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a study of a colonial pottery factory
volume 3: ceramics

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THE "POOR POTTER" OF YORKTOWN:
A STUDY OF A COLONIAL POTTERY FACTORY
VOLUME 3: CERAMICS
COLONIAL NATIONAL HISTORICAL PARK VIRGINIA



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VOLUME 3. CERAMICS

INTRODUCTION

The Yorktown Pottery Factory produced large quantities of utilitarian ceramics during its generation of operation. Both lead glazed earthenwares and salt glazed stonewares, perhaps the earliest in America, were manufactured in a variety of shapes.

A total of 23 shapes were identified as having been made at Yorktown (Table 4, Figures 146-148). Nearly all shapes were found in both bisque and glazed varieties. Of the 23 total shapes, 21 were produced in earthenware and 15 in stoneware. Ten forms were produced in either stoneware or earthenware; thirteen forms were produced in both wares.

The large variety of shapes produced by one colonial pottery is remarkable. Possibly many additional shapes were produced as well. Some ceramic shapes are distinctly out of place in Yorktown, an area of English settlement. We refer to the stove tile, many of which, when put together, formed a stove - a distinctly Germanic form.

The quality of Yorktown ceramics is high, especially for certain forms, such as mugs and teapots. It is highly probable that very experienced potters worked at Yorktown. Unfortunately, we have no idea of their names or area of birth from documents.

The following five chapters will describe the results of the analysis of ceramics. Chapter 10 will be a detailed description of the 23 shapes made at Yorktown, followed by general observations on Yorktown production techniques as gleaned from the sherds recovered from the site (Chapter 11).

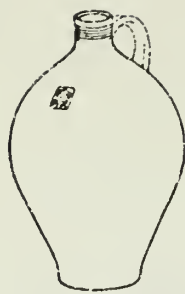
Chapter 12 will deal with the frequency and distribution of ceramics at the site and the following three chapters will discuss



BETTY LAMP



BIRD BOTTLE



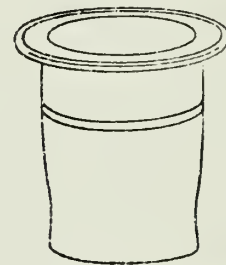
BOTTLE



BOWLS



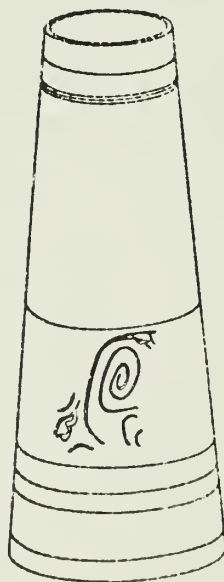
CHAFING DISH



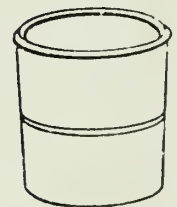
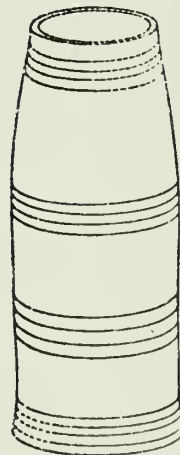
CHAMBER POTS



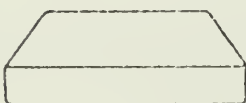
COLLANDER



CHURNS



CREAM POTS



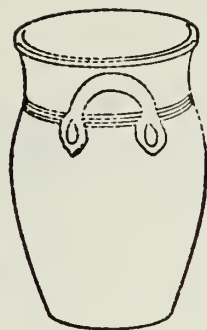
FLOOR TILE



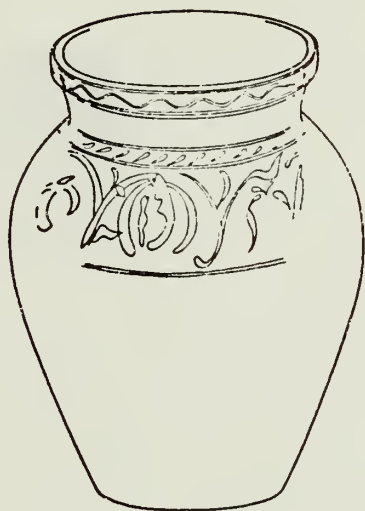
FUNNEL



Figure 146. Comparative Ceramic Forms and Sizes



JARS



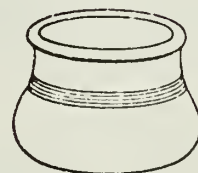
JUG



MILKPANS



MUG



PIPKINS

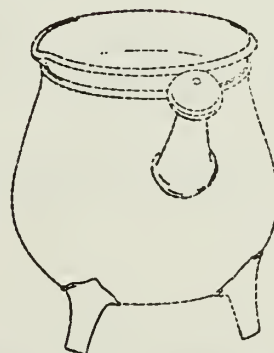


Figure 147. Comparative Ceramic Forms and Sizes



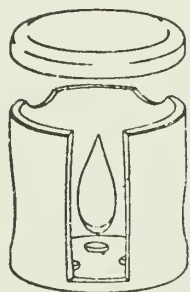
PLATE



PLATTER



PORRINGERS



SAGGAR



SAUCE PANS



STOVE TILE



TEA POT



BISQUE 'TEST' POTS

Figure 148. Comparative Ceramic Forms and Sizes

the functions and occurrence of the Yorktown vessels and the marketing and distribution of Yorktown products in the Middle Atlantic region.

CERAMIC FORMS PRODUCED AT YORKTOWN

<u>Form</u>	<u>Earthenware</u>	<u>Stoneware</u>
1. Betty Lamp	X	
2. Bird Bottle	X	
3. Bottle	X	X
4. Bowl	X	X
5. Chafing Dish	X	
6. Chamber Pot	X	X
7. Churn	X	X
8. Colander	X	X
9. Cream Pot	X	
10. Floor Tile		X
11. Funnel	X	
12. Jug	X	X
13. Milk Pan	X	X
14. Mug	X	X
15. Pipkin	X	X
16. Plate	X	X
17. Platter	X	
18. Porringer	X	
19. Saggar		X
20. Sauce Pan	X	X
21. Storage Jar	X	X
22. Stove Tile	X	
23. Teapot	X	X
Total	21	15

Table 4

CHAPTER 10

DESCRIPTION OF YORKTOWN POTTERY VESSEL SHAPES

The 23 Yorktown vessel shapes will be described in alphabetical order.

BETTY LAMP

Definition: a lighting device with an upper cup-like bowl for holding oil or fat, an attached hollow tube for holding a reed or wick, a baluster-shaped pedestal and a spouted rimmed base to catch the overflow of oil

Ware: earthenware, bisque and glazed.

Description:

Color - glaze varies from light yellow tan to dark brown due to kiln temperature and atmosphere differences and thickness of glaze.

Glaze - entire vessel lead glazed.

Slip/Wash - none.

Decoration - none.

Handle - broken end sections of a handle still attached to top of the pedestal show the placement of the handle. No recognizable betty lamp handles were found.

Marks-Stamps - none.

Size - overall measurements unknown. Bases of betty lamps measured 4-1/2 inches in diameter.

Discussion: all sections of the betty lamp were wheel thrown.

The bowl is thrown separately as shown by turning marks on the bottom of two bowls where they have separated from the pedestal. Bowls were fastened to pedestals with slip as shown by an excess of slip that had run over the edge. An air space between the two sections probably caused breakage during firing. All bases have an unevenly cut out hole in the center bottom extending up into the pedestal to prevent problems in drying and firing a thick mass of clay.

Three dozen lamps were listed in Williams Rogers' inventory.

Illustrations:

Figure 149.

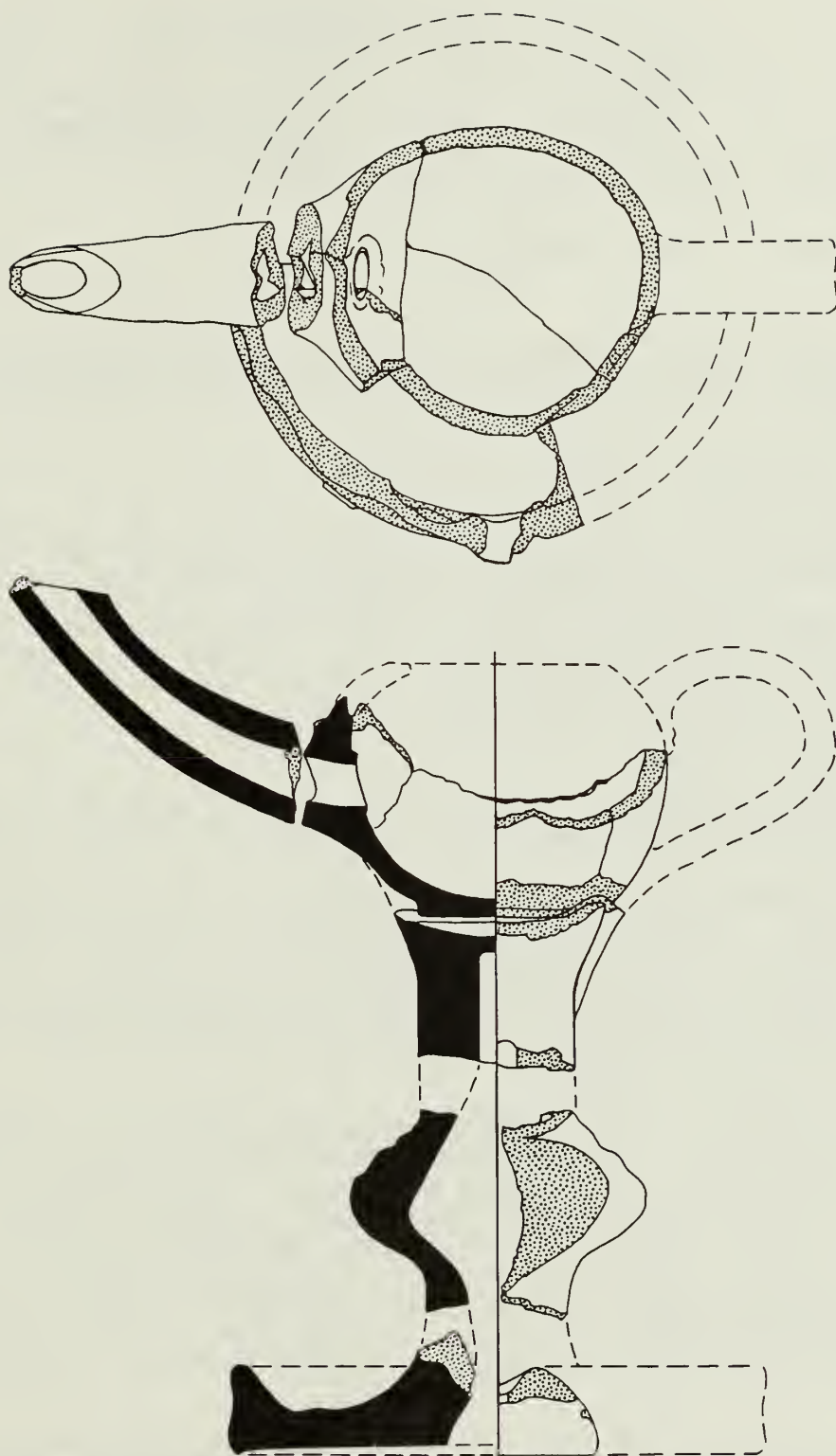


FIGURE 149. BETTY LAMP.

BIRD BOTTLE

Definition: a jug-like bulbous vessel with flat base and short slab-cut rectangular handle below rim. Base has a cut-out half circle and triangular notch for mounting horizontally on a nail as a bird house. A hole in the handle and a slanted hole in the bulbous mid-section of the pot held a wooden stick, which served as a bird perch.

Ware: earthenware, bisque and glazed.

Description:

Color - glaze varies from light yellow-tan to red-orange to dark brown; some 49 green-glazed sherds were also found.

Glaze - lead glazed, only on exterior.

Slip/Wash - none.

Decoration - cordons at rim and incised lines at the beginning of the shoulder or bulbous section.

Handle - one rectangular slab to hold stick for perch. Width of handle varied from 1-1/4 inches to 1-5/8 inches, with majority 1-1/4 inches. Diameter of hole in handle = 1/4 inch.

Marks-Stamped - none.

Size - approximately 8-1/2 inches in height, with a 3-1/4 inch rim diameter and basal diameter of about 4 inches.

Discussion: William Rogers' inventory refers to "4 doz bird bottles 12/". The vessels described above, with the peculiar cut-out base, must be the bird bottles referred to. One bisque fragment, with complete handle, was recovered in the firebox of the Large Kiln. When in use, the bird bottles were actually bird houses, which could be conveniently hung below the eaves of houses.

An advertisement in the Virginia Gazette (March 12, 1752) reads as follows: "A large assortment of stone and earthenware, such as Milk pans, Cream pots, Jugs and Bottles, Butter pots of various size, Martin-Pots, Bowls, Dishes, Plates, Teapots, Chamber Pots, etc. Likewise an assortment of European goods, lately imported." The purple martin is one of five Progne subis species of the New World. As they consume huge quantities of mosquitoes and other insects, "Martin-Pots" were probably quite popular in the 18th C., as they are today.

The 1746 inventory of John Burdett, who kept an ordinary on the Duke of Gloucester Street, Williamsburg, included "16 bird Bottles 3/".¹

Fairly complete bird bottles have been found archaeologically in the Williamsburg area. One bird bottle was found in a chimney near Green Spring and another was recovered from the James Geddy House in Williamsburg.² Height and basal diameter

of these two specimens are 21.91 and 10.16 centimeters and 18.42 and 10.48 centimeters.

Illustrations:

Figures 150-152.

¹Inventory and Appraisement of estate of John Burdett, York County Records, Book 20, Wills and Inventories, pp. 46-49.

²Watkins C. Malcolm and Ivor Noel Hume, The "Poor Potter" of Yorktown, U.S. National Museum Bulletin No. 249 (Washington, D.C., 1967), 107-109.

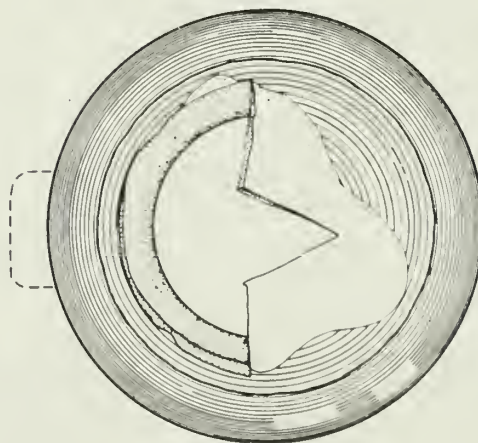
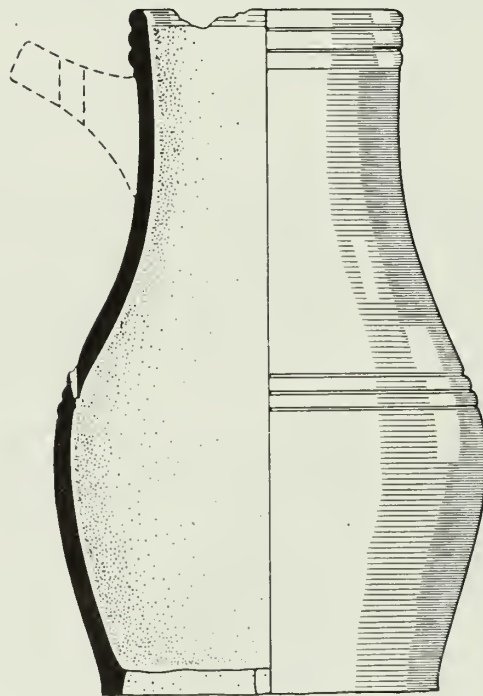
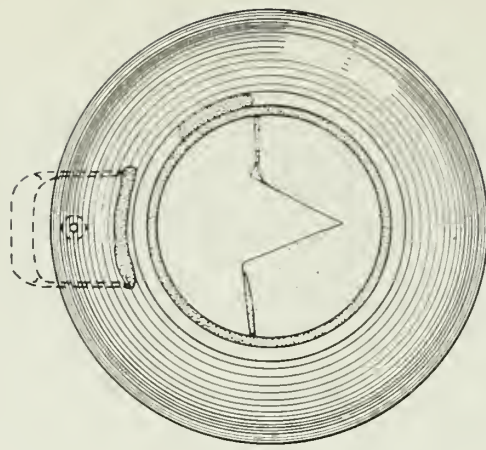


FIGURE 150. BIRD BOTTLE.

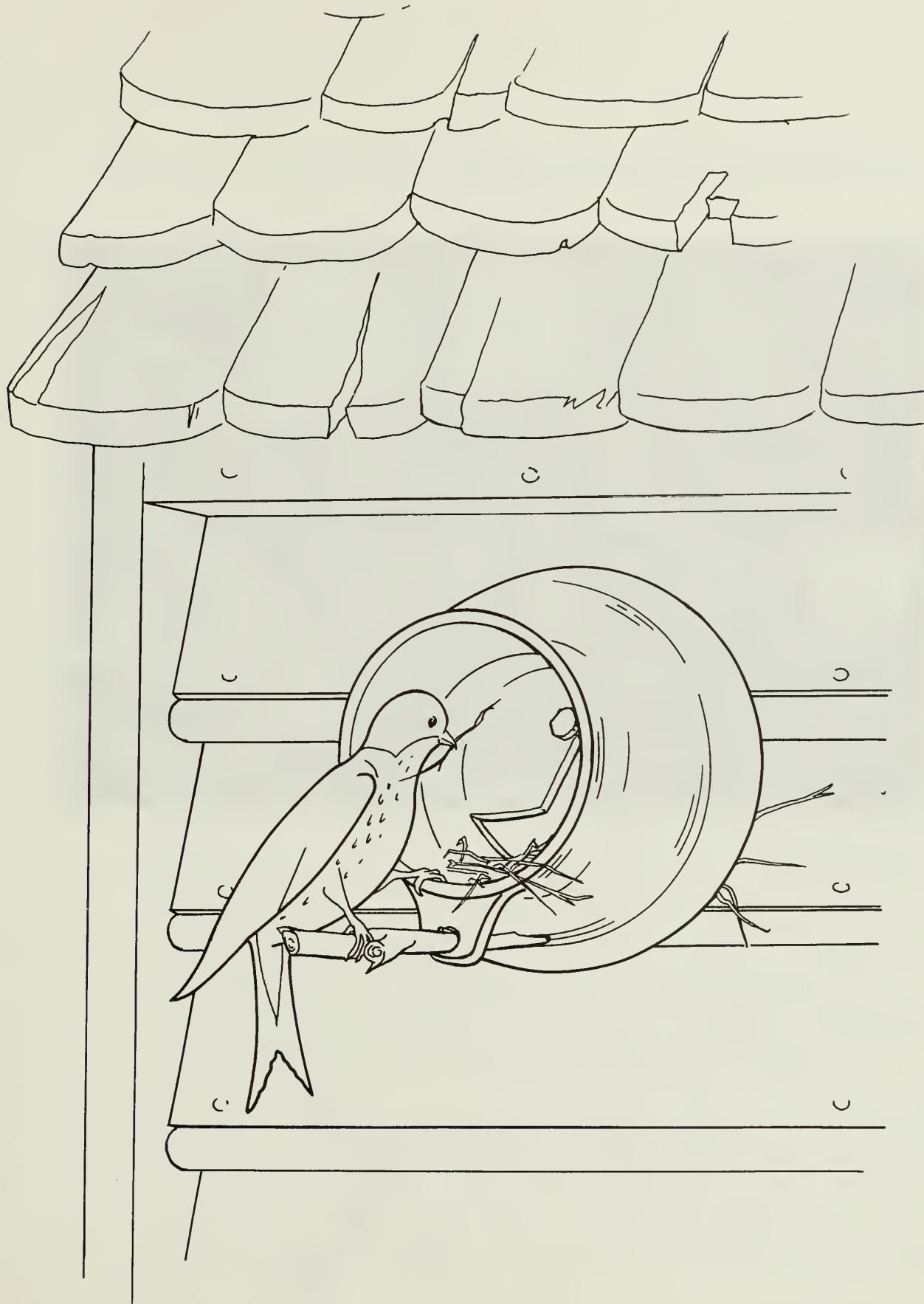


FIGURE 151. BIRD BOTTLE IN USE.



FIGURE 152. BIRD BOTTLE HANDLES (UPPER)
AND COLANDERS (LOWER)

BOTTLE

Definition: a bulbous bodied vessel with a small mouth and cordoned rim, a narrow neck, a narrow flat base, and one handle applied just below the rim and to the shoulder.

Ware: earthenware, bisque and glazed.
stone ware, bisque and glazed.

Description:

Color - glazed earthenware varied from light yellow-tan to dark brown with darker flecking due to temperature and atmospheric differences within the kiln during firing.

Stoneware colors vary from dark brown on upper portions to grey, grey-brown, or mottled brown on lower portions of vessel.

Glaze - earthenware is lead glazed on interior and exterior surfaces.

Stonewares are salt glazed on exterior only.

Slip/Wash - earthenware usually not slipped. Only one earthenware vessel, in the bisque state, had an iron oxide slip. The upper portion of most, but not all, stoneware bottles was dipped in iron oxide slip or wash.

Decoration - none, other than iron oxide and cordons.

Earthenware bottle rims, both bisque and glazed, had two large cordons below the rim (majority), or three cordons, or four cordons (minority). On earthenware bottles with two cordons, the top end of the handle was applied just below the first cordon, extending to one inch below the second cordon. A thin strip of clay was wedged between the top of the handle and the neck of the bottle to fasten it securely. Several cordons were undercut signifying that they must have been cut separately with a tool rather than with a template.

Stoneware bottle rims had four or five small cordons below one large cordon at the rim. The large rim cordon varied from 3/8 inch to 7/8 inch in width. The small cordons were all the same size and were probably cut with a template.

Handles - one round, half-round, or flat handle ending on the shoulder in a three thumb or finger impression terminal

Earthenware bottles had 7 types of handles and stoneware bottles had 10 types. These variations may be due to preferences and capabilities of potters employed at the same time or changing styles and new potters at different periods of production.

Some earthenware and stoneware bottles had three finger or thumb impressions at the handle base. These indentations are the same size and not graduated. All have an

added strip of clay to fill in the gap between the handle and the vessel wall.

Marks-Stamps - raised initials WR below a raised crown, both set within a depressed rectangle. Always appears on shoulder of vessel. One bottle fragment has a double stamp, which may signify double capacity (?). Another bisque stoneware bottle had a WR Crown stamp and in addition a large incised X mark, also on the shoulder.

Size - one nearly complete stoneware bottle (bisque) measures 11 inches in height, 8-1/4 inches in maximum width, 3-3/4 inches in basal diameter, and 1-1/2 inches at the rim. This vessel weighs 4 lbs. 6 ounces.

Rim diameters vary: earthenware - 1-1/2 to 2-3/4 inches, with the majority 2-1/4 inches. Glazed stoneware - 1 inch to 1-3/4 inches, with the majority 1-1/8 inches.

Capacity of bottles varied from one to three gallons and possibly larger. Few bottles in the Yorktown sample were complete enough to estimate or measure capacity.

Discussion: in addition to the large bottles described above, a number of fragments of small bottles were found at the site. William Rogers Inventory of 1739 lists "4 dozen small stone bottles." The inventory also lists "11 pocket bottles." The archaeological evidence consists of earthenware rims measuring 3/4 inch in diameter, and bases varying from 2 to 5 inches in diameter, with the majority at 3-1/2 inches. Eleven small stoneware bottle rims ranged from 1 to 3 inches in diameter and 84 basal fragments from 1-1/2 to 4 inches in diameter. No rim to base fragments were found to show the overall shape but one assumes the shapes are similar to the large bottles.

Perhaps these bottles are the small bottles or flasks mentioned in 1739.

There is a reference to William Barbasore, one of William Rogers' servants, who confessed that he and another servant had broken into Rogers' storehouse in the summer of 1739 and had taken "two or three butter potts, a stone sacue pan, and about fourteen pocket bottles", which were later sold in Poquoson.

Illustrations:

Figures 153-159.

