklers," *The Antiquaries Journal* LXII:1, 80.
- <sup>12</sup> Leonid Tarassuk and Claude Blair, eds. *Arms and Weapons* (Verona: Bonanza Books, 1986), 105.
- <sup>13</sup> Kingsbury, *Records*, 3: 665.
- <sup>14</sup> Barbour, 2:146.
- <sup>15</sup> Henry Porter, [1599] *The Two Angrie Women of Abington* quoted in A.V.B. Norman *The Rapier and the Small-Sword, 1460-1820* (New York: Arno Press, 1980), 25.
- <sup>16</sup> Carole Rawcliffe, *Medicine & Society in Later Medieval England* (Phoenix Mill: Alan Sutton Publishing Ltd., 1995), 112.
- <sup>17</sup> Many thanks to Dr. Manfred Fleischer for calling my attention to this information.
- <sup>18</sup> Johannes Henrici Curadi, *Silesia Togata* (Legnica, Poland, 1706)
- <sup>19</sup> Barbour, 1:195.
- <sup>20</sup> Barbour, 1:229.
- <sup>21</sup> Rawcliffe, 149.
- <sup>22</sup> Rawcliffe, 152
- <sup>23</sup> Wyndham B. Blanton, *Medicine in Virginia in the Seventeenth Century* (Richmond: The William Byrd Press, Inc., 1973, reprint of 1930 edition), 124.
- <sup>24</sup> Lanfrank, *Lanfrank's 'Science of Chirurgie'*, ed. By R. von Fleischhacker (Chappel Hill: Early English Text Soc., 1894) as quoted in Rawcliffe.
- <sup>25</sup> Kathy Lynn Emerson, *The Writer's Guide to Everyday Life in Renaissance England* (Cincinnati, Ohio: Writer's Digest Books, 1996), 76.
- <sup>26</sup> Kingsbury 3:23. The petition was included in a list of instructions to Sir Thomas Gates from the Virginia Council "wch were formerly wth others delived to Sr Thomas Gates knt att his goinge to virginiea for his direcon in his govermt there." If Gates carried them as they left London, these instructions would not have reached Jamestown until Gates did in May 1610. The petition for the return for Post Ginnet is clear. Less certain is the request for William Wilkinson. The document asks for the return of "willm wilson" fellow of English surgeon John Woodall. The medical connection suggests that Wilson and Wilkinson are one and the same. It is not known if Ginnet or Wilkinson managed to return to England for there were no surgeons remaining in Jamestown by the fall of 1609. This is reflected in John Smith's need to return to England after his gun powder accident because "there was neither Chirurgiann, nor Chirurgery in the Fort to cure his hurt" (Barbour II, 223).
- <sup>27</sup> Barbour, 2:175, 178.
- <sup>28</sup> Barbour 2:194.
- <sup>29</sup> Barbour 2:143.
- <sup>30</sup> Edward Maria Wingfield [1608] *A Discourse of Virginia*. Privately reprinted by Charles Deane (1860), Boston. In Jocelyn R. Wingfield, *Virginia's True Founder: Edward Maria Winfield and His Times 1550-c.1614* (Athens, Georgia: The Wingfield Family Society, 1993) 341.
- <sup>31</sup> Kingsbury 3:23. The servant with the chest may have arrived in Virginia before Gates and his instructions. Gates sailed aboard the *Sea Venture* which was borne off course by storms and wrecked on Bermuda. Seven of the eight other ships comprising the fleet that sailed with the *Sea Venture* arrived in Virginia in August 1609. Gates did not reach Virginia until the following year.
- <sup>32</sup> Robert Caudrey [1604] *A Table Alphabetical of Hard Unusual English Words*. Robert A. Peters, ed. (Gainesville, FL: Scholars' Facsimiles & Reprints, 1966).
- <sup>33</sup> John Woodall, *The Surgions Mate* (1617; reprint with foreword by John Kirkup, Bath: Kingsmead, 1978), 14.
- <sup>34</sup> Dennis A.J. Morey, M.D., personal communication, 1977.
- <sup>35</sup> Woodall, 225.
- <sup>36</sup> Carville V. Earle, "Environment, Disease, and Mortality in Early Virginia," *The Chesapeake in the Seventeenth Century*, ed. Thad W. Tate and David L. Ammerman (Raleigh: The Univ. of North Carolina Press, 1979), 96-125.
- <sup>37</sup> J.J. North, *English Hammered Coinage Volume 2*, (London: Spink & Son, 1991), 20.
- <sup>38</sup> John Stafford-Langan, personal communication, 1997.
- <sup>39</sup> D. Antjekathrin Grassmann, personal communication, 1995.
- <sup>40</sup> Alice L.L. Ferguson and T.D. Stewart, "An Ossuary near Piscataway Creek with a Report on the Skeletal Remains," *American Antiquity* 6 (1940): 13.

<sup>41</sup> North, 20, 150.

<sup>42</sup> One was found during National Park Service excavations at Jamestown; one was located at The Maine (ca. 1618-1625) near Jamestown, and one was excavated at Flowerdew Hundred, about 25 river miles from Jamestown. Eighteen of the tokens, pierced and comprising a necklace, were located in a 17th-century Indian ossuary on the banks of Piscataway Creek in Maryland (Ferguson and Stewart, *Ossuary*).

<sup>43</sup> Jacqueline Pearce, *Border Wares*, (London: HMSO, 1992), 102.

<sup>44</sup> L.G. Matthews and H. J. M. Green, "Post-Medieval Pottery of the Inns of Court," *Post-Medieval Archaeology* 3 (1969): 1-17.

<sup>45</sup> C.T. Martin, ed., (1904) *Middle Temple Records*, 2:596, as quoted in Matthews and Green, "Post-Medieval Pottery," 3.

<sup>46</sup> Barbour 3: 216.

<sup>47</sup> John L. Cotter, *Archeological Excavations at Jamestown, Virginia*, reprint of 1958 edition (Washington, D.C.: U.S. Department of the Interior, 1994), 102-109.