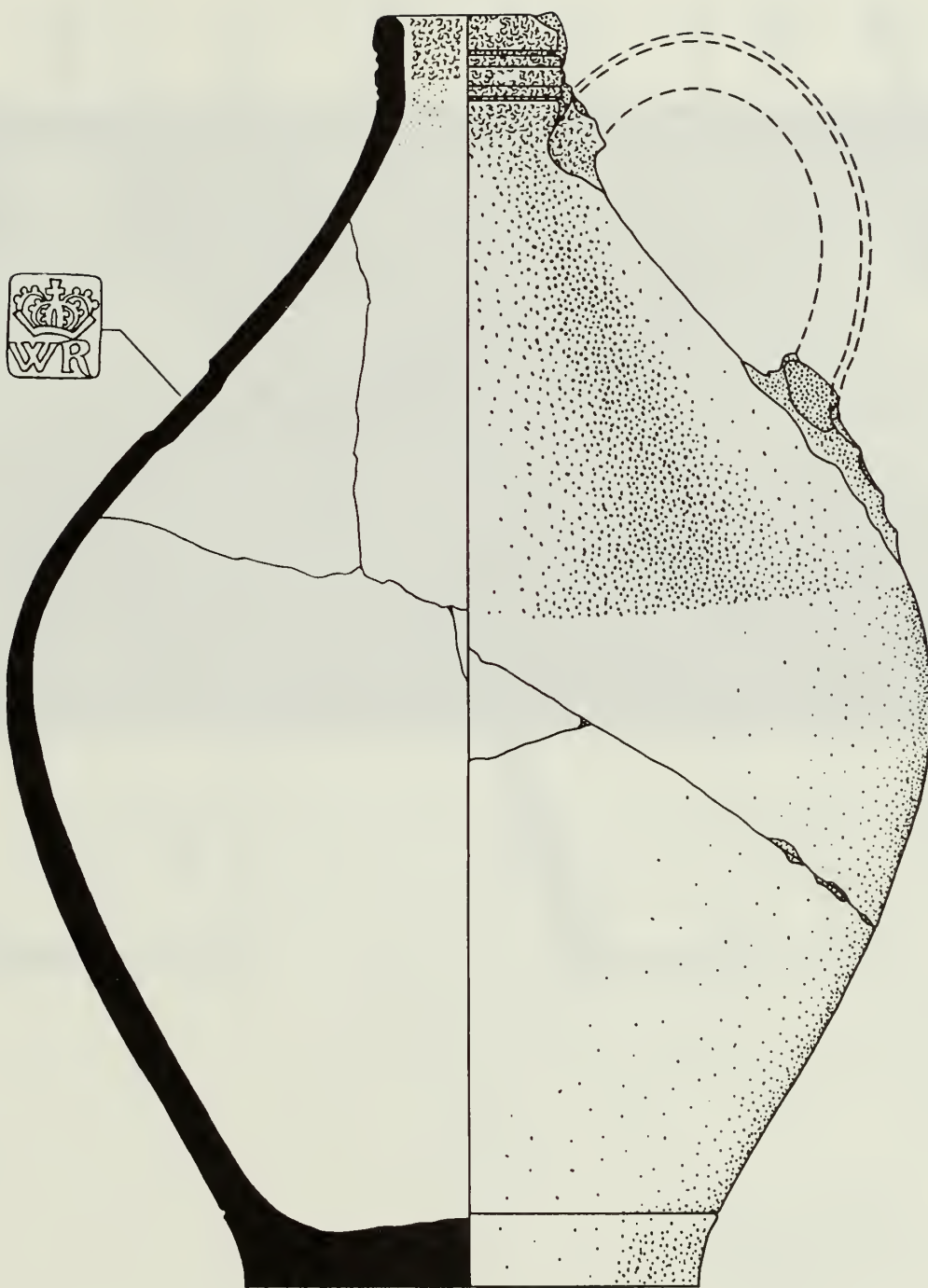


FIGURE 153. BOTTLE, SALT GLAZED STONEWARE.



FIGURE 154. BOTTLES: BISQUE STONEWARE ($11\frac{1}{4}$ " HIGH),
SALT GLAZED, LEAD GLAZED.

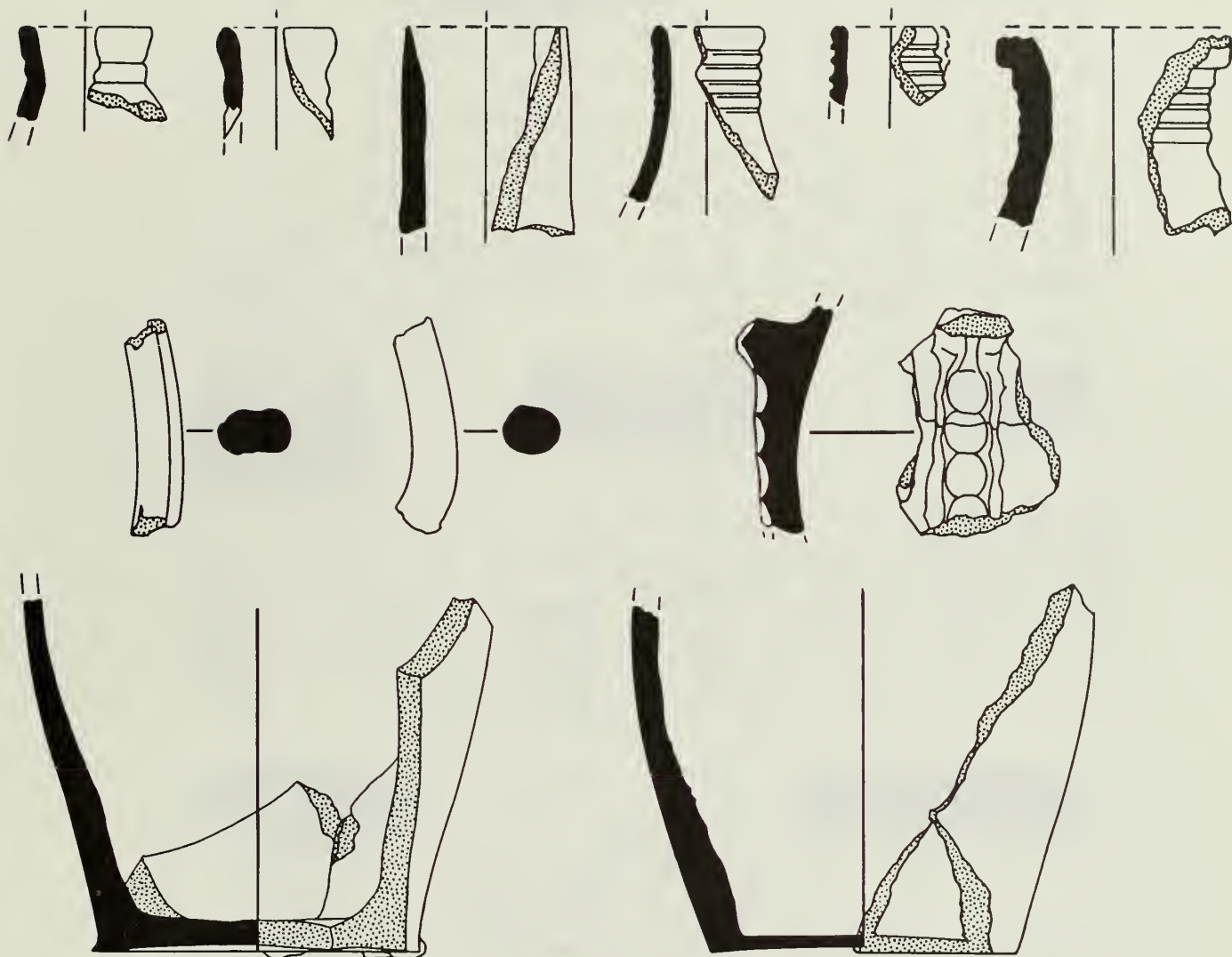


FIGURE 155. SMALL BOTTLES.

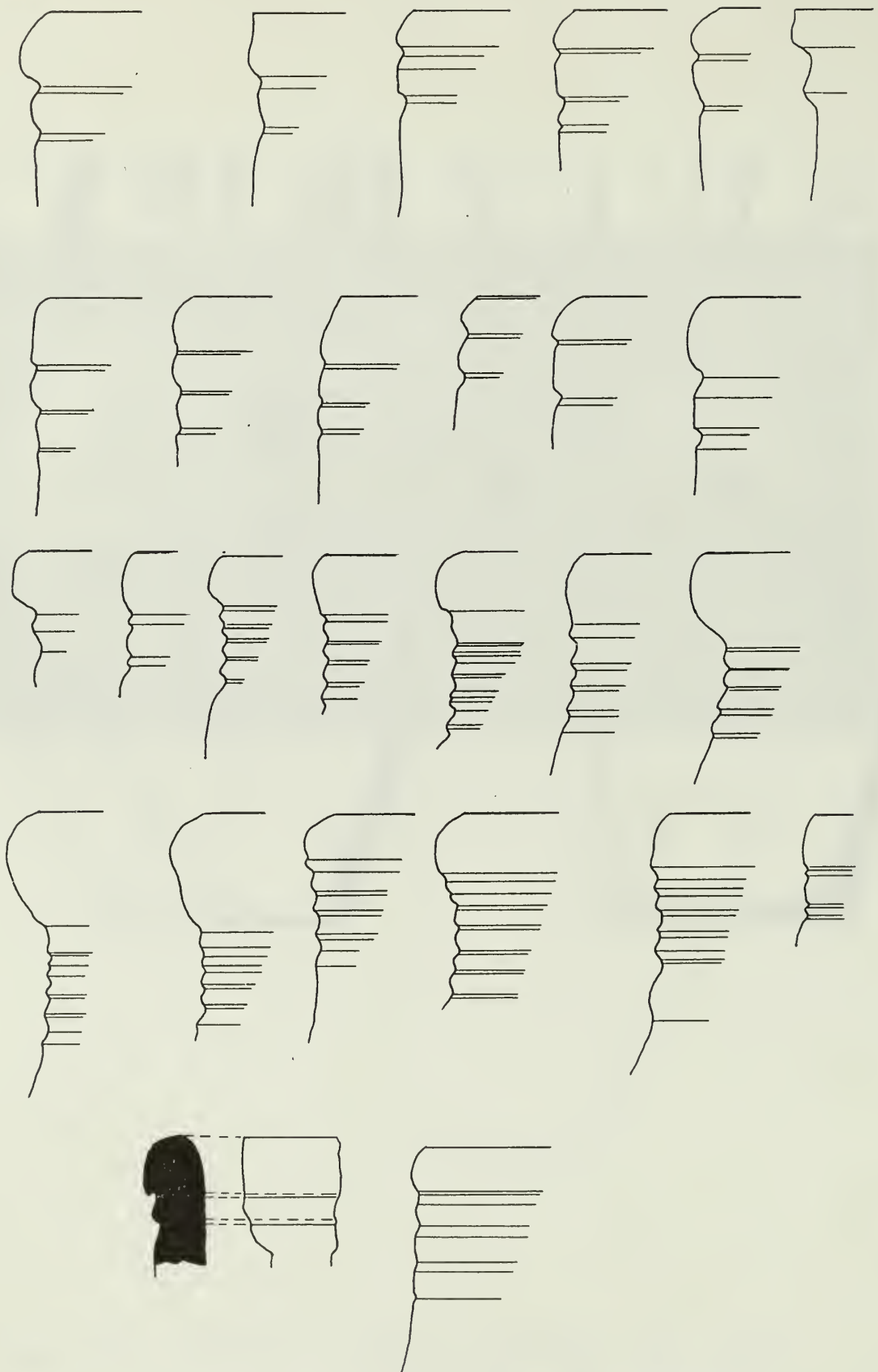


FIGURE 156. VARIATIONS OF CORDONS ON BOTTLES.

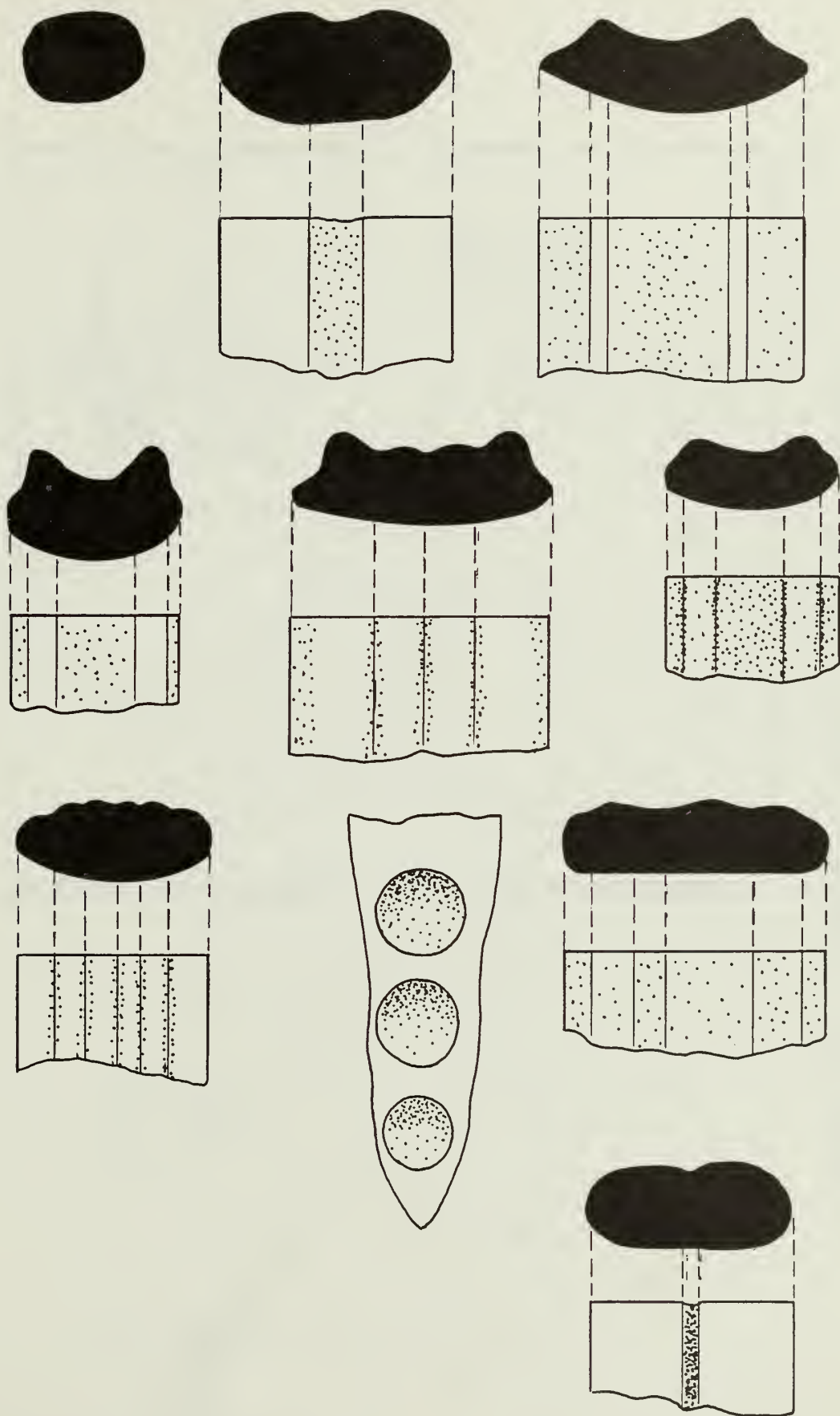


FIGURE 157. BOTTLE HANDLES, EARTHENWARE AND STONEWARE.



FORMATION OF RIM



FORMATION OF CORDONS

FIGURE 158. BOTTLES.

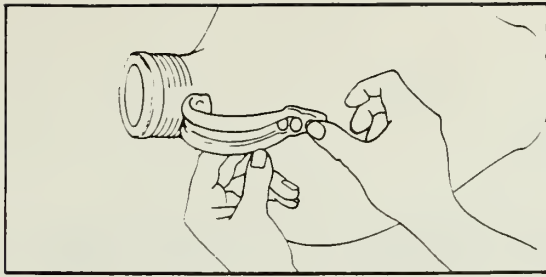
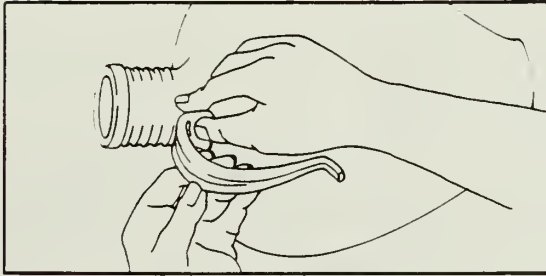
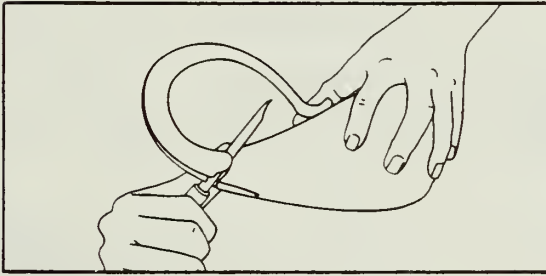
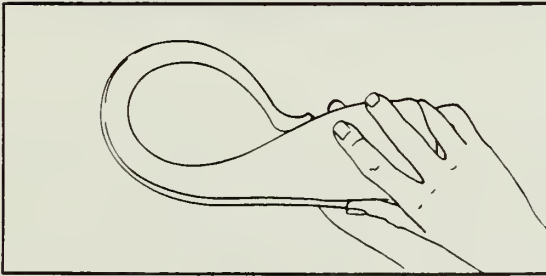
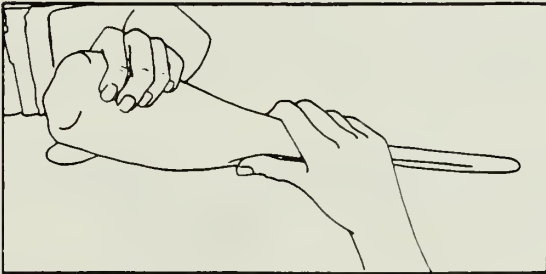
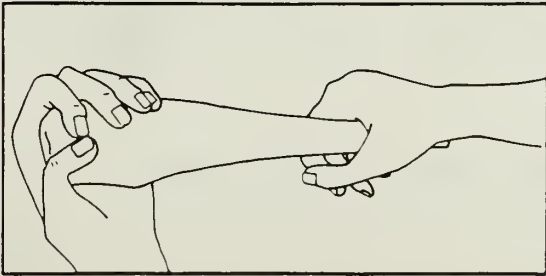


FIGURE 159. STAGES IN HANDLE FORMATION, BOTTLES.

BOWL

Definition: an open container with outsloping walls ending in one of seven rim types and having either a flat base or a turned foot.

Ware: earthenware, bisque and glazed.
stoneware, glazed.

Description:

Color - for earthenware vessels, the glaze varies from a light yellow-tan to red-orange to red-brown and dark brown.

Stoneware - tan or grey to dark brown.

Glaze - earthenware is lead glazed on all surfaces.
Stoneware bowls are salt glazed on all surfaces.

Slip/Wash - only stonewares are stained. Some are dark brown in appearance possibly due to the addition of iron oxide, although some firing conditions will cause the same effect.

Decoration - none.

Handles - none.

Rim and basal variants - earthenwares exhibit 7 rim variants and 6 base variants. Stoneware bowl fragments exhibit up to 10 variations in rim style.

Marks-Stamps - none.

Size - one complete earthenware bowl has the following measurements (in inches); 8-1/2, rim diameter; 3-1/2, basal diameter; 3-1/2, height. Weight - 1 lb. 12 oz. Another stoneware bowl measures 8 (rim) by 3-1/4 (basal diameter) by 3 (height) and weighs 1 lb. 8 oz.

Variations in height - earthenware - 3-1/2 to 4 inches.
Stoneware - 2-1/8 to 3-1/2 inches.

Variations in diameter - earthenware rims - 5 to 20 inches, with the majority 7 inches. Stoneware rims - 6 to 11 inches.

Earthenware bases = 2-1/2 to 7-1/2 inches, with the majority measuring 3-1/2 inches. Stoneware bases measure 3-1/4 to 3-1/2 inches in diameter.

Capacity of 8 inch diameter bowls is one quart.

A Yorktown earthenware bowl with a rim diameter of 20 inches and a height of 9 inches was excavated at Seawell's Ordinary in Gloucester County, Virginia. The trash pit in which it was found dated to around 1740.

Illustrations:

Figures 160-167

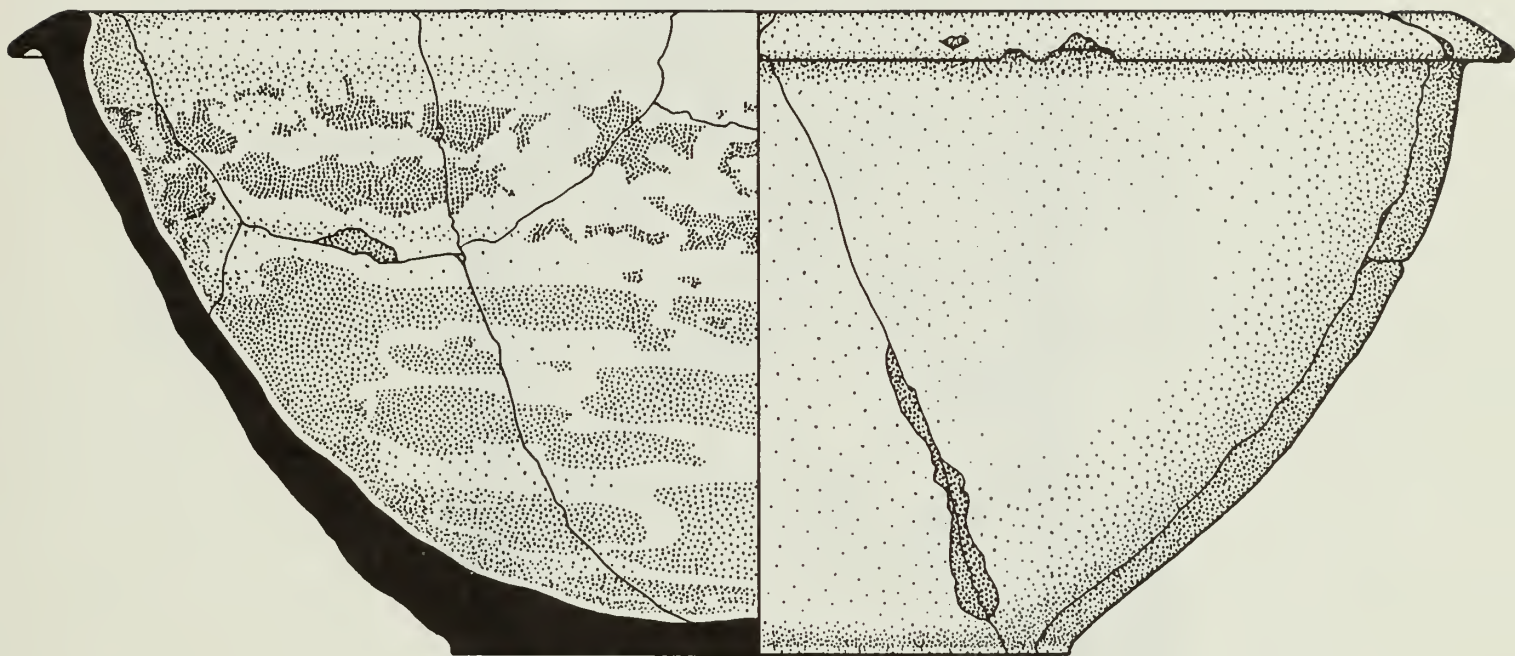


FIGURE 160. BOWL, BISQUE.

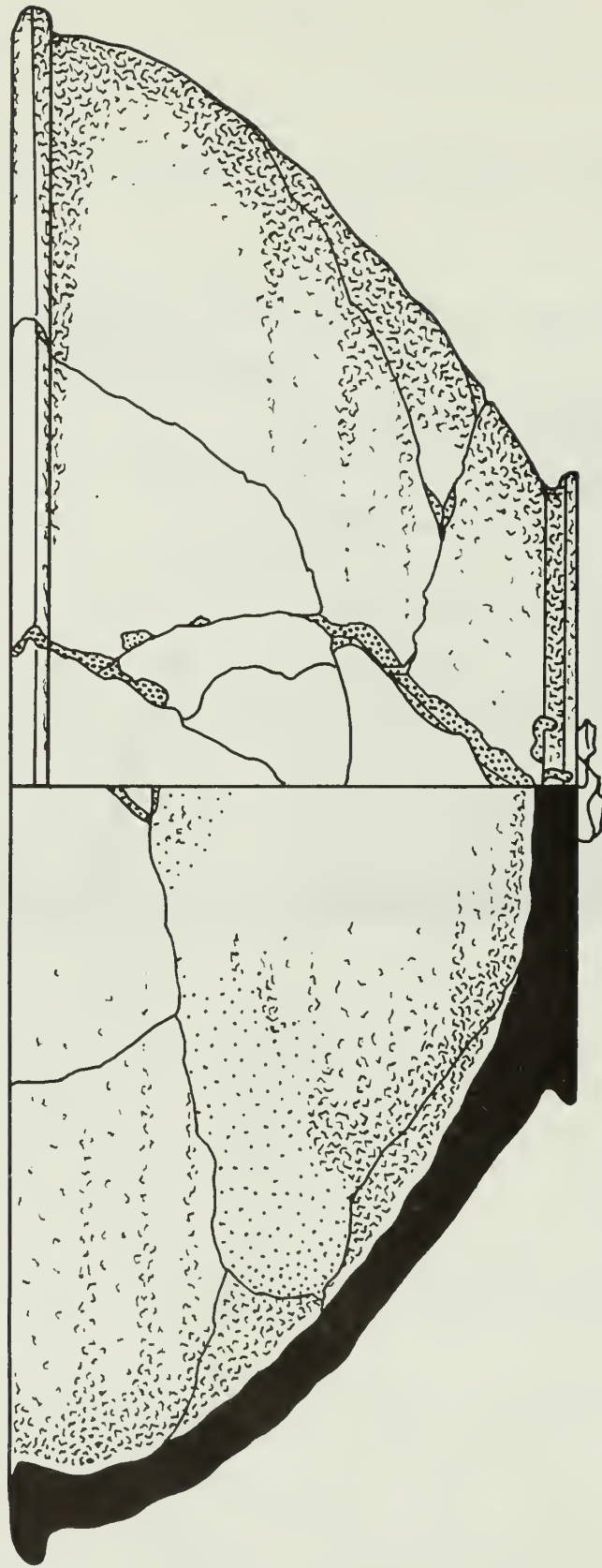


FIGURE 161. BOWL, BISQUE.



Figure 162. Bowl, Lead Glazed Earthenware.

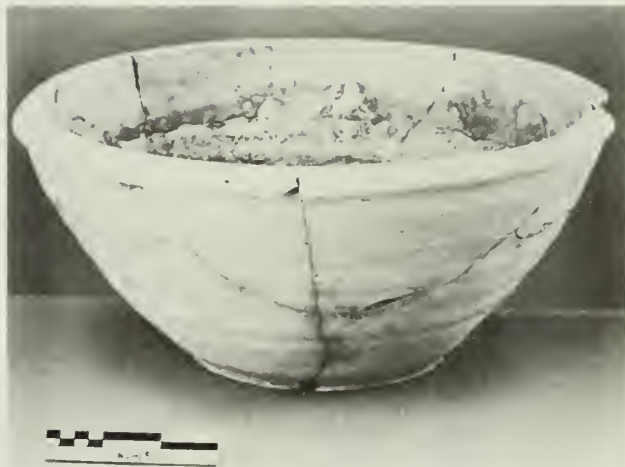


FIGURE 163. BOWLS: SALT GLAZED STONEWARE ($8\frac{1}{2}$ " DIAM.) (UPPER LEFT), BISQUE EARTHENWARE, LEAD GLAZED.

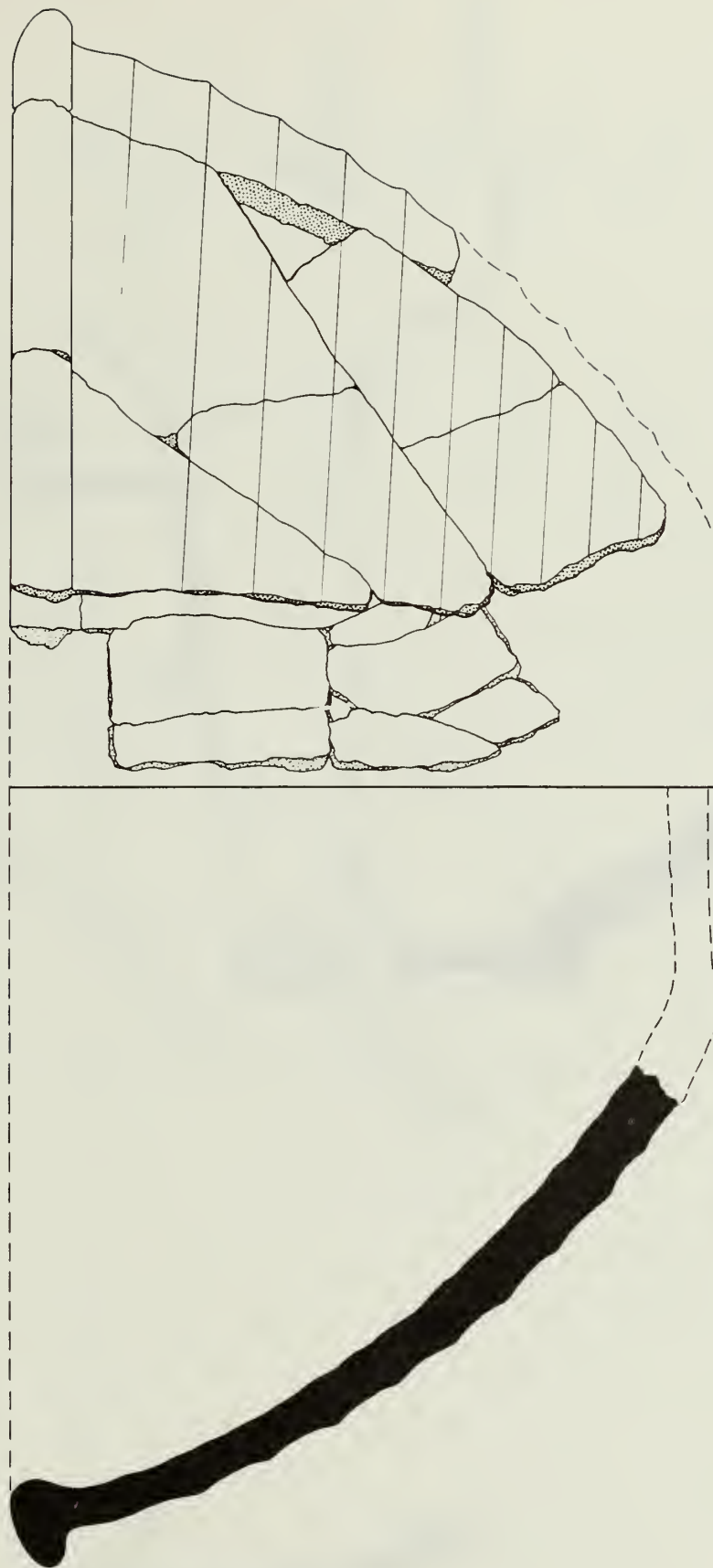


FIGURE 164. BOWL, BISQUE.

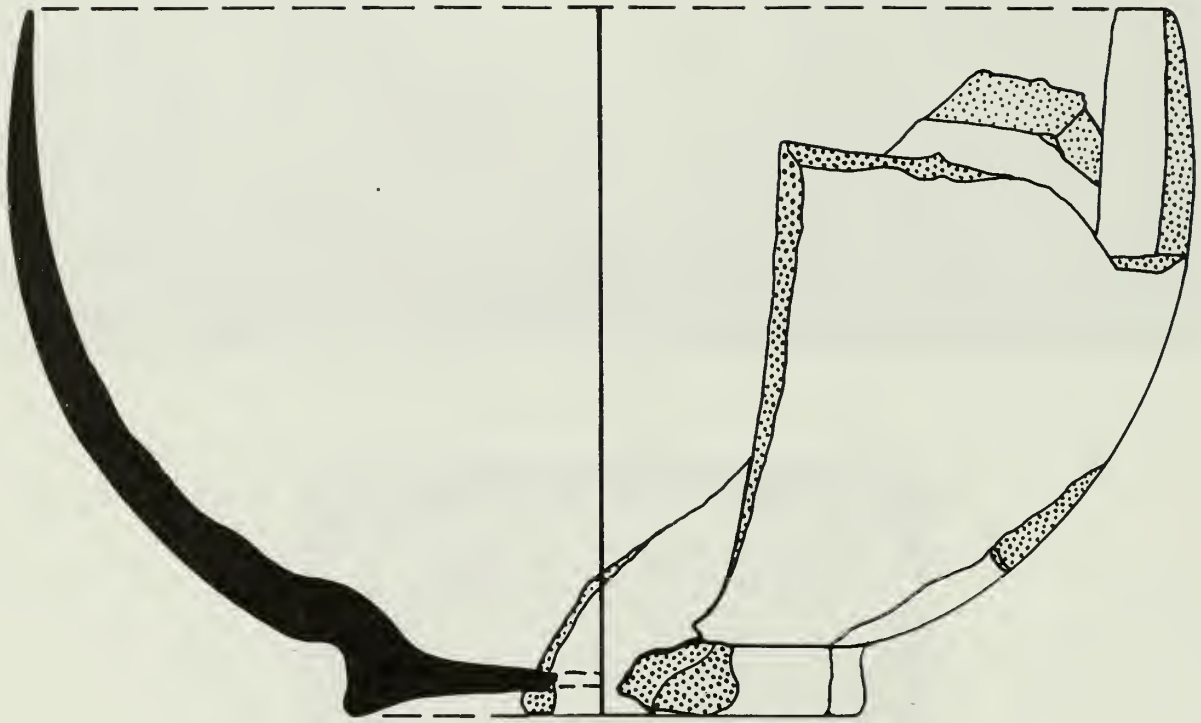


FIGURE 165. BOWL, BISQUE.

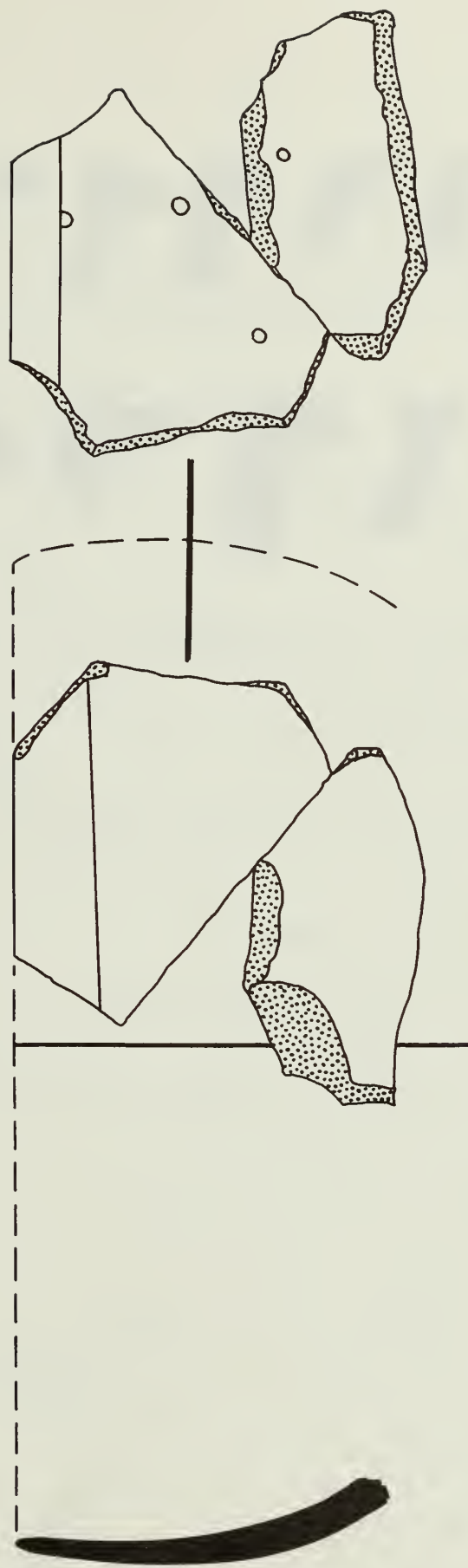


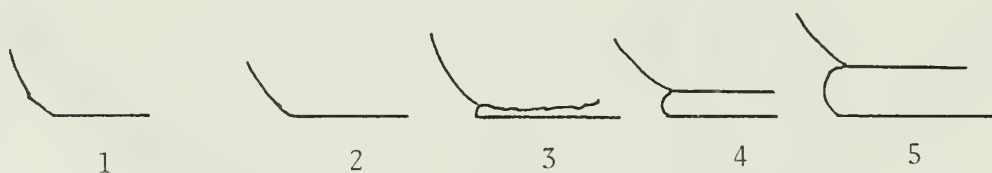
FIGURE 166. BOWL, BISQUE .



stoneware



earthenware



bowl bases

- 1 = cut off like milkpan
- 2 = not cut, but still flat base
- 3 = rough irregular footed base

Figure 167. Bowls, Rims and Bases.

CHAFING DISH

Definition: an open vessel mounted on an inverted bowl-shaped pedestal with several knobs projecting above the rim to hold a container of food for cooking or warming. The base has a number of holes cut through its walls to supply air to the burning charcoal or other fuel placed inside.

Ware: earthenware, bisque and glazed.

Description:

Color - green, red-orange, to red-brown with darker fleckings.

Glaze - lead glazed on interior as well as exterior.

Slip/Wash - none.

Decoration - none.

Handle - only fragment of end where attached to lower wall of pedestal found.

Marks-Stamps - none appear in our small sample.

Size - unknown.

Illustrations:

Figure 168.

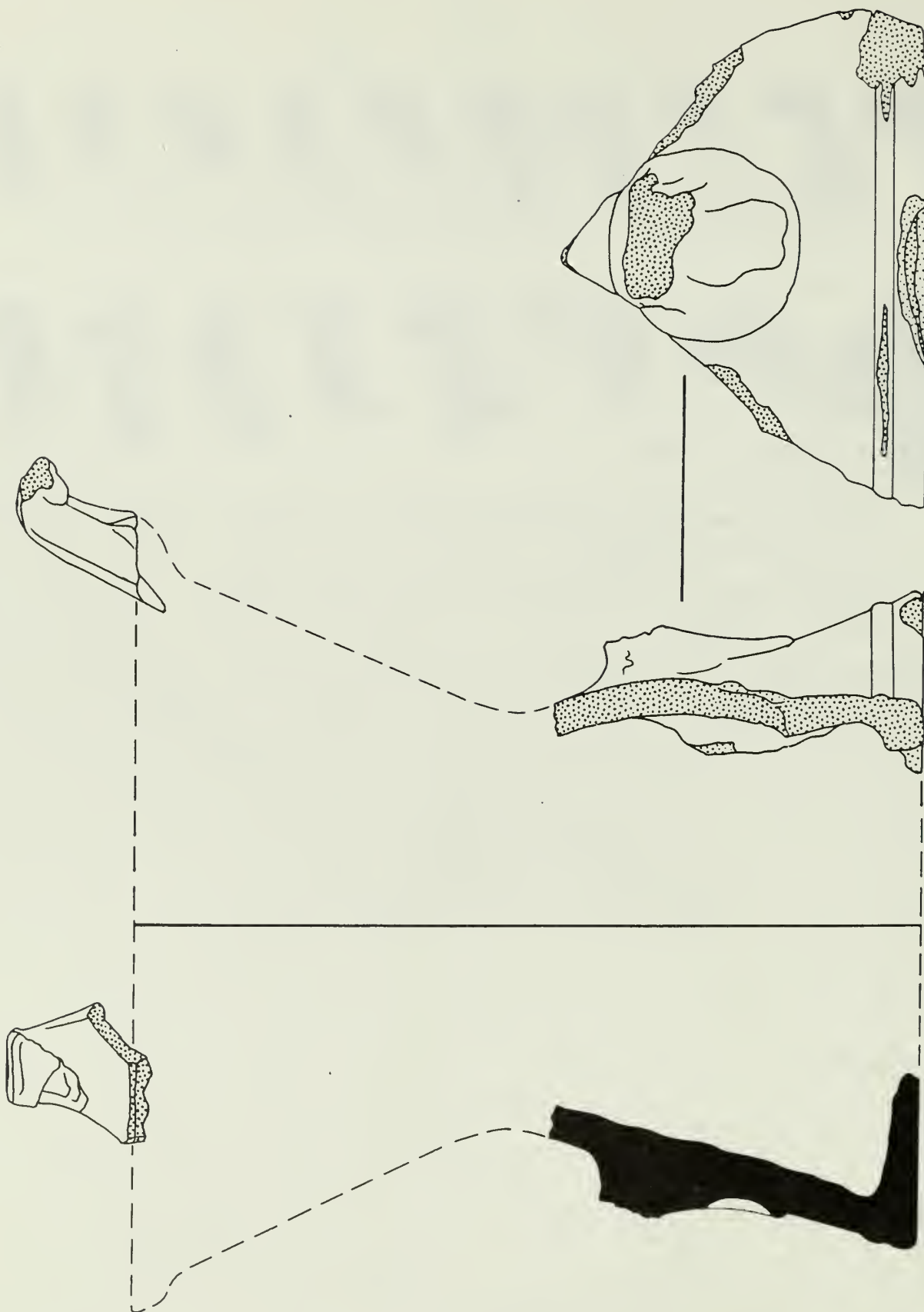


Figure 168. Chafing dish.

CHAMBER POT

Definition: an open vessel with curved wall and everted rim with strap handle attached to sturdy rim. Turned and raised footring.

Ware: earthenware, bisque and glazed.
stoneware, glazed.

Description:

Color - earthenware: glaze varies from orange-red to red-brown to dark brown with darker flecking due to impurities in glaze and kiln condition.

Stoneware varies in color from dark brown on upper slipped sections of pots and greys or greenish-greys on lower portions.

Glaze - earthenwares are lead glazed on all surfaces. Stonewares are salt glazed on interior and exterior, but thinner salting appears on the inside.

Slip/Wash - on stoneware only. The upper one-half to two-thirds has been dipped in iron oxide slip.

Decoration - both wares exhibit two or three ornamental grooves going around the pot, beginning c. one inch below the rim.

Handle - stonewares exhibit one wide strap handle applied to rim with curve at level of rim or below. Lower part of handle applied to lower curved wall of vessel. No good examples of earthenware handles were found, except for one basal end on one sherd.

Rim and base variants - none discernable.

Marks-Stamped - none.

Size - a nearly complete stoneware chamber pot has a capacity of two quarts and weighs 2 lbs. 8 ounces. It measures as follows (in inches): height - 5-3/4; outer rim diameter - 6-1/2; basal diameter - 3-1/2.

Size variations: height - 4-1/2 inches (earthenware) to 5-3/4 inches (stoneware); diameter - earthenware rims 6 to 10 inches, with the majority 8 inches, and stoneware rims 5-1/2 to 8 inches, the majority measuring 7 inches; basal diameters, 3-1/2 to 5 inches.

Discussion: chamber pots were very difficult to identify as other forms had the same rim and foot. The handles, when attached to the rim, were the only positive identification. The diameter range of 5-1/2 to 10 inches may represent child and adult sizes.

One vessel is identified as a possible chamber pot (Figures 171, 172). This handleless earthenware vessel is lead glazed on all surfaces and measures 9 inches in height, 7 inches in interior diameter and 10 inches in exterior diameter at the rim. The broad rim measures $1\frac{3}{4}$ inches in width. Similar forms are still used by some inhabitants of St. Eustatius, Netherlands Antilles, as chamber pots.

Illustrations:

Figures 169-175.

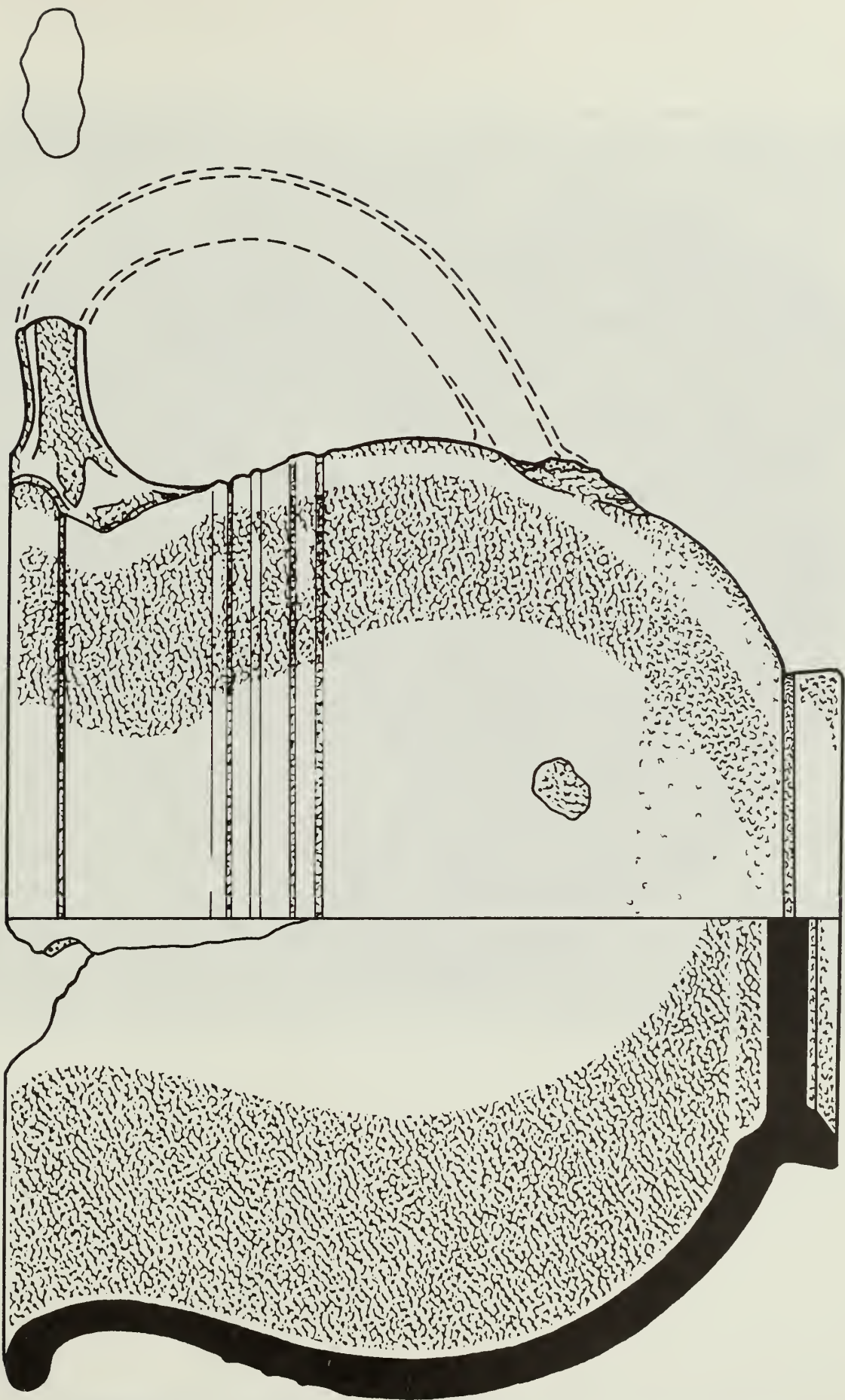


FIGURE 169. CHAMBER POT, SALT GLAZED STONEWARE.



FIGURE 170. CHAMBER POT, SALT GLAZED STONEWARE.

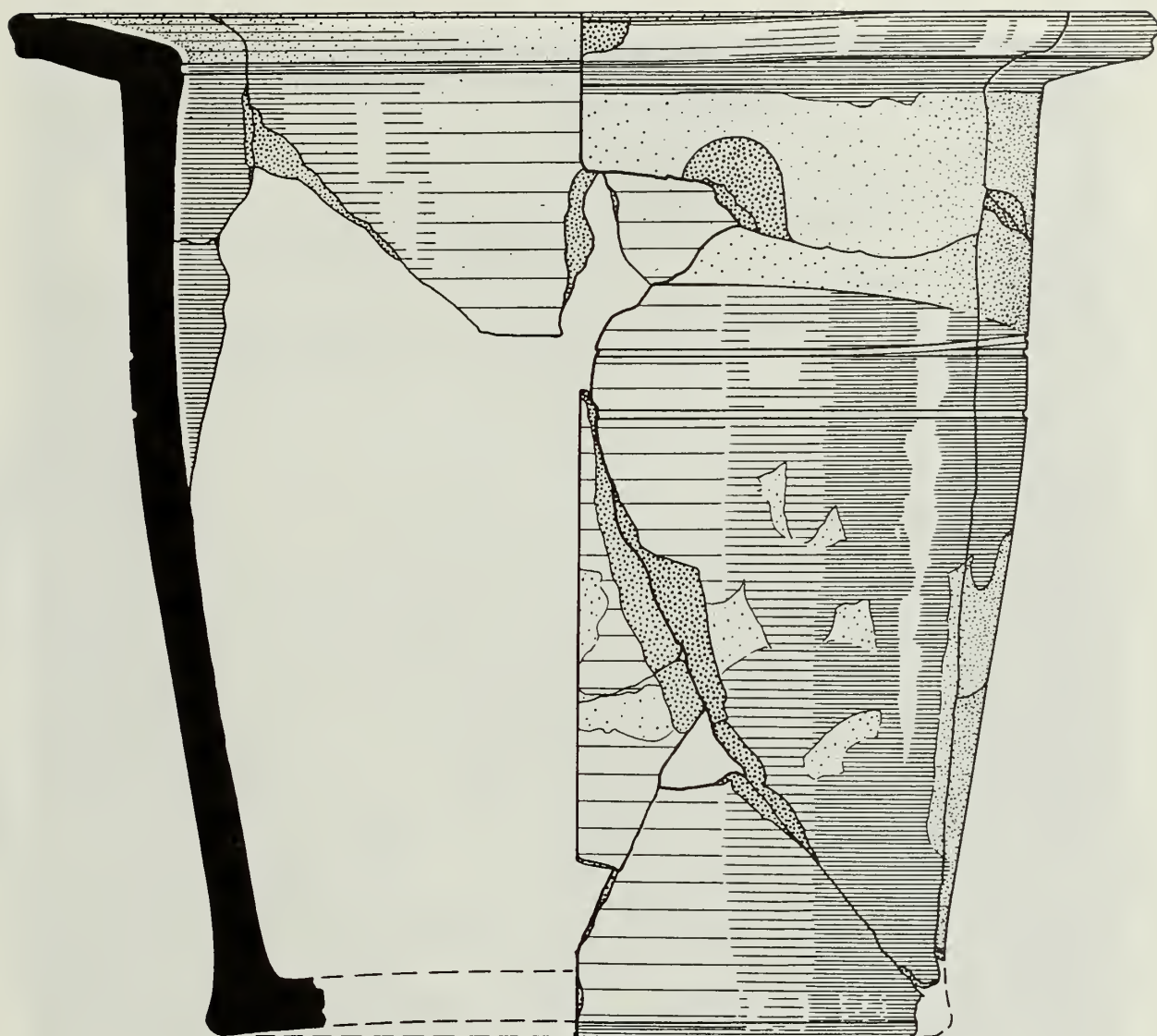


FIGURE 171. POSSIBLE CHAMBER POT, LEAD GLAZED.



FIGURE 172. POSSIBLE CHAMBER POT, LEAD GLAZED EARTHENWARE.

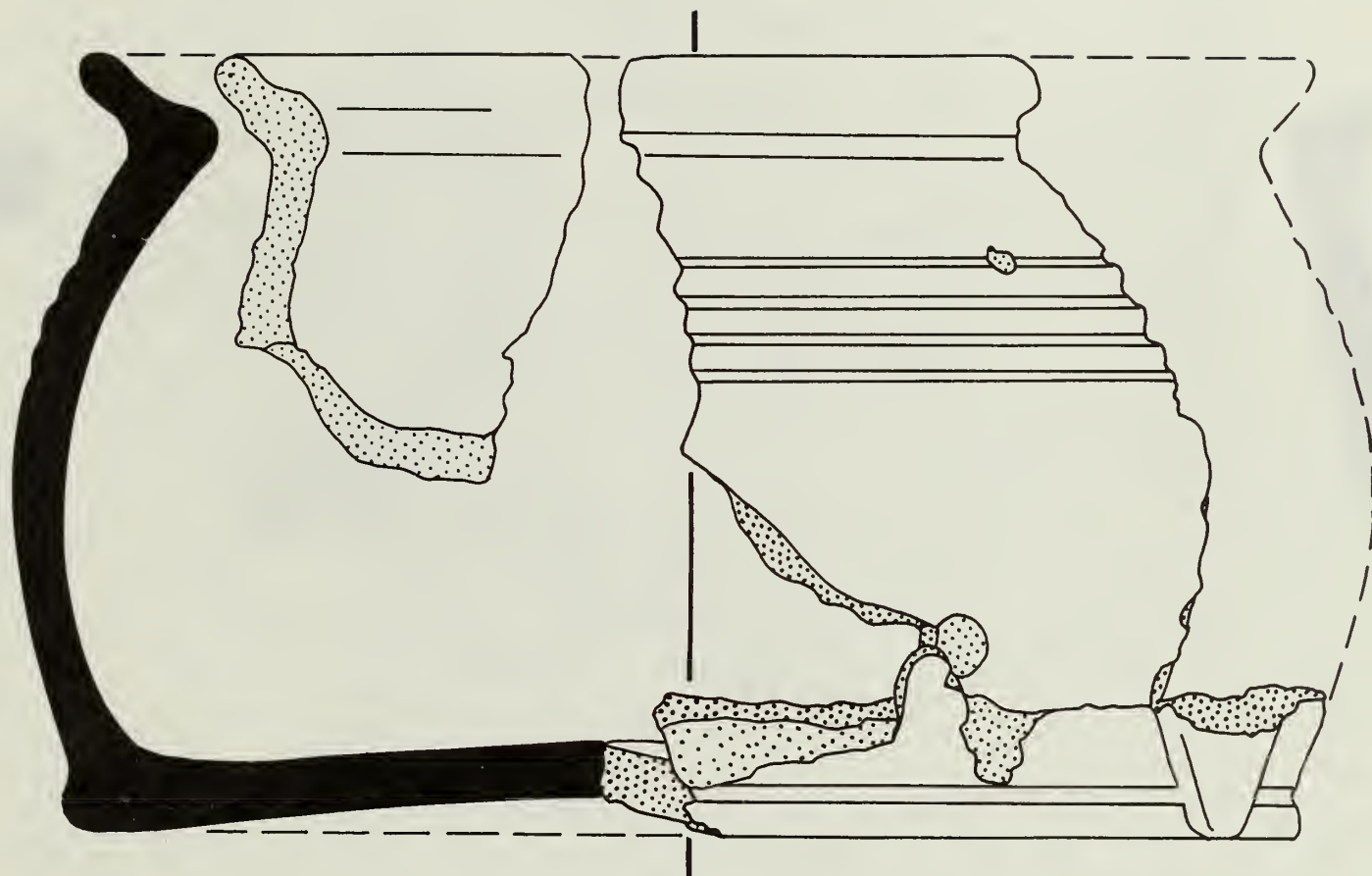


FIGURE 173. CHAMBER POT, EARTHENWARE.

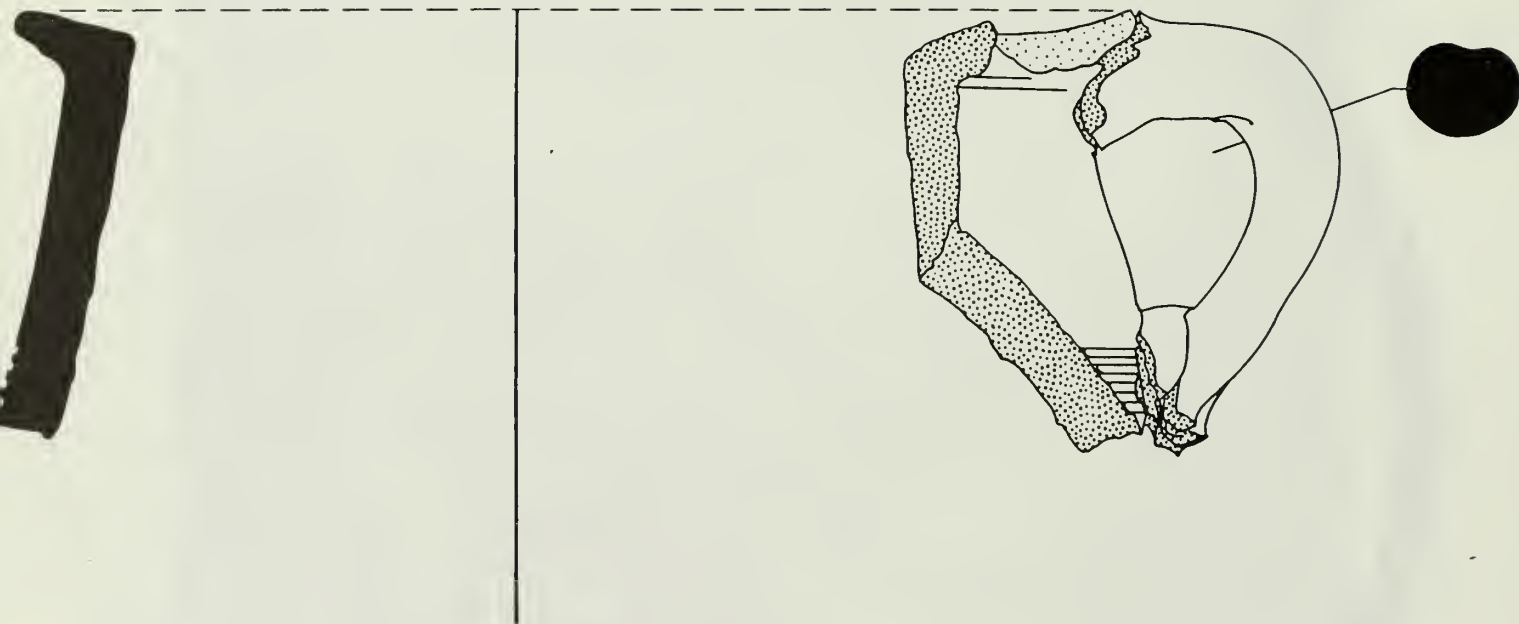


FIGURE 174. CHAMBER POT, EARTHENWARE.

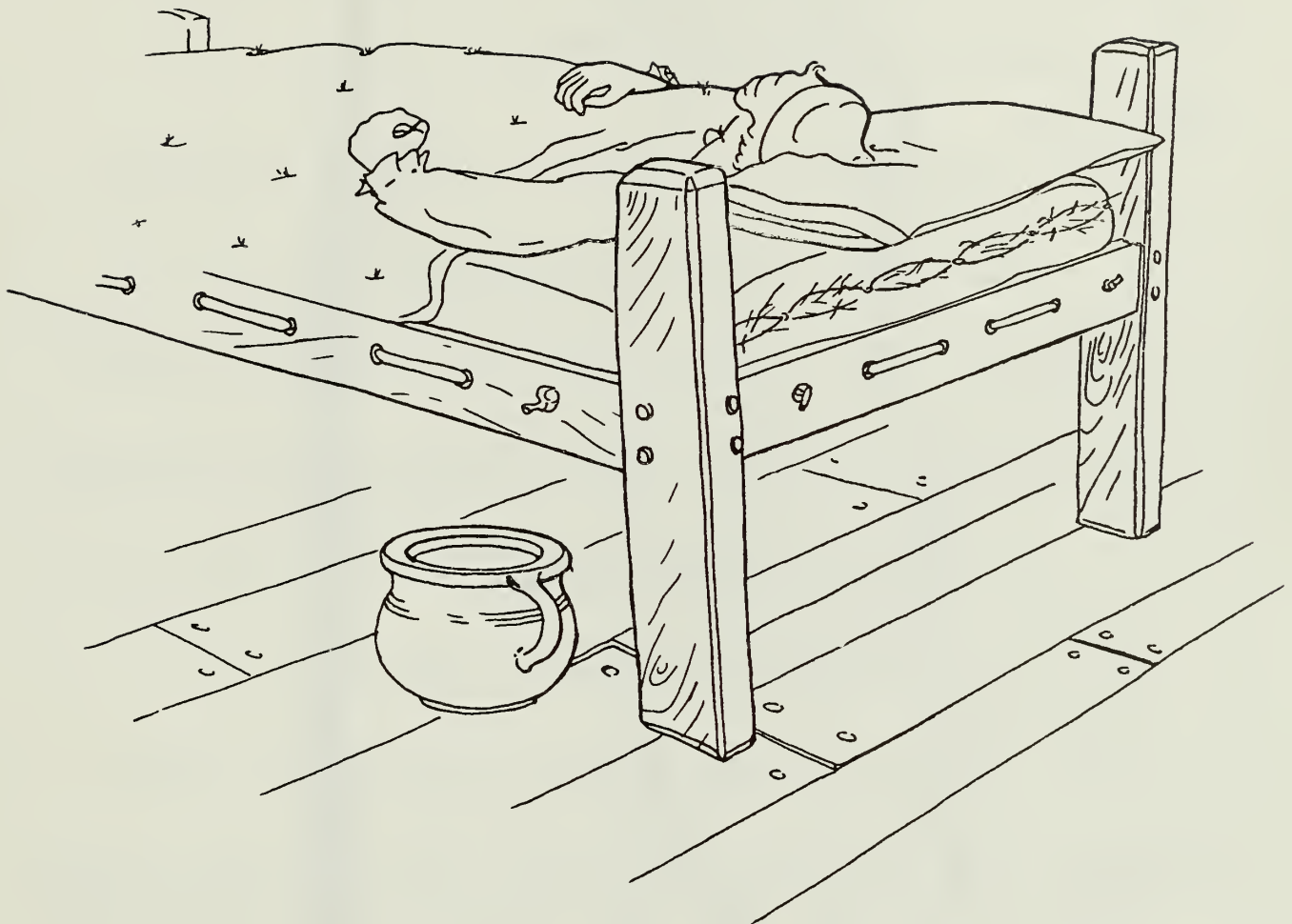


FIGURE 175. CHAMBER POT READY FOR USE.

CHURN

Definition: a tall cylindrical form, graduated in size from a large bottom to a smaller top.

Ware: earthenware, bisque and glazed.
stoneware, glazed.

Description:

Color - earthenware - red-orange to red-brown with darker flecking.

Stoneware - mottled brown on top half and grey with some brown mottling on bottom half

Glaze - both earthenware and stoneware glazed on all surfaces.

Slip/Wash - none on earthenware. Stoneware churns exhibit slip on the top half.

Decoration - earthenware churns have incised decoration, consisting of leaf and possible flower motifs. Leaf used in design is similar to stove tile leaf.

On stoneware, four groups of four incised lines appear at intervals from rim to base.

Handles - none.

Rim and base variants - not enough information.

Marks-Stamps - none

Size - one complete churn measures as follows (in inches):
17-1/2 (height) by 6 (rim) by 8 (base).

Discussion: the Yorktown churns may be the earliest clay butter churns made in America. In England, up to the mid-nineteenth century, most churns were cooper-made from oak staves bound with iron, but from that time on many potters began to produce ceramic examples based on existing wooden shapes.

In the Yorktown pottery site, one lead glazed earthenware sherd may be a churn lid. It is of the right size and it has a hole in the middle for a wooden pole-paddle. (Figure 179)

Illustrations:

Figures 176-179.

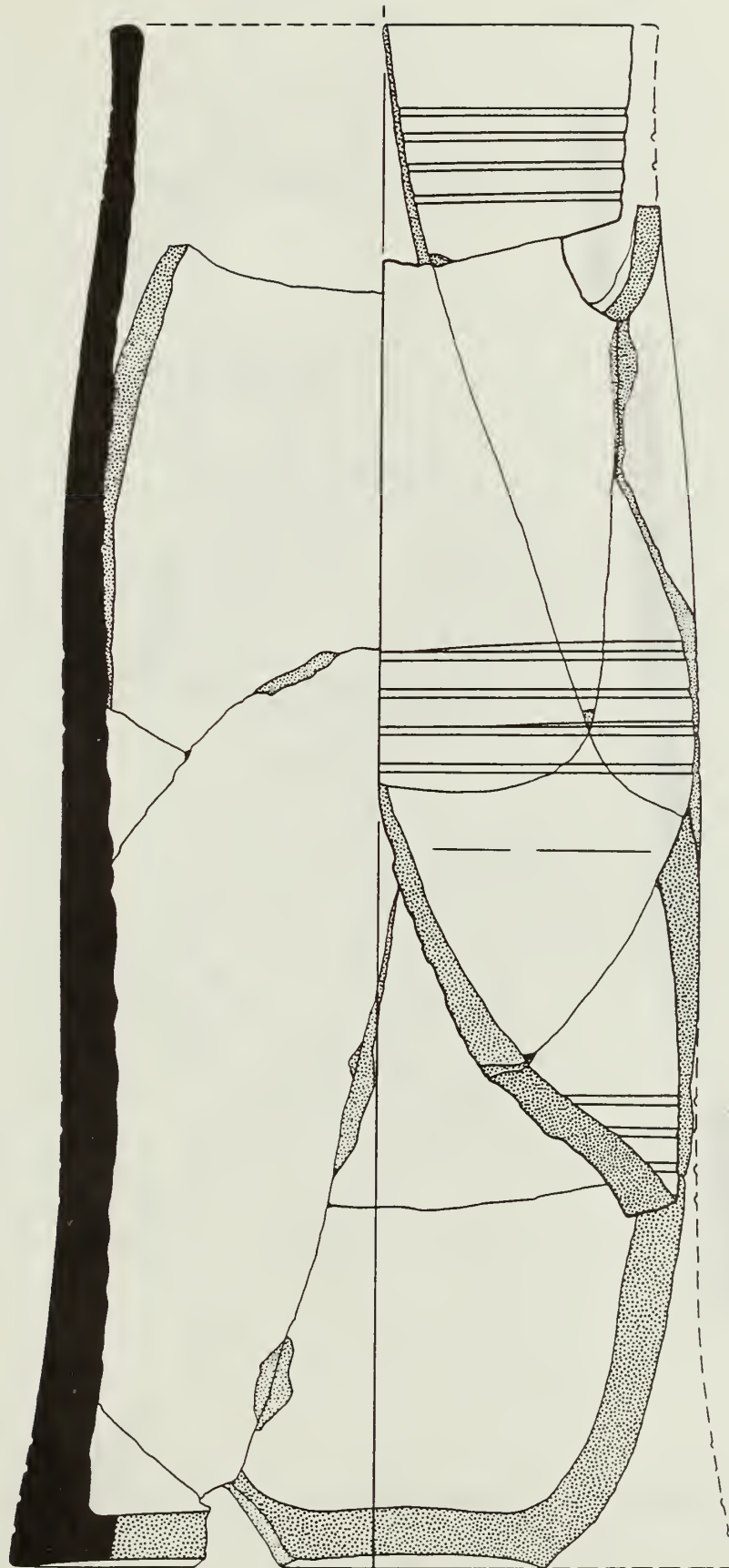


FIGURE 176. CHURN, SALT GLAZED STONEWARE.

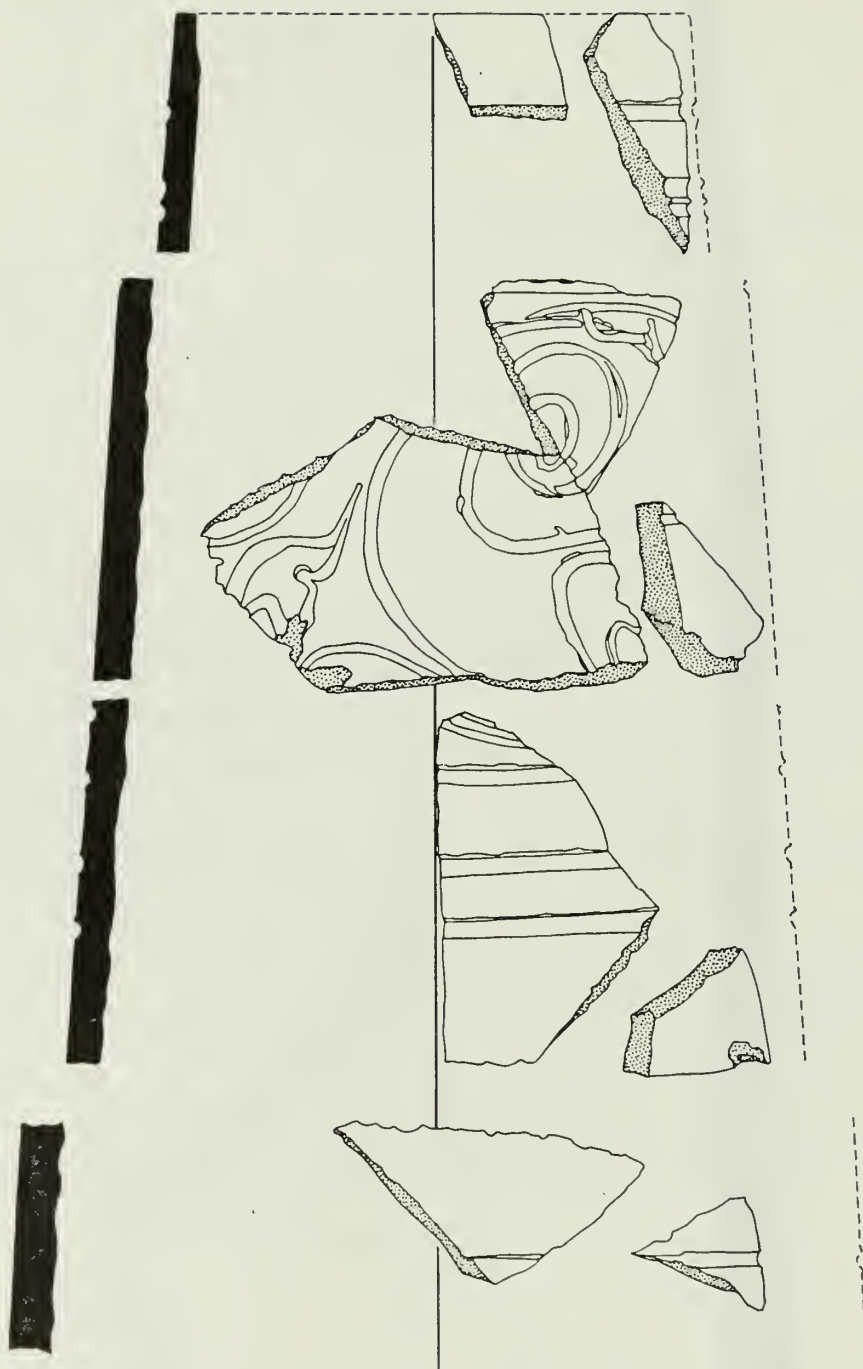


Figure 177. Churn with incised decoration.

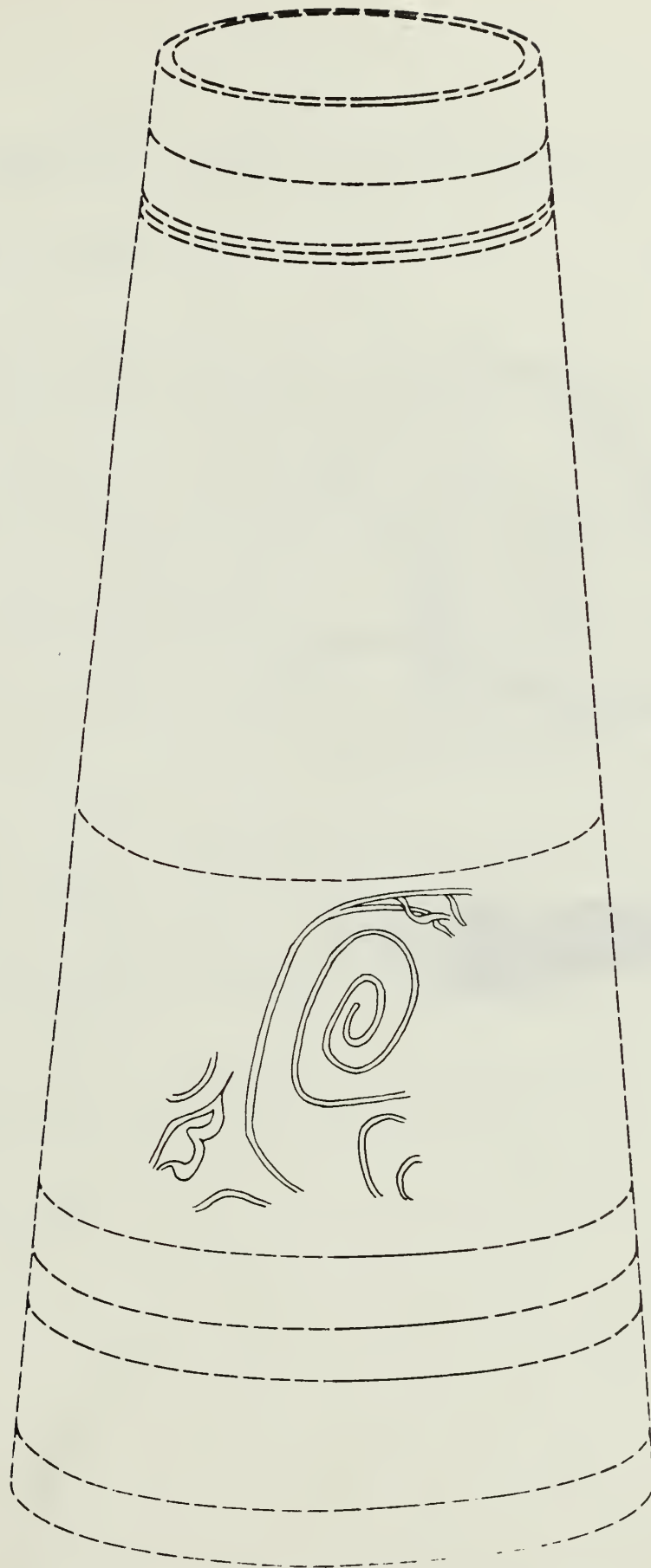


FIGURE 178. RECONSTRUCTION OF CHURN SHOWN IN FIG. 177

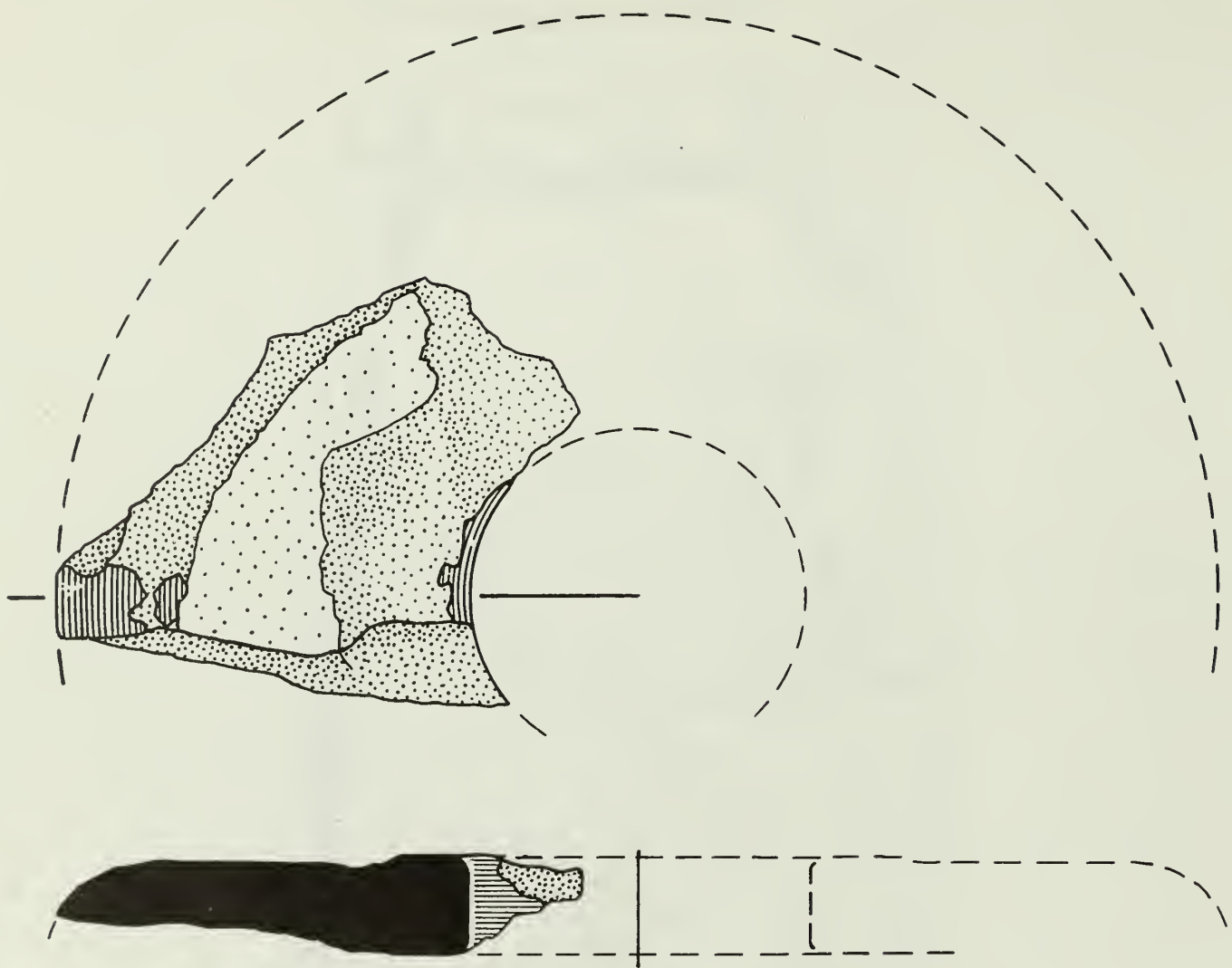


FIGURE 179. CHURN LID WITH HOLE IN CENTER.

COLANDER

Definition: an open bowl-shaped vessel with holes punched through the lower side walls and base for drainage.

Ware: earthenware, bisque and glazed.
stoneware, glazed.

Description:

Color - earthenware glazes vary from red-orange to red-brown to dark brown with darker flecking due to thickness of glaze and kiln atmosphere.

Stoneware examples are dark brown in color.

Glaze - earthenwares are all lead glazed inside and outside except one which is glazed on the inside only.

Stonewares - salt glazed on all sides.

Slip/Wash - none on earthenware. On stoneware, iron oxide was probably applied to give the dark brown color.

Decoration - on earthenware sherds, a series of several cordoned lines are visible.

No decoration is discernable on stoneware sherds.

Handles - none found.

Rim Variants - three rim types are discernable in the earthenware sample, but only one in the stonewares.

Marks-Stamps - none.

Size - very few measurements are possible, due to the small size of the sherds. On earthenwares, one sherd has a basal diameter of 4 inches; rim measurements vary between 7 and 12 inches.

Discussion: Holes were punched in each vessel from the inside to the outside when the clay was leather hard.

Illustrations:

Figures 152, 180



FIGURE 180. COLANDERS.

CREAM POT

Definition: a tall, usually vertical side container with nearly equal basal and rim diameters.

Ware: earthenware, bisque and glazed.

Description:

Color - glaze varies from red-orange to red-brown to dark brown with darker flecking.

Glaze - lead glazed on all surfaces.

Slip/Wash - none.

Decoration - eight bisque cream pots have a brushed-on decoration consisting of red-brown bands with a wavy line in-between. One cream pot fragment and several other sherds exhibit incised lettering (Figure 188).

Handles - usually none, but one variant has short rounded handles (Figure 187).

Rim Variants - nine slightly differing rim styles are present in our sample (Figure 189).

Marks-Stamps - none.

Size - height varies from 4 to 10 inches on measurable vessels. Diameter varies from 5 to 11 inches, with the majority between 6 and 8 inches. Some measurable individual pot sizes (height followed by diameter): 10 x 8 inches (Figure 181); 6 x 6-1/2 (Figure 182); 5 x 6 (Figures 183, 184); 4 x 7 (Figure 186); 6-1/4 x 7 (Figure 185).

Discussion: some cream pots may have been called butter pots. Rogers' inventory of 1739 lists "9 large Cream potts 4/6."

Illustrations;

Figures 181-189.

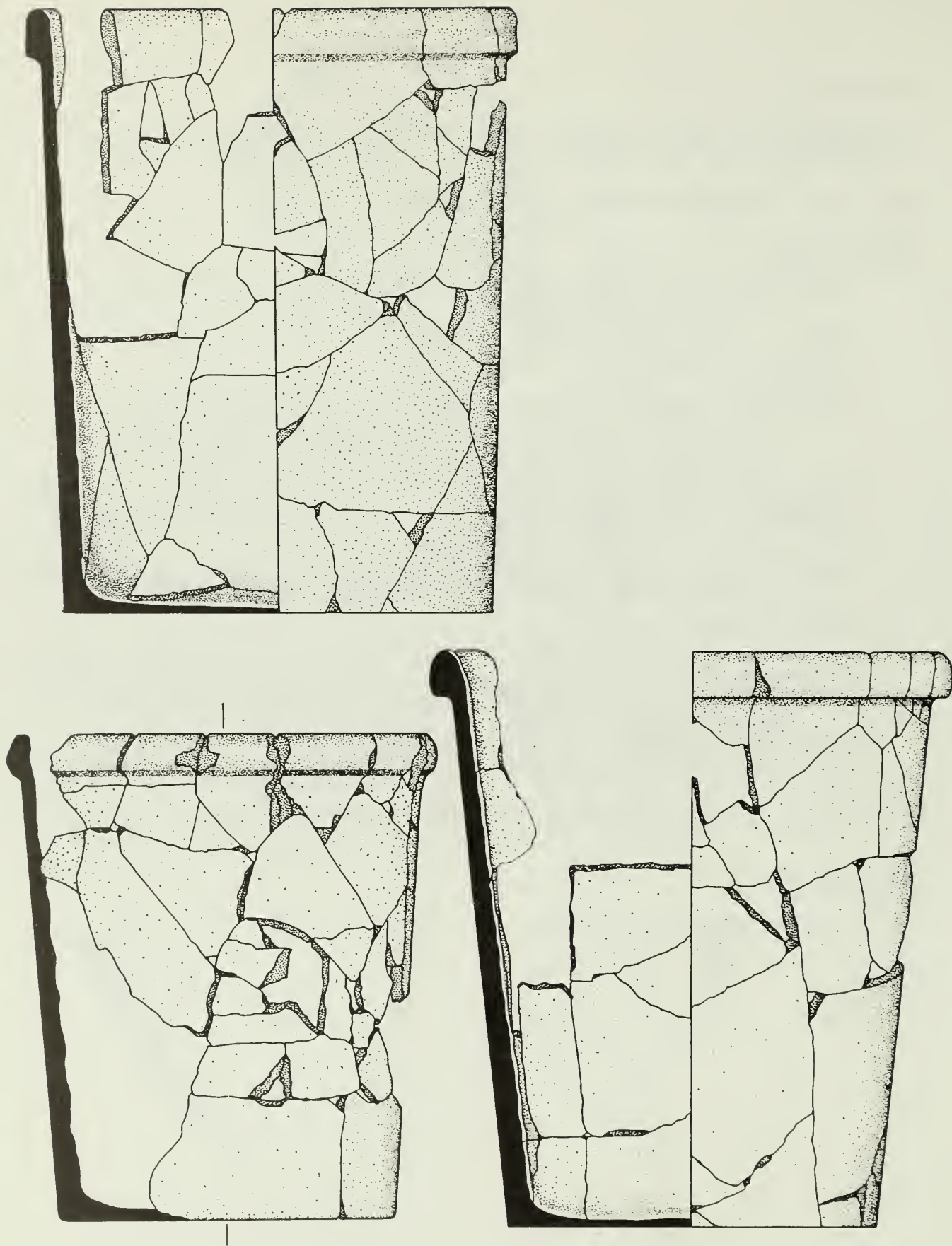


FIGURE 181. CREAM POTS, BISQUE EARTHENWARE.

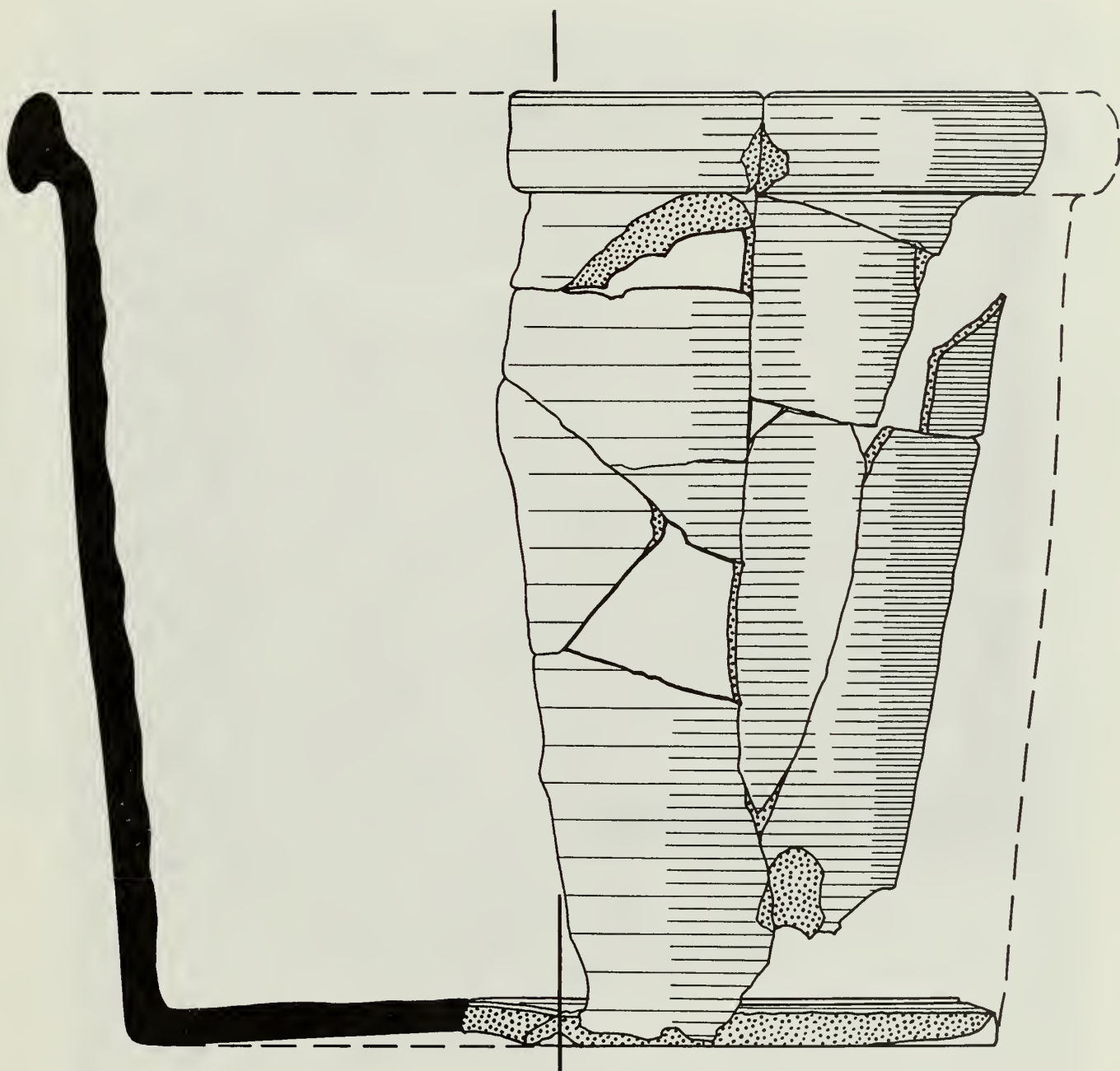


Figure 182. Cream Pot, Lead Glazed Earthenware.

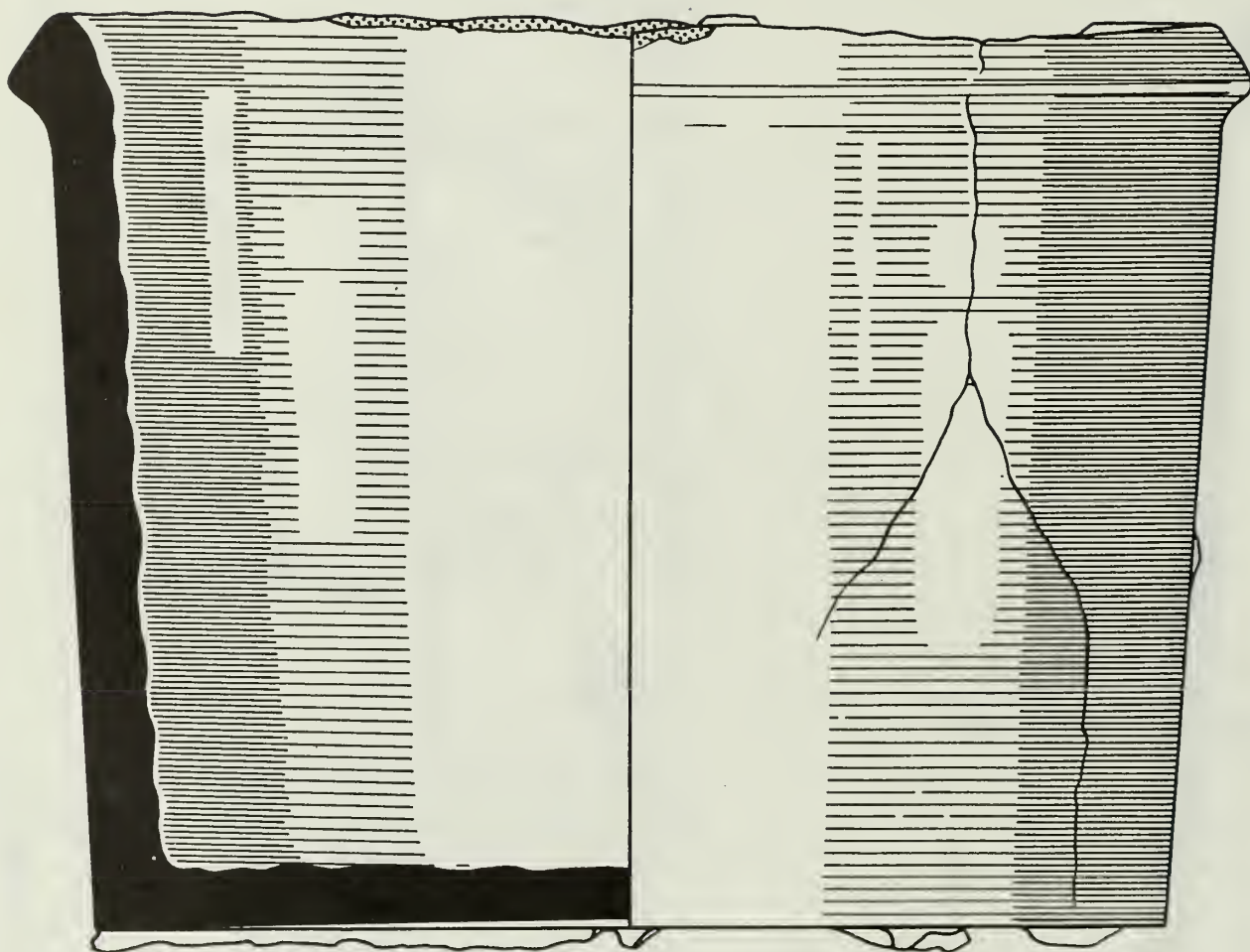


FIGURE 183. CREAM POT, LEAD GLAZED EARTHENWARE.

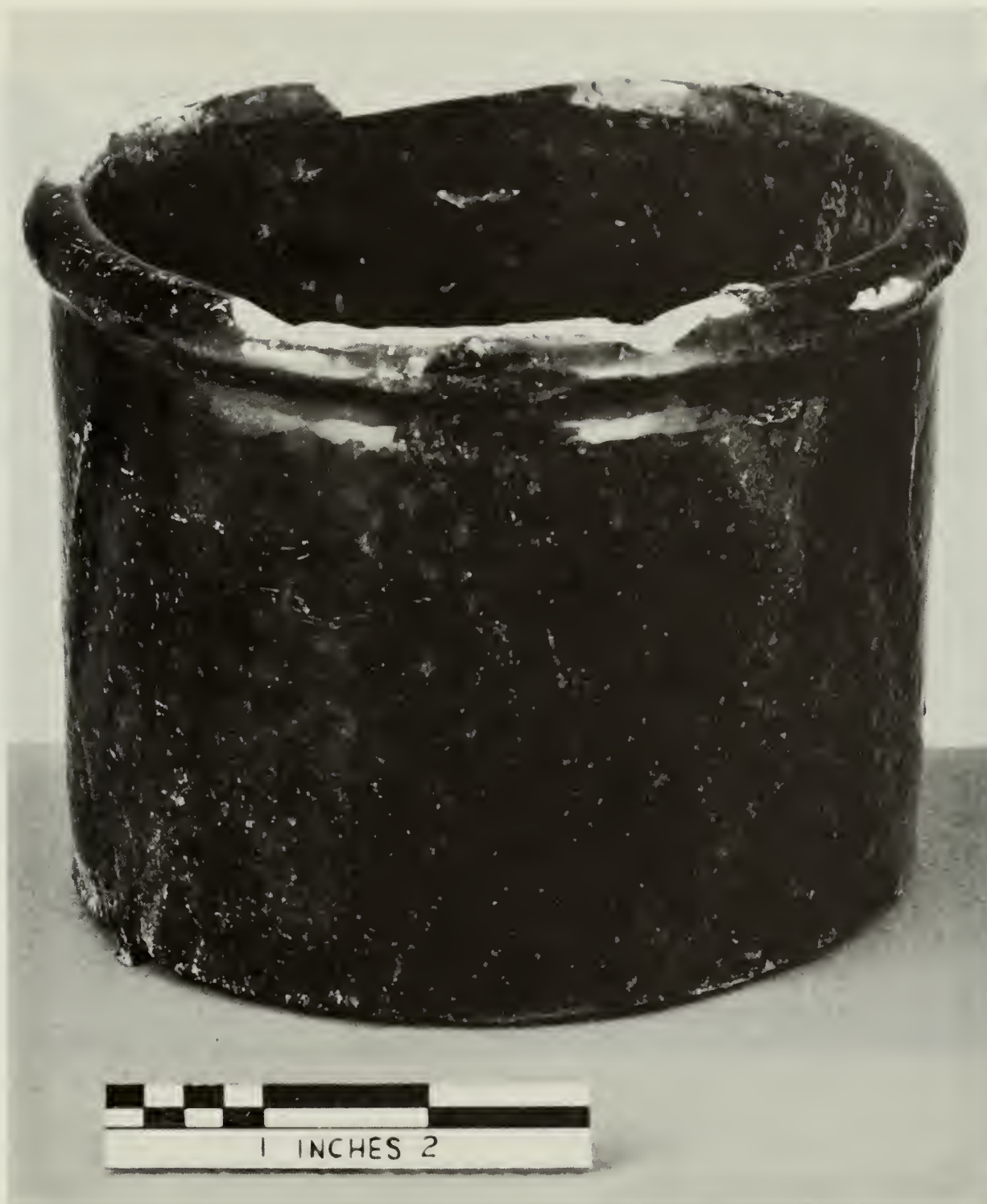


FIGURE 184. CREAM POT, LEAD GLAZED EARTHENWARE.

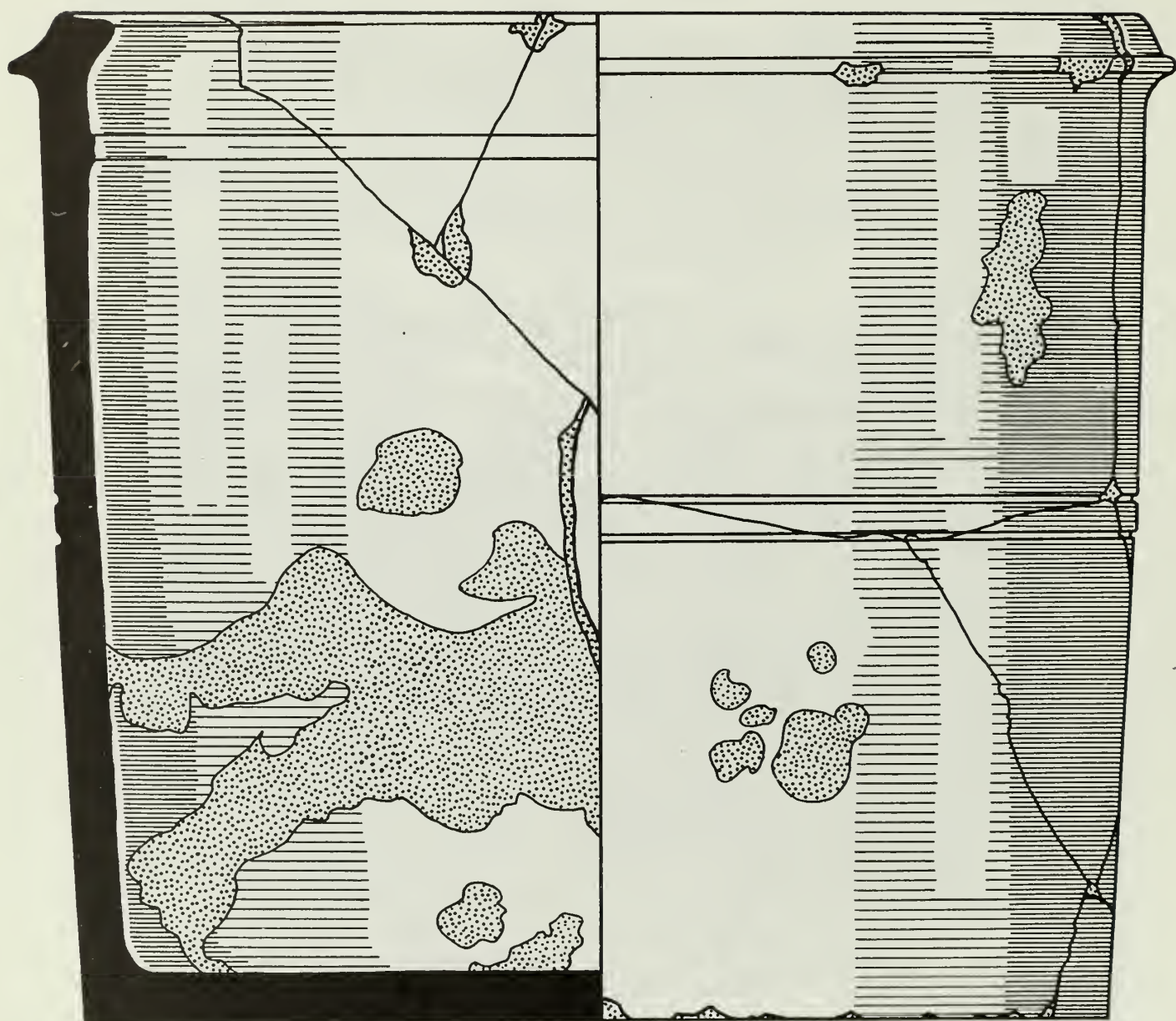


FIGURE 185. CREAM POT, LEAD GLAZED EARTHENWARE.

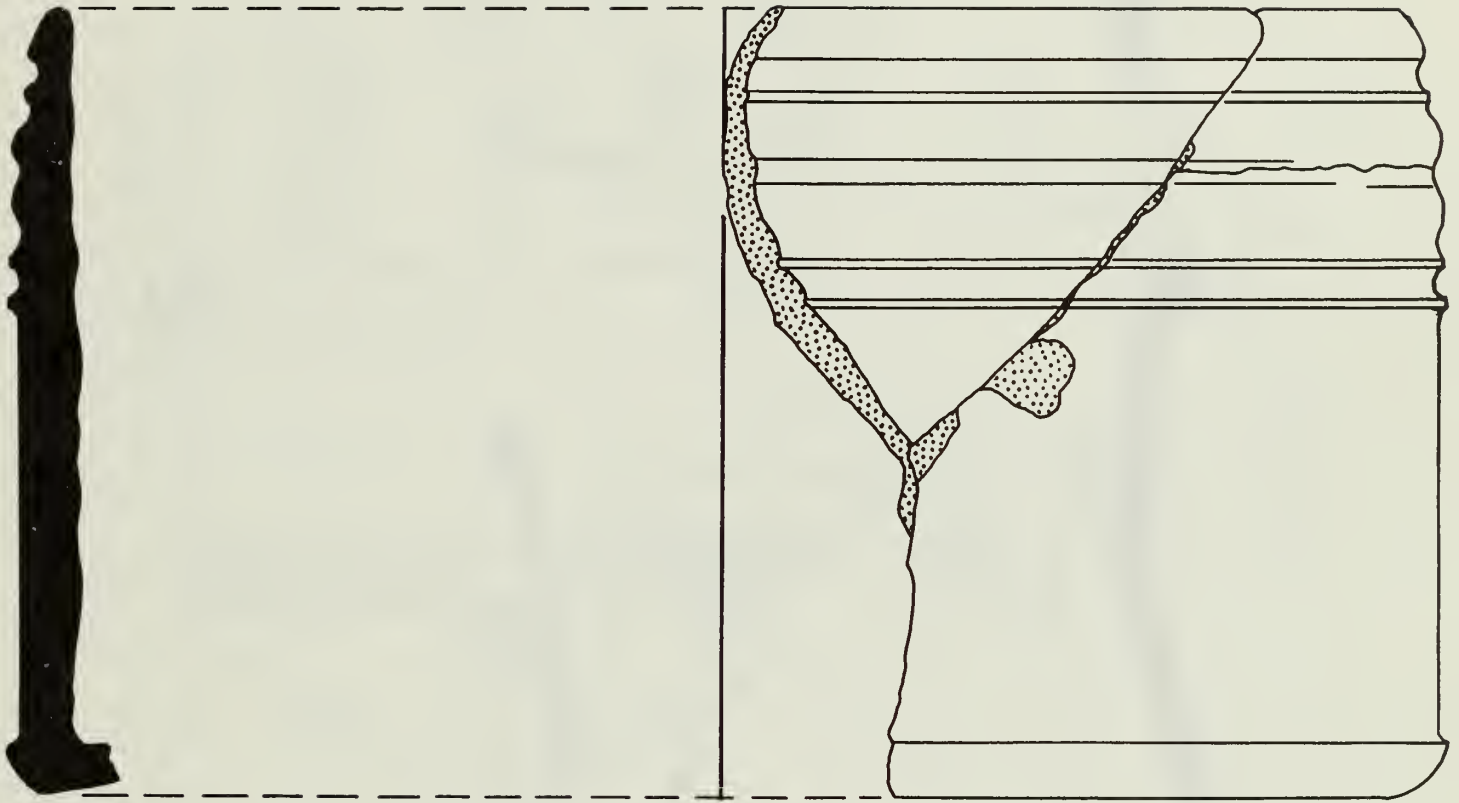


FIGURE 186. CREAM POT, BISQUE.

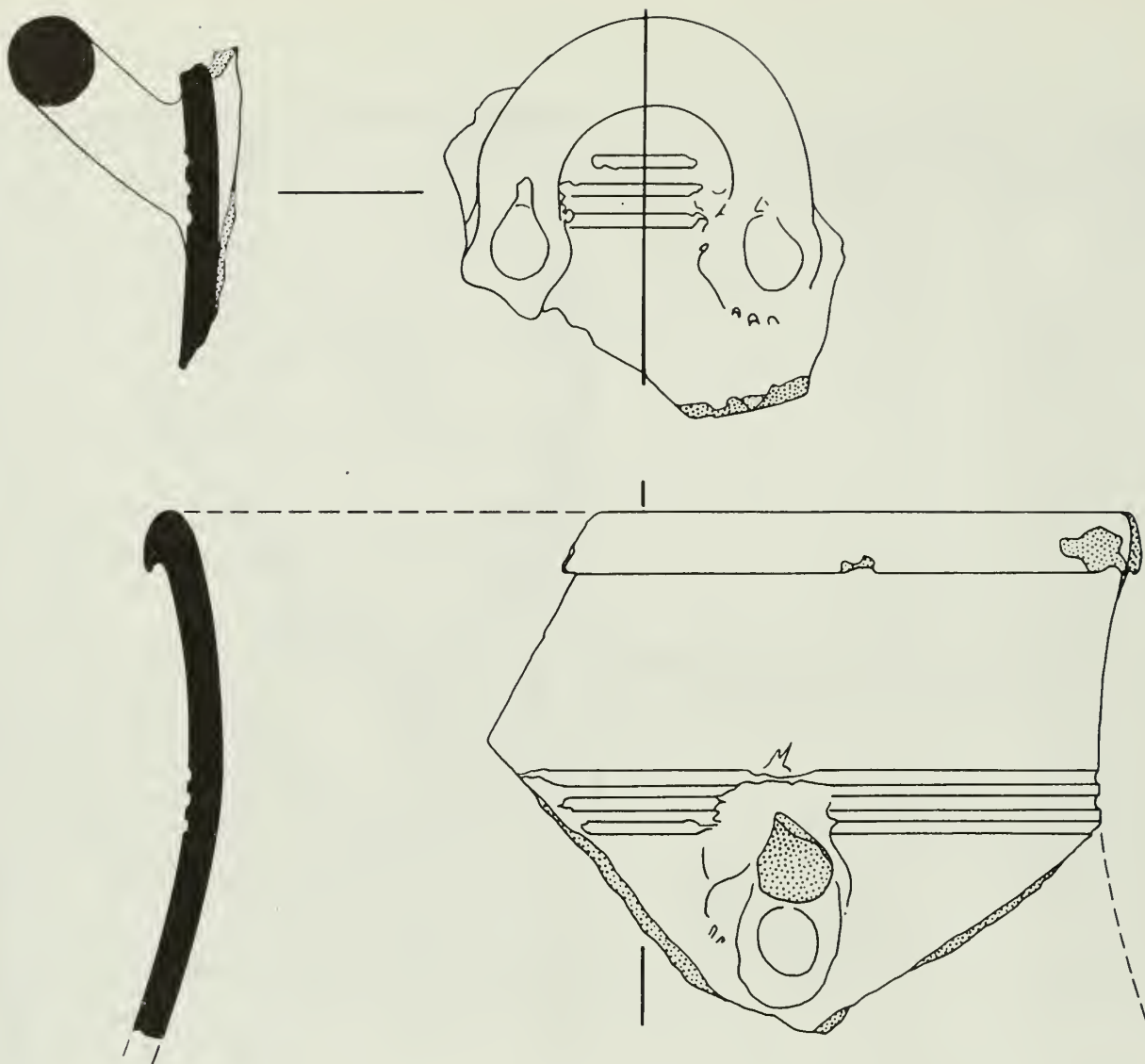


FIGURE 187. CREAM POT, BISQUE EARTHENWARE.

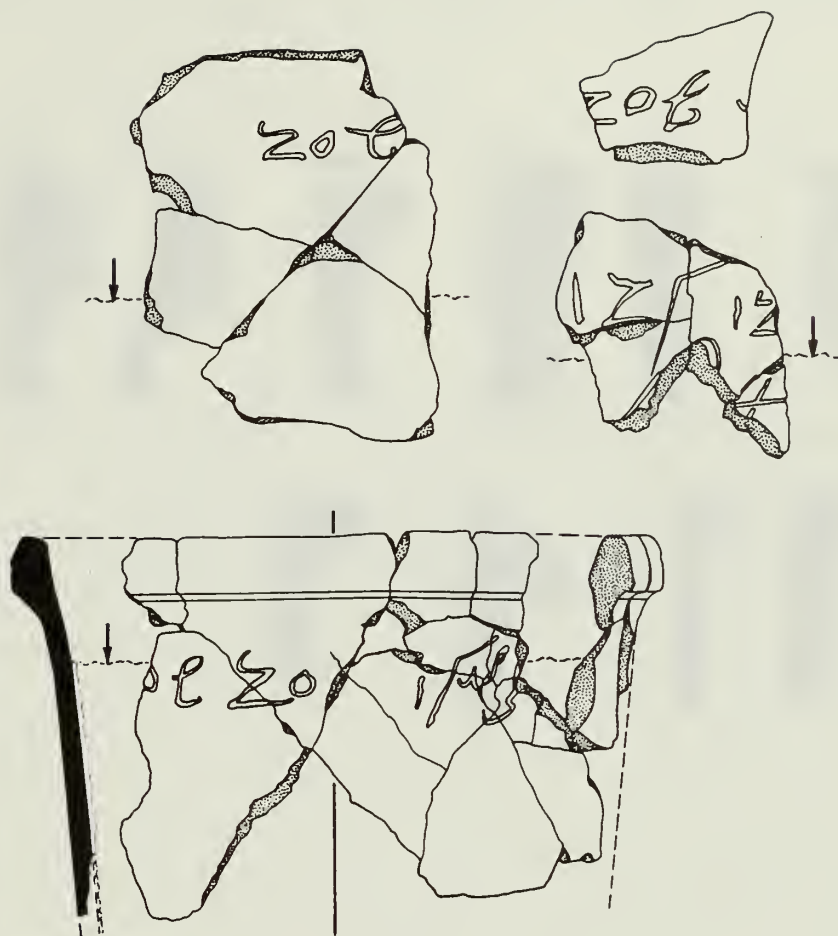


FIGURE 188. CREAM POTS WITH INCISED LETTERING.
VESSELS ARE BISQUE.

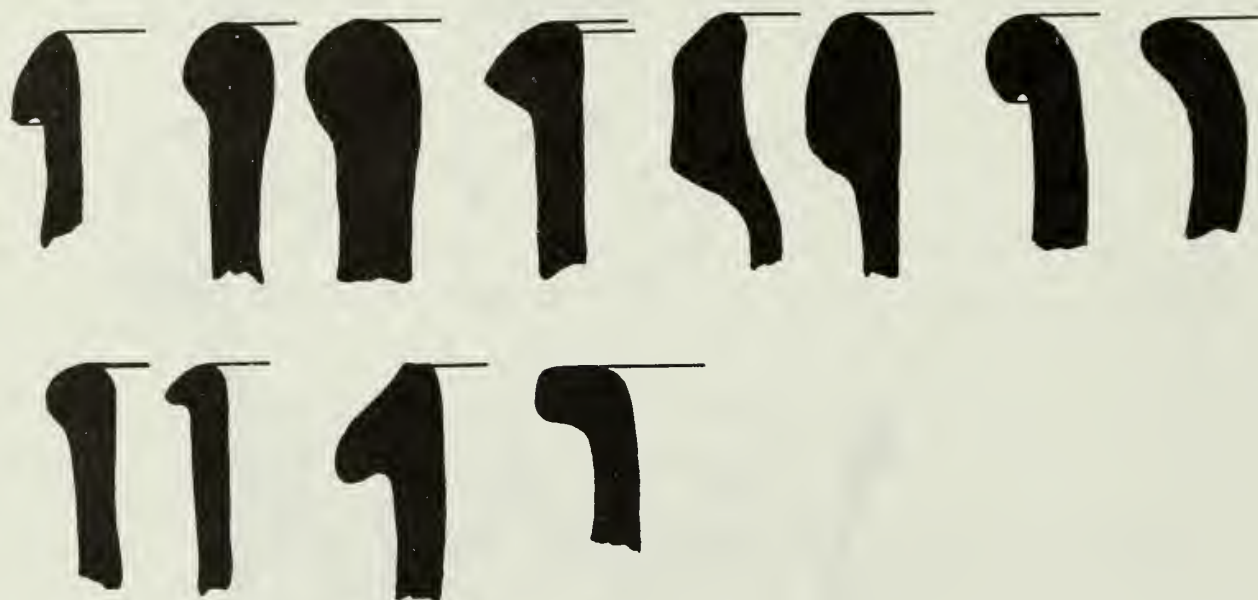


FIGURE 189. CREAM POT RIM FORMS.
BISQUE AND GLAZED EARTHENWARE.

FLOOR TILE

Definition: a square, flat ceramic form used as a floor covering or for construction purposes.

Ware: stoneware, bisque and glazed.

Description:

Color - brown to grey.

Glaze - salt glazed on all surfaces.

Slip/Wash - none.

Decoration - none.

Marks-Stamped - none.

Size - each floor tile measured approximately 7-7/8 inches square.

Discussion: the clay color and salting texture is typical of Yorktown stoneware and the finding of 4 bisque tile sherds gives positive evidence of their local manufacture.

Illustration:

Figure 190

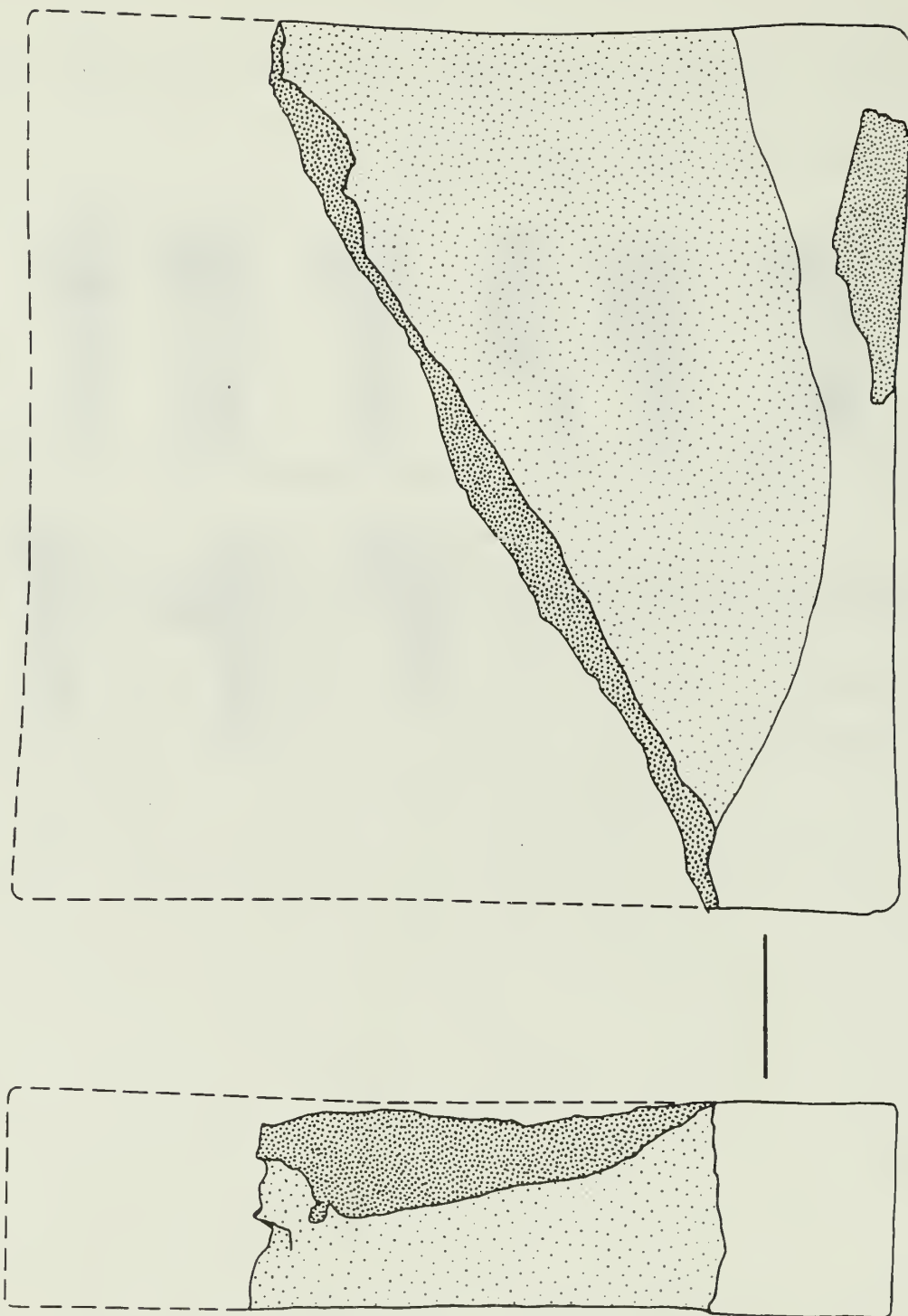


FIGURE 190. FLOOR TILE, SALT GLAZED.

FUNNEL

Definition: a bowl-like form with two open ends, one end being smaller than the other, for purposes of channeling ingredients from one container to another.

Ware: earthenware, bisque and glazed.
stoneware, glazed (possible).

Description:

Color - earthenwares are orange-red to red-brown with darker flecking.

Glaze - lead glazed on all surfaces.

Slip/Wash - none.

Decoration - none.

Handles - none. However, there is one hole under the rim for hanging purposes.

Marks-Stamps - none.

Size - dimensions approximate the following (in inches): 3-1/2 (height) by 4 and 7 (smaller and larger outer rim diameters). Two complete funnels found in Williamsburg, in mid-18th C. contexts, have³ rim diameters (large end) of 18.25 and 18.42 centimeters.

Discussion: there were only two top rim to base rim funnel sherds recovered from the pottery site. There were probably more found but positive identification could not be made because the wide section rim is identical to one type bowl rim and the small end is similar to another type of bowl rim.

Illustrations:

Figure 191.

³Watkins, C. Malcolm and Ivor Noel Hume, The "Poor Potter" of Yorktown, U.S. National Museum Bulletin No. 249 (Washington, D.C., 1967), 105.

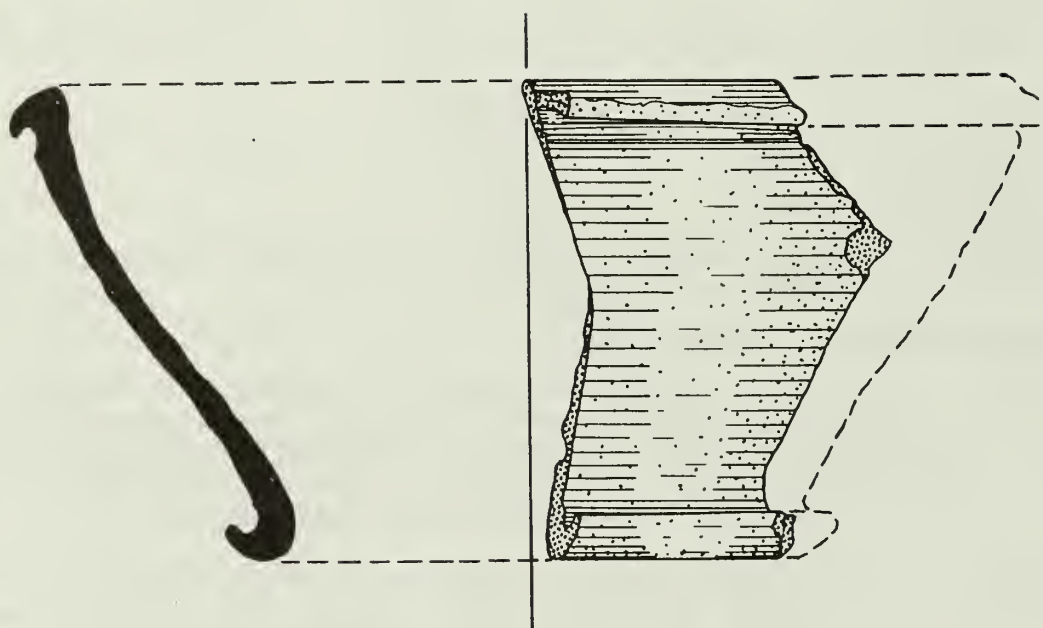


FIGURE 191. FUNNEL, LEAD GLAZED.

JAR

Definition: a tall container with out-sloping walls and out-flaring
tims to accommodate a lid or cloth cover tied with a string.

Ware: earthenware, bisque and glazed.
stoneware, bisque and glazed.

Description:

Color - glazed earthenware is red-orange, red-brown to dark
brown with darker fleckings.

Stoneware is brown in color where dipped in iron oxide;
various shades of grey or grey-brown on lower, undipped
areas.

Glaze - lead glazed on all surface.

Stoneware heavily salt-glazed on the exterior, with less
salting on the interior.

Slip/Wash - upper portion of stoneware jars are dipped in iron
oxide.

Decoration - on stoneware, two or three incised lines encircle
the shoulder approximately one-third of the distance
below the rim.

Handles - none on earthenware jars; stoneware jars usually do
not have handles except for two ear-type handles found
on two large storage jars.

Rim Variants - variations shown in Figure 197.

Marks-Stamps - none.

Size - earthenware too incomplete to measure height;
stoneware varies between 7-1/2 inches and 17 inches in
height. Rim diameter: earthenware - 2 to 11-1/2 inches,
with the majority measuring 8 inches. Stoneware: rim
diameters vary between 3 to 11 inches, with the majority
measuring 6 inches.

One stoneware jar 10 inches in height weighed about 5-1/2
pounds.

Illustrations:

Figure 192-197.

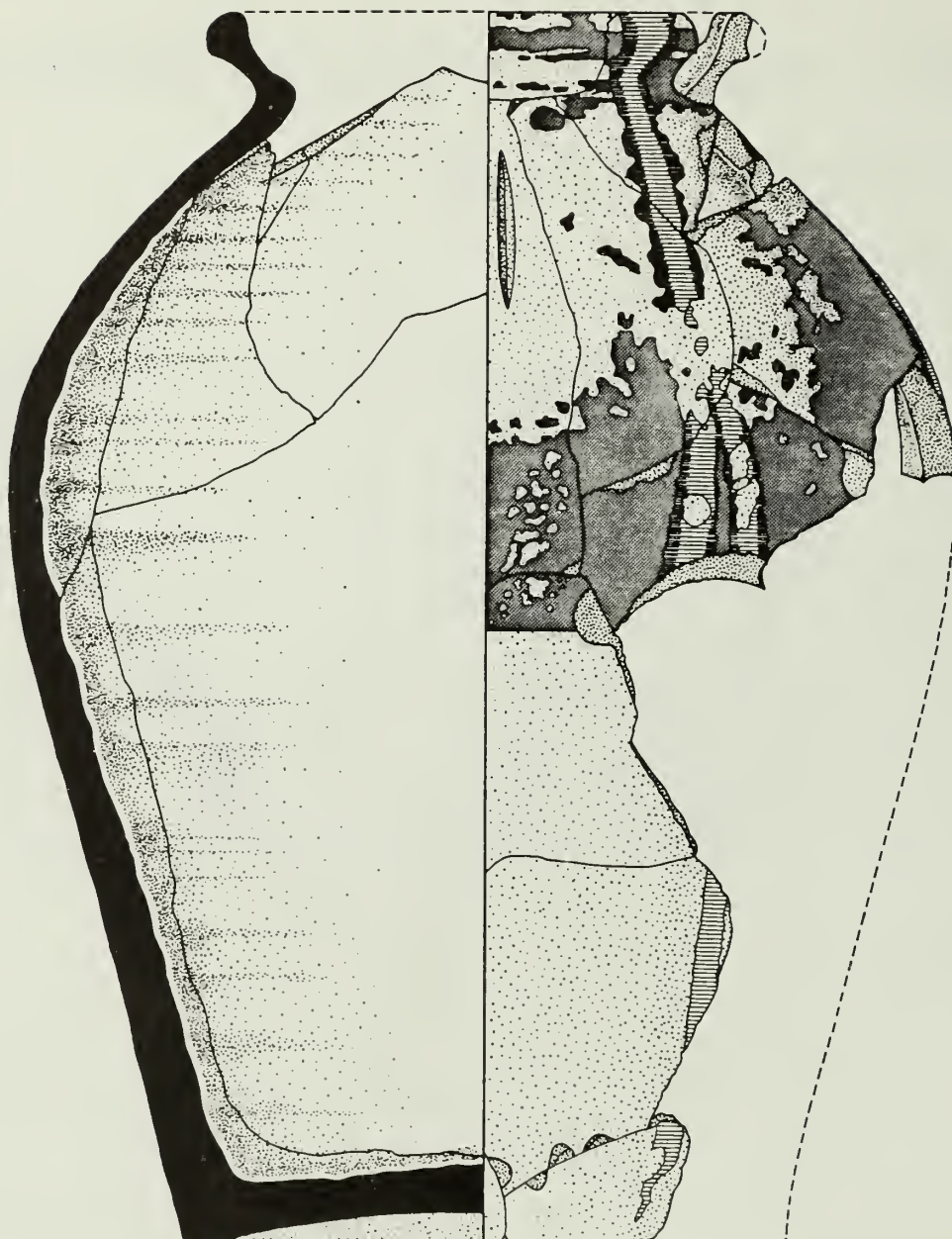


FIGURE 192. STORAGE JAR, BISQUE STONEWARE
WITH LEAD GLAZED RUNS.



FIGURE 193. STORAGE JAR, BISQUE STONEWARE
WITH LEAD GLAZE RUN.

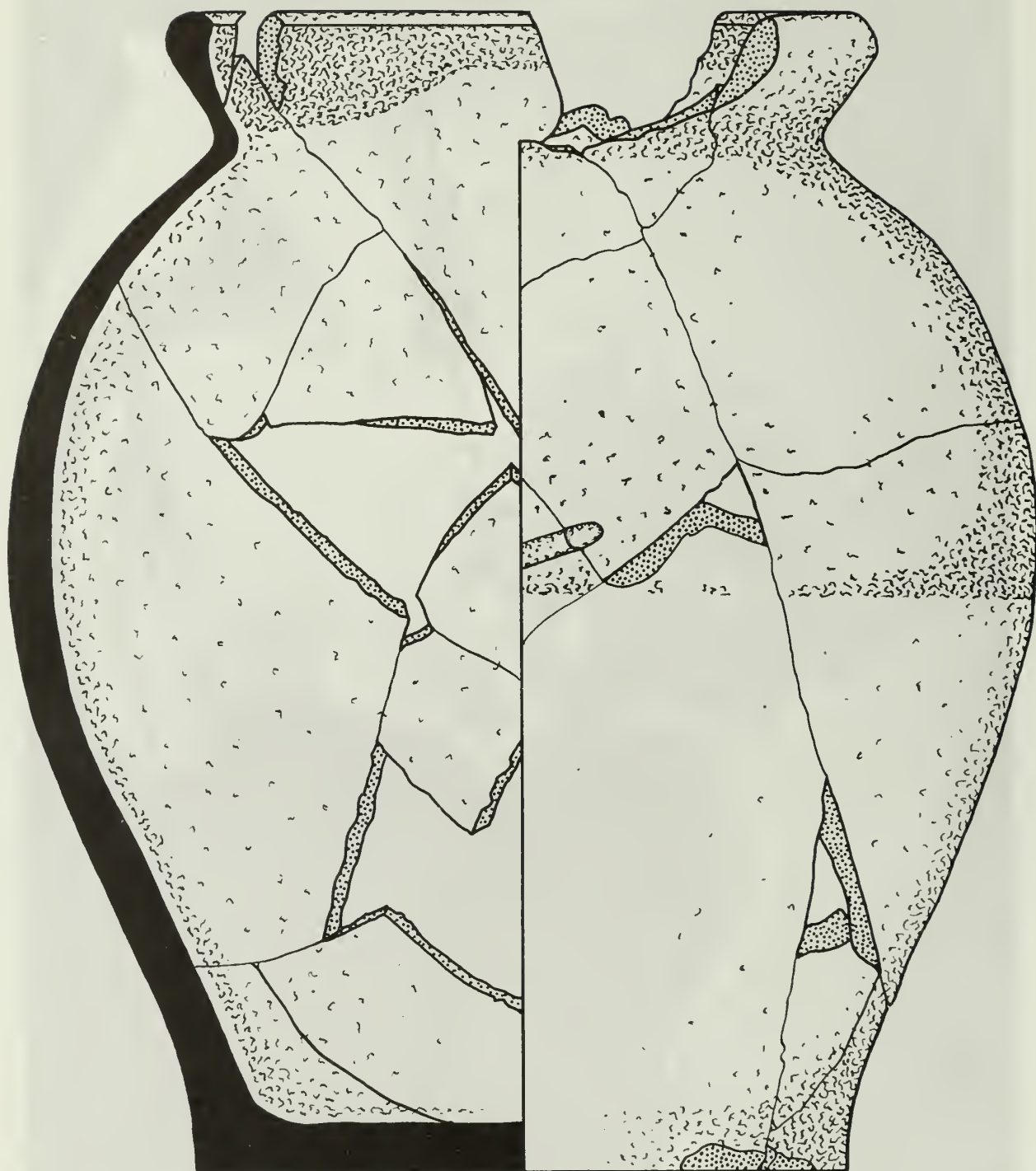


FIGURE 194. JAR, SALT GLAZED STONWARE.



Figure 195. Jars, salt glazed stoneware.

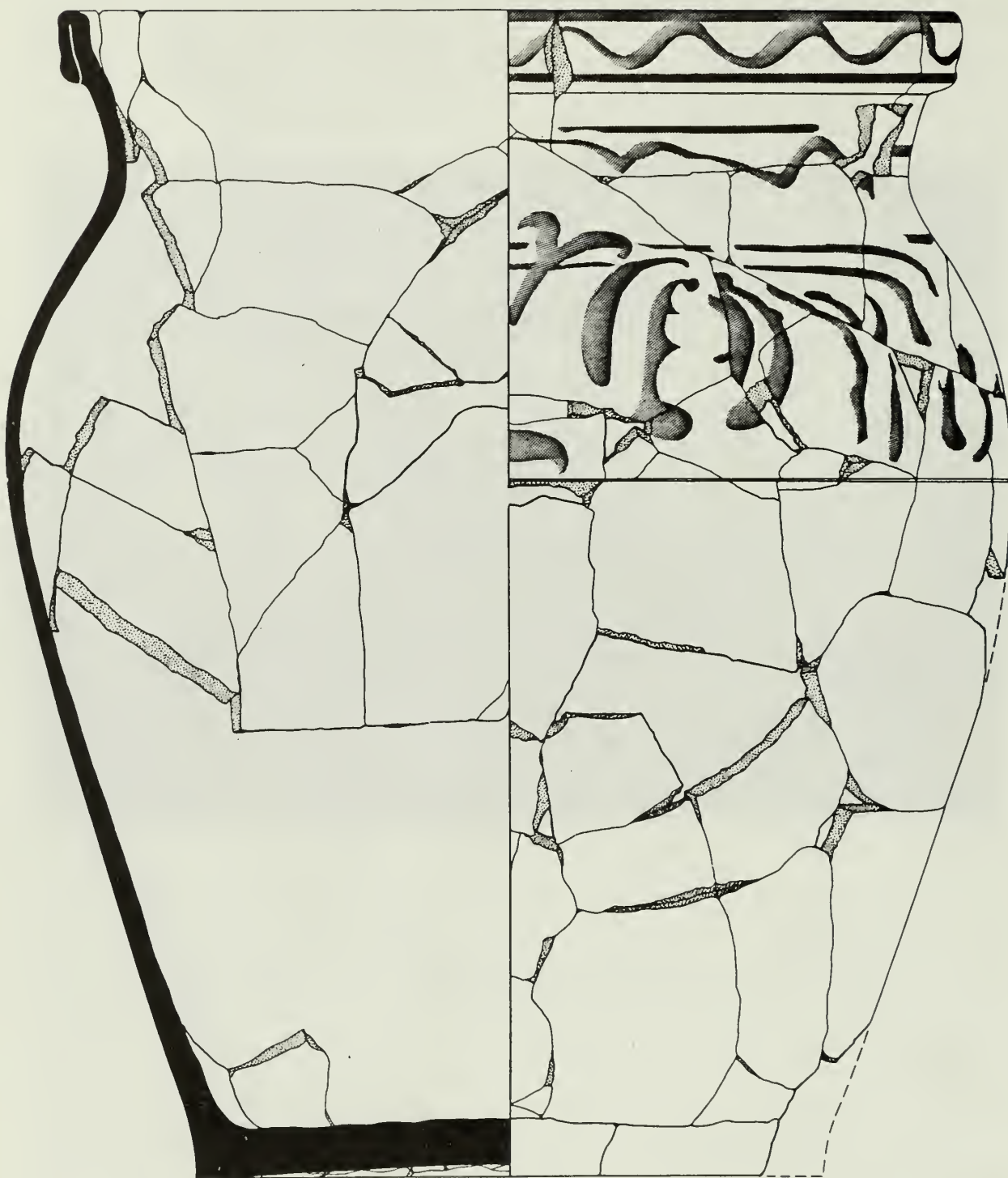


FIGURE 196. JAR, BISQUE, WITH PAINTED DECORATION.



FIGURE 197. JAR RIMS, EARTHENWARE AND STONEWARE.

JUG

Definition: a handled vessel with a footed base, a bulbous body narrowing abruptly into a straight, many-cordoned neck and a rounded rim with a small spout.

Ware: earthenware, bisque and glazed.
stoneware, bisque and glazed.

Description:

Color - earthenware: speckled red-orange to red-brown with darker flecking.

Stoneware: red-brown, mottled brown to dark brown where dipped in slip. Lower undipped portion probably greyish in color.

Glaze - earthenware sherds are lead glazed on both the interior and exterior.

Stoneware fragments are salt glazed on both surfaces.

Slip/Wash - not done on earthenware. The upper one-half of stoneware jugs was dipped in iron oxide slip.

Decoration - numerous cordons appear on stoneware necks.

Handles - strap handles. Information incomplete.

Marks-Stamps - none.

Size - height of stoneware jugs - 11-1/2 inches. Earthenware sherds incomplete. Rim diameters vary from 3-1/2 inches to 5 inches, with the majority measuring 3-1/2. Stoneware bases vary between 4-3/4 to 6 inches.

Illustrations:

Figures 198-199.



FIGURE 198. JUG, SALT GLAZED.



FIGURE 199. JUG CORDON VARIATION.

MILK PANS

Definition: a wide, flat based vessel with curved out-sloping walls and one spout in the rim.

Ware: earthenware, bisque and glazed.
stoneware, glazed (very few).

Description:

Color - glaze varies from a light yellow-tan to red-orange to dark brown with darker flecking.

Glaze - lead glazed usually only on the interior to just over the rim. A few were glazed inside and outside including the base. When glazed on the interior only, streaks of glaze sometimes appear on the exterior due to sloppy glaze application.

Slip/Wash - none.

Decoration - none.

Handles - none.

Rim Variants - 16 rim variants have been discerned in the Yorktown sample, ranging from rounded and folded to flat.

Marks-Stamps - none.

Size - height varies from 2 to 4 inches, with the majority measuring 3-1/4 inches. Rim diameter measures 10 to 19 inches, with the majority 16 inches. Basal diameters usually vary from 6" to 9". Typical milk pan sizes (diameter and basal diameters in inches): 13-1/2 x 8-1/2; 13-1/4 x 6-1/2; 14 - 14-1/2 x 8-9. A milk pan with a rim diameter of 14 inches weighs 4 lbs. 12 ounces and has a capacity of 3 quarts (filled to within one inch of the top).

Discussion: the major earthenware production of the Yorktown Pottery Factory was milk pans. These popular shapes probably had a variety of uses. One major functional use was to separate cream from milk in making butter and cheese. Milk was poured into these shallow pans and left until the cream had risen to the surface, when it would be skimmed off and put into a cream pot until enough had accumulated for churning butter or making cheese.

The great number of milk pans required in one household is shown by a 1653 inventory listing "22 milk pans, 11 earthenware pots."⁴

Milk pan bases were not "turned" with a tool as most pots were. Excess clay at the base was cut off with a knife or tool with little care en to smooth the uneven cuts. This is a traditional method as mentioned by Brears (1971): "From the post-medieval period on, it is customary to use a knife to cut off excess clay at the base of plates or shallow bowls. The

projecting rims of these shapes make it difficult to throw cleanly in this area."⁵

Milk pan spouts were made by pressing down on the rim with two thumbs (Figure 205).

Illustrations:

Figures 200-210.

⁴ Inventory of George Eskerigge, Parish of Lancaster.

⁵ Brears, Peter C.D., The English Country Potter, Its History and Techniques (David and Charles, Newton Abbott, 1971).

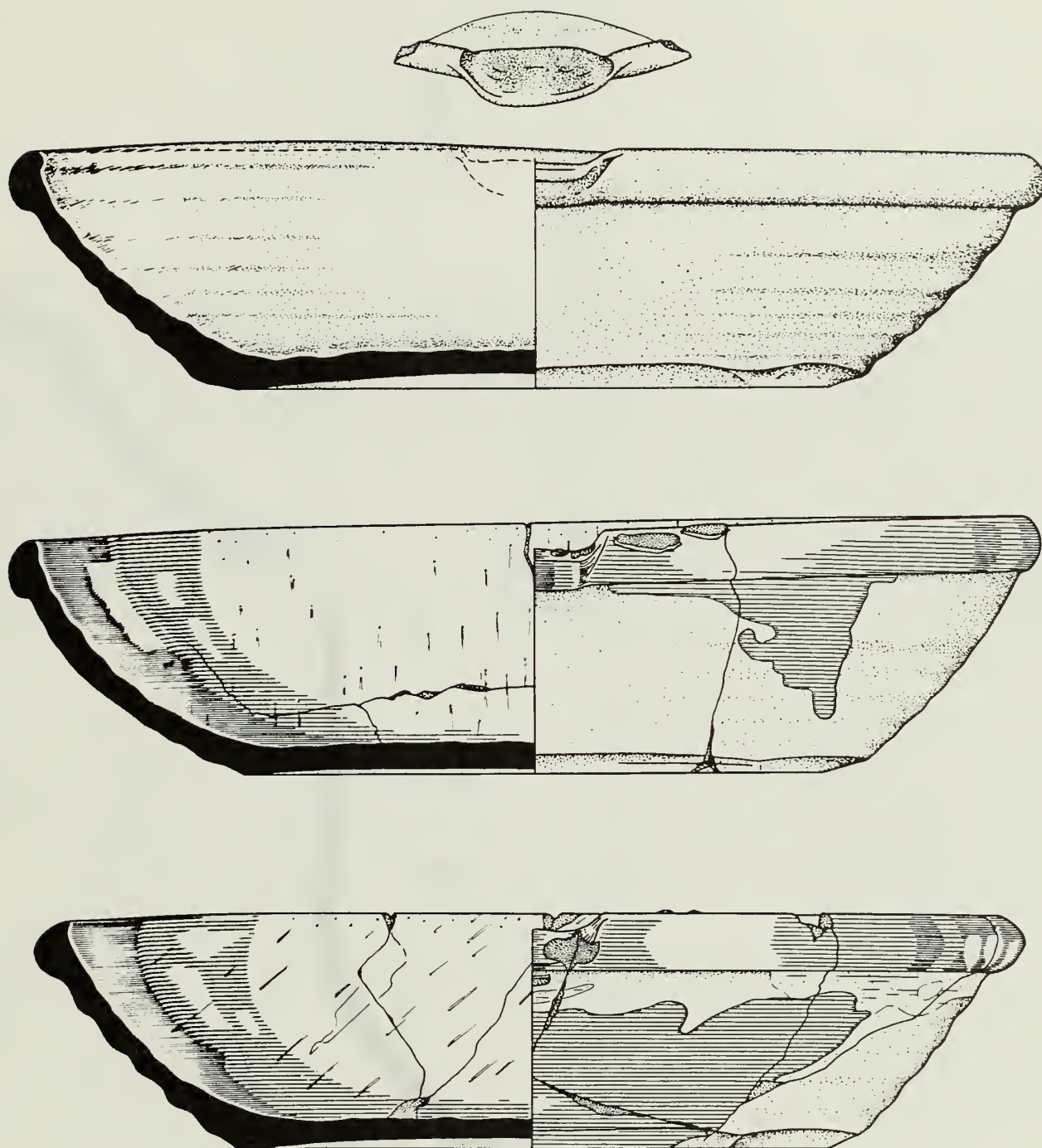


FIGURE 200. MILKPANS, BISQUE (TOP) AND LEAD GLAZED.



FIGURE 201. FLAT RIMMED MILKPAN.

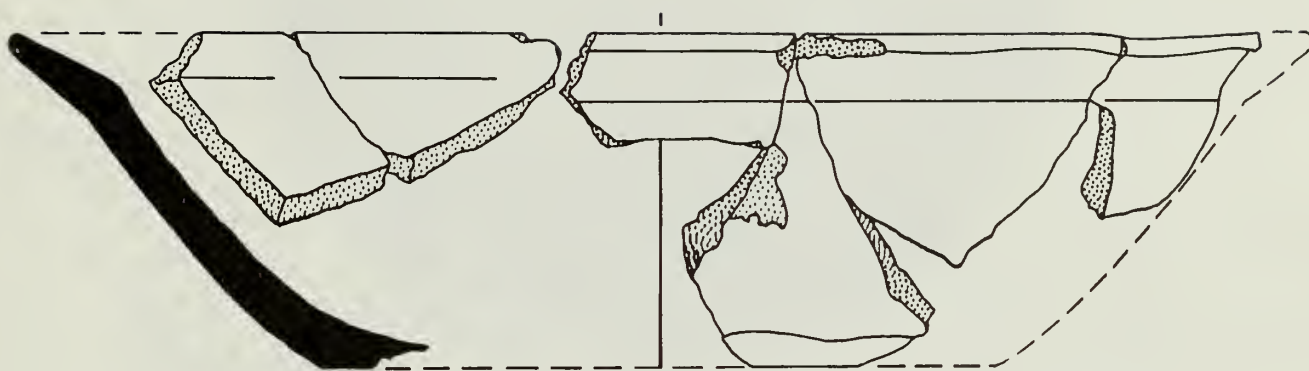


Figure 202. Milkpan or bowl, earthenware.



FIGURE 203. MILKPAN, LEAD GLAZED EARTHENWARE.
POURING SPOUT AT BOTTOM.



FIGURE 204. MILKPAN, BISQUE, WITH KNIFE
TRIMMING MARKS ON BASE.



FIGURE 205. TRIMMING MILKPAN BASES AND FORMING SPOUTS.



FIGURE 206.

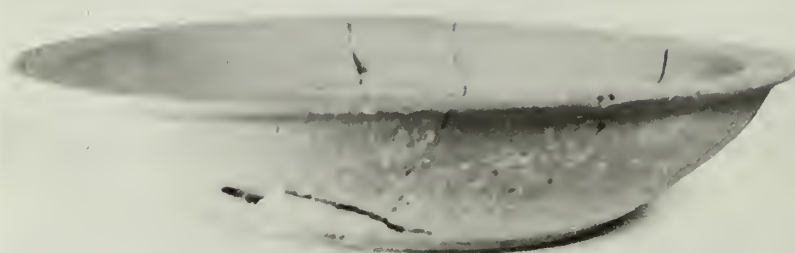


FIGURE 207.

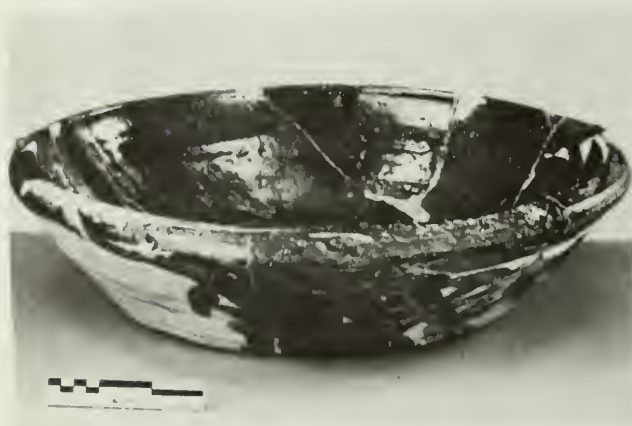


FIGURE 208.

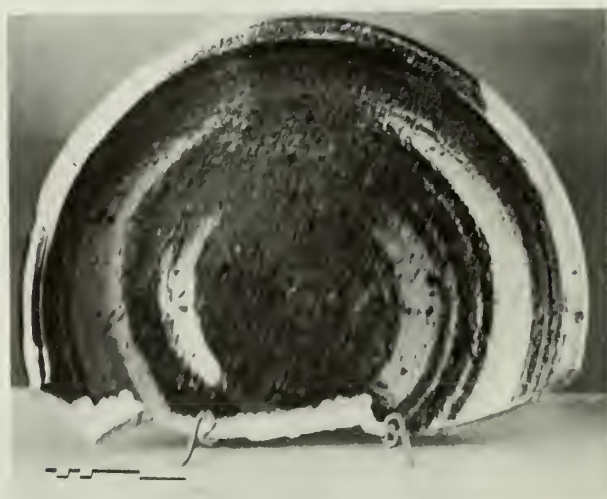


FIGURE 209.

FIGURES 206-209. MILKPANS, BISQUE AND LEAD
GLAZED EARTHENWARE.

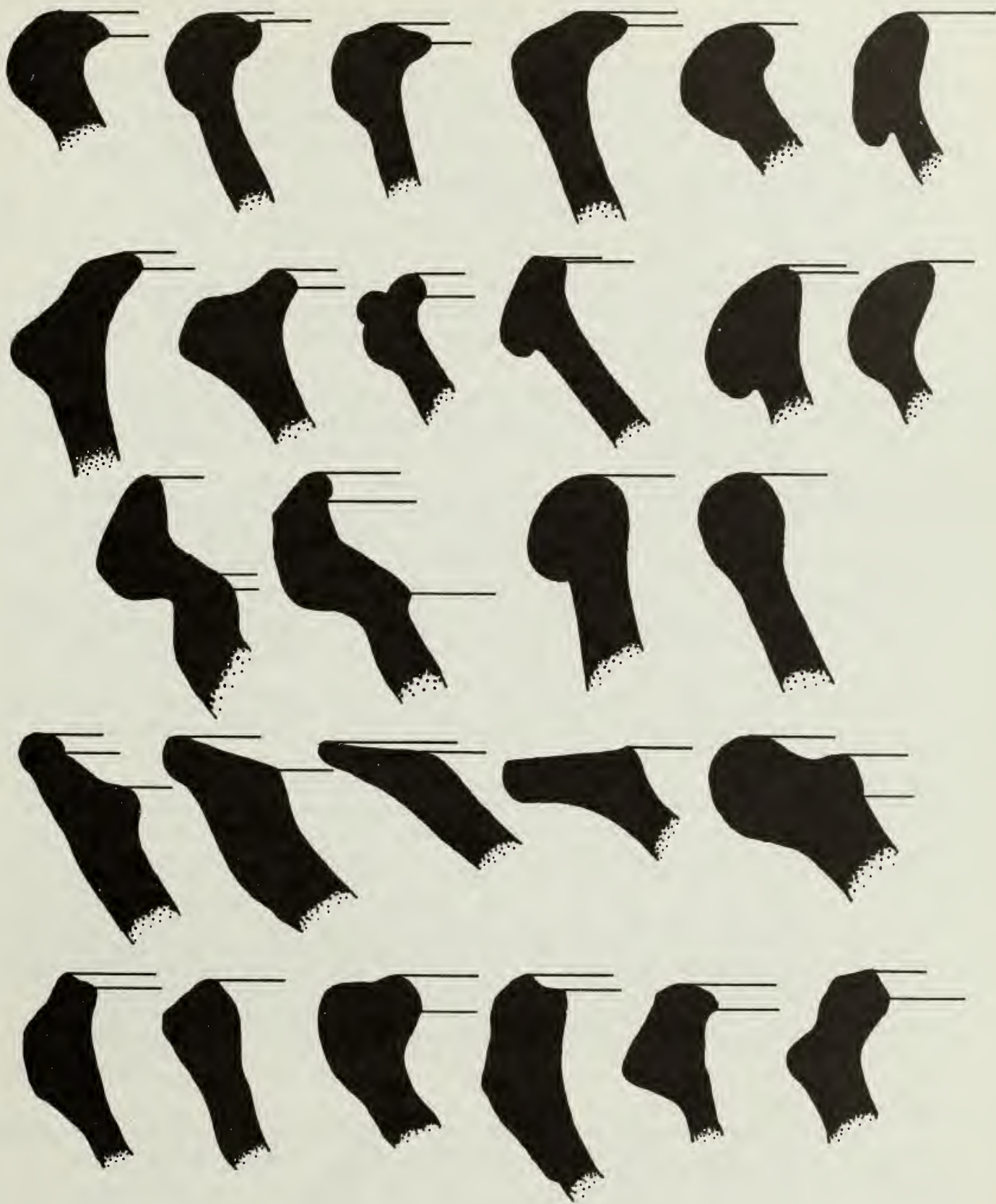


FIGURE 210. VARIATIONS OF MILKPAN RIMS.

MUG

Definition: a handled vertical sided drinking vessel with flat but slightly raised base, always cordoned near base.

Ware: earthenware, bisque and glazed.
stoneware, bisque and glazed.

Description:

Color - earthenware: yellow in color is white slipped underneath; dark brown if iron oxide dipped. If not slipped, green glaze or dark brown, red-orange to red-brown with darker mottling.

Stoneware: if dipped in iron oxide, usually reddish brown to dark brown in color; lower section white, light grey to dark grey if white slipped; grey to dark grey if no white slip.

Glaze - earthenware mugs were lead glazed over all surfaces. Stoneware mugs were salted outside and inside but glaze varies in thickness on the inside depending on amount of salt reaction and accessibility to interior.

Slip/Wash - earthenware: white slip on lower one-half of some mugs or over entire mug; clear lead glaze over white slip resulted in a yellow glaze. Upper one-half sometimes dipped in an iron oxide slip.

Stoneware: usually upper part of mug dipped in iron oxide slip and lower part in white slip; however, some mugs have no slip.

Decoration - on both stoneware and earthenware mugs, cordoning occurs near the base on the exterior of the mug, and one or more incised lines appear near the rim. A minimum of 11 cordon variations occur on the mugs (Figure 221). In general, the larger number of base cordons were used on the larger mugs. Cordon templates were probably used as the cordons are so regular, with no indication of a series of individually made, sometimes overlapping or undercut turnings. Because of the large number of cordon patterns, there is a possibility they were turned on a horizontal lathe but there is no definite proof of this. However, all rims were turned thin from the interior.

The treatment of the lower terminal of each mug handle is decorative.

On earthenware, usually one incised line appears just below the rim. One sherd, however, had 12 small grooves or incised lines.

Stoneware mugs usually exhibit one incised line below the rim. Some sherds, however, have two to eight or more small cordons or grooves just below the rim.

Handles - on both earthenware and stoneware examples, one thin strap handle has the lower terminal folded back on itself and impressed.

Marks-Stamps - earthenware mugs had no marks or stamps. Many stoneware mugs are stamped, but some are not. The stamp has the initials WR below a crown, both of which are in relief within a depressed rectangle, which measures 1/2 inch by 7/16 inch. The majority of these stamps are located 3/4 inch to 2 inches to the left of the handle and from 1/2 inch to 1-1/4 inches below the rim. One quart mug is tamped directly opposite the handle.

Eight of twelve test mugs are marked with one or two slashes on the base.

Two mugs have a section of a small circle incised through the iron oxide near the rim. It is uncertain if this is part of a flower petal, initial or number.

Size and Capacity - the majority of information is from stoneware mugs, as earthenware mug fragments were too fragmentary to give meaningful measurements.

Stoneware: although there is much variation in size, it is probable that the following sizes of mugs were manufactured in Yorktown - 1/4 pint (gill, or 4 oz.), 1/2 pint (8 oz.), 1 pint (16 oz.), 1-1/2 pints (c.24 oz.), and 1 quart (32 oz.).

Actual mug measurements (in inches): 1). 2-3/4 high by 3/8 diameter 3-4 oz. or 1/4 pint); 2). 3-1/2 high by 2-5/8 (7-8 oz. or 1/2 pint); 5 to 5-1/2 high by 3 to 3-1/2 diameter (13-16 oz. or 1 pint); 6 high by 3-1/2 diameter (20-24 oz. or 1-1/2 pints). A few mug bases, larger in diameter than the 1-1/2 pint size, probably was of the one quart capacity.

Weight - stoneware mugs of 1 pint capacity weighed about 1 lb. 3 oz. each.

Discussion: the best quality pot manufactured at Yorktown was undoubtedly the stoneware mug. Its appearance and excellent potting rivaled those produced in England. In fact, to the inexperienced eye, they are virtually indistinguishable from English mugs. Therefore, the Yorktown potters were in direct competition with English potters in the production of this shape.

Although earthenware mugs were also produced in Yorktown, they were a distinct minority as compared with stoneware mugs.

Stoneware mugs were the only form fired in saggars, signifying great care was taken in their production. Scars on earthenware mugs do not show how these were stacked in the kiln.

No evidence of mugs adorned with a sprig-molded swan ornament was found at the Yorktown site. The swan tankards excavated near the Swan Tavern in Yorktown were probably manufactured in

England. A close examination of these sherds, some of which are illustrated in Watkins and Noel Hume, reveal the fabric and manufacture of the Swan mugs to be different from the mugs made at Yorktown.⁶

Thirteen small stoneware mugs, each 3-1/2 inches high by 2-5/8 inches in diameter, appear to be test pieces. They were all found in association with the Small Kiln. Three are marked on the base with one slash, five with two slashes, four are unknown as to marking as most of the base area is missing on each. One whole base has no slashes but is similar to the other mugs. Some of these test mugs appear to have been dipped several times, first in iron oxide, then in a grey slip and finally in a white slip. The slip, applied to the top one-half of each mug, has peeled and rolled back on many. The apparent search for a satisfactory ingredient or combination of ingredients for a white slip to cover a dark body appeared to be unsuccessful in these tests. However, that the potters were eventually successful is shown by a total of 237 mug sherds that have a smooth white slip beneath the salt glaze.

Six 1/4 pint mugs have a curious, unexplained feature. They all exhibit a 3/8 inch hole, which is located slightly off center on one side of the mug - 1-3/4 inches from the rim and 1-1/4 inches from the bottom (Figures 218, 219).

As previously mentioned, many mugs have a stamped mark - the initials WR below a crown, both within a depressed rectangle - on one side. A similar but larger mark appears on some stoneware bottles. Since these marks appear only on mugs and bottles, the purpose of the mark was probably to certify capacity. The initials presumably stood for William Rex and not for William Rogers. English stamps of this period were similar but were usually oval or round instead of rectangular.

As discussed by Bimson (1970:165-166), 'An Act for the Ascertaining the Measures for Retailing Ale and Beer' was passed on April 11, 1700, in order to enforce the use of the Standard Ale Quart in retailing ale and beer. This had become necessary because tavern keepers were cheating the public. From June 24, 1700, it became illegal to retail ale or beer except 'according to the said Standard or in Proportion thereunto in a Vessell made of Wood Earth Glasse Horne Leather Pewter or of some other good and wholesome Metall made sized and equalled unto the said Standard and signed stamp or marked to be of the Content of the said Ale Quart or Ale Pint'; the mark being the letters WR and a crown.

Only two years after the act became law, William III died. He was succeeded by Queen Anne. Bimson points out that a number of surviving mugs marked with 'AR and crown' show that some potters believed that the correct mark was the current royal cypher. However, the Act made no provision for a change of monarch and 'WR and crown' remained the legal mark until repealed by the Statute Law Revision Act of 1876. Therefore, the mark 'WR and crown' can indicate any date from 1700 to 1876, whereas 'AR and crown' probably derives from the early years of Queen Anne's reign.

Illustrations:

Figures 211-221

⁶Watkins and Noel Hume, op. cit., pp. 91-99.

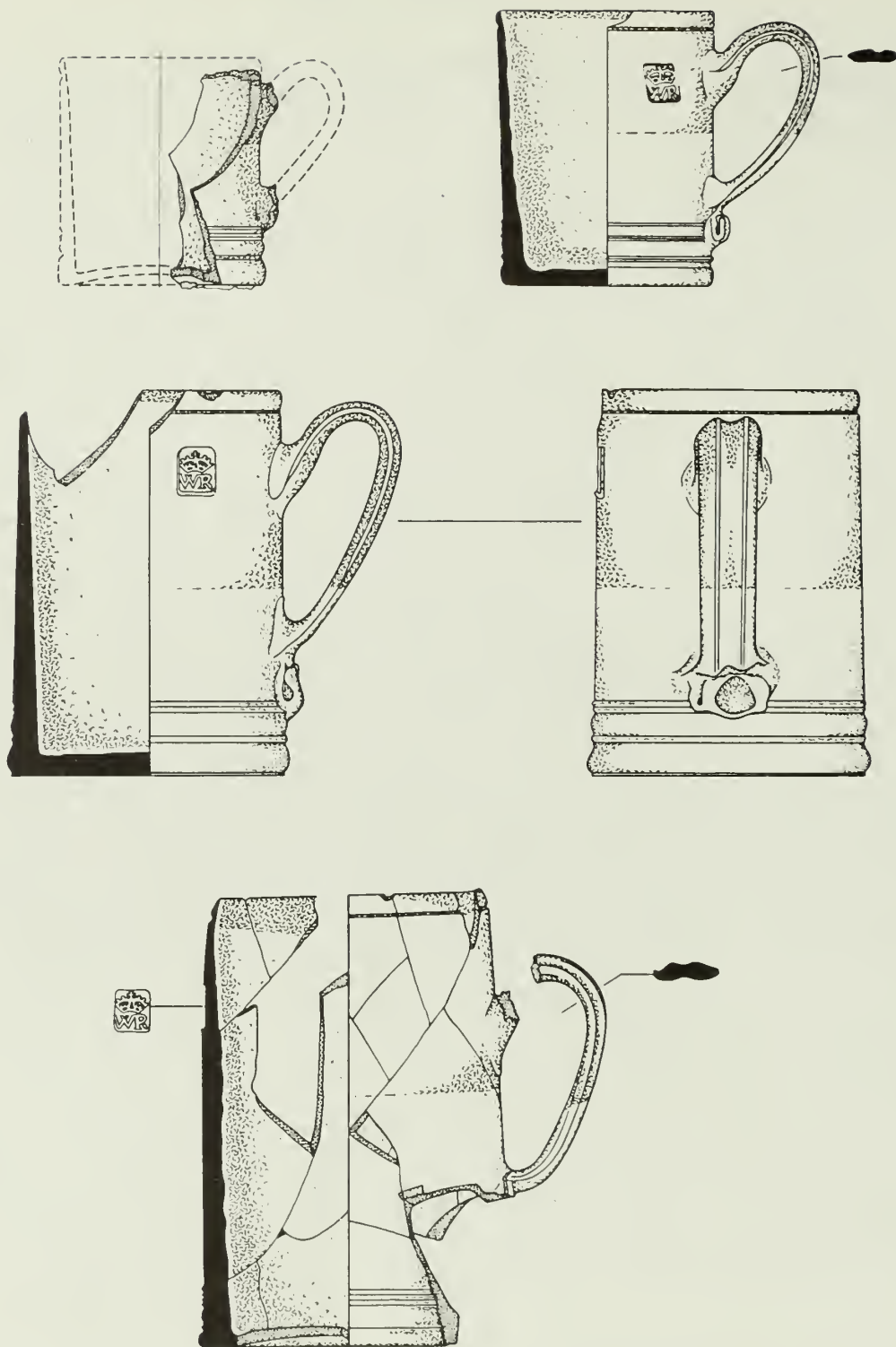


FIGURE 211. MUGS, SALT GLAZED STONEWARE.

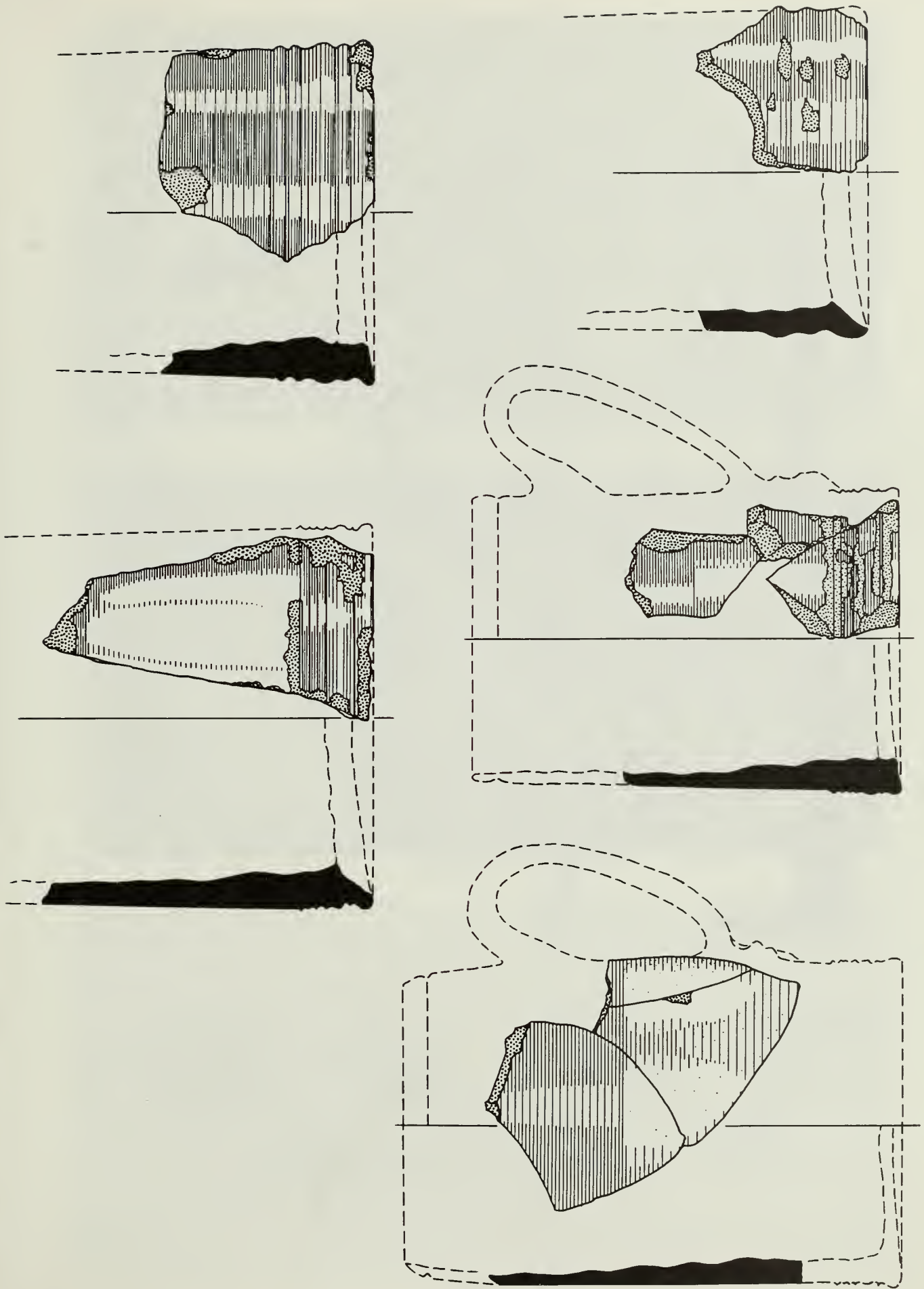


FIGURE 212. MUG, LEAD GLAZED EARTHENWARE.

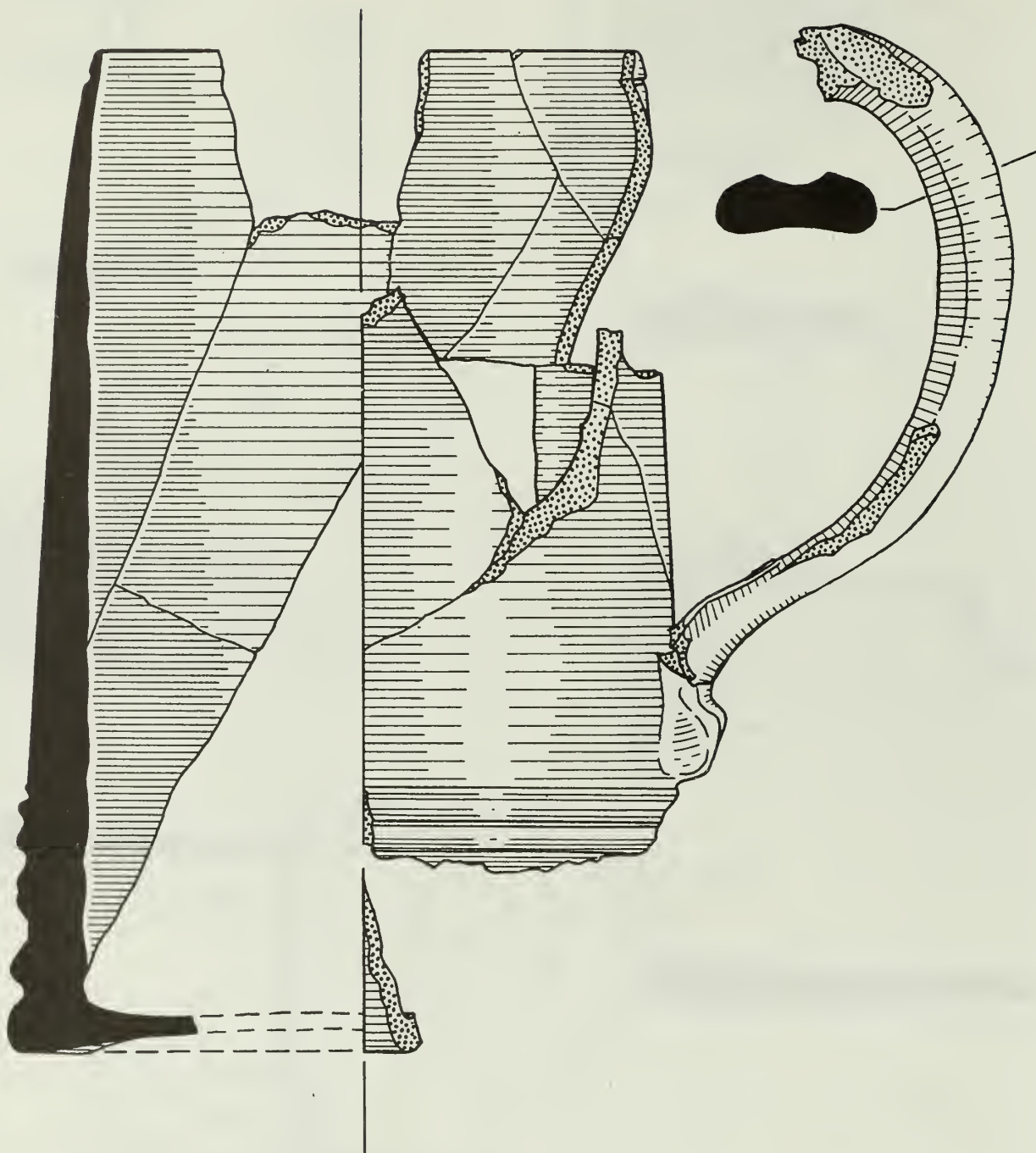


Figure 213. Mug, Lead Glazed Earthenware.



FIGURE 214.



FIGURE 215.



FIGURE 216.

FIGURES 214-216. MUGS, SALT GLAZED STONEWARE.

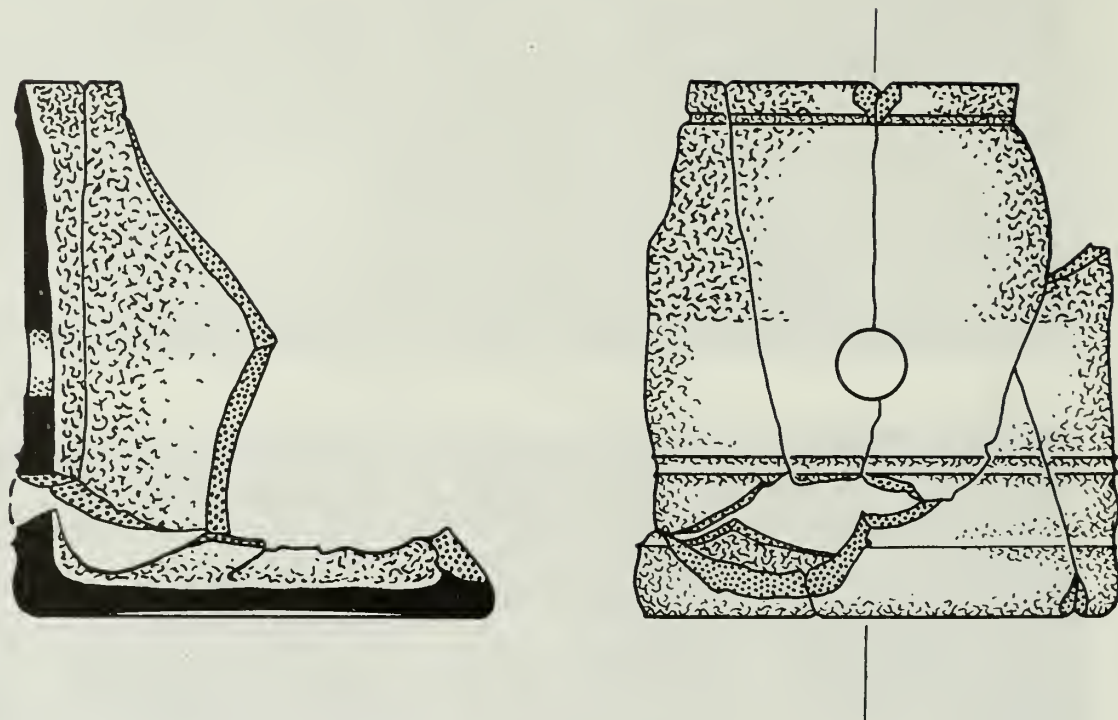


FIGURE 217. MUG, SALT GLAZED STONEWARE, WITH HOLE.



FIGURE 218. MUGS WITH HOLE ($\frac{5}{16}$ " DIAM.) IN CENTER.

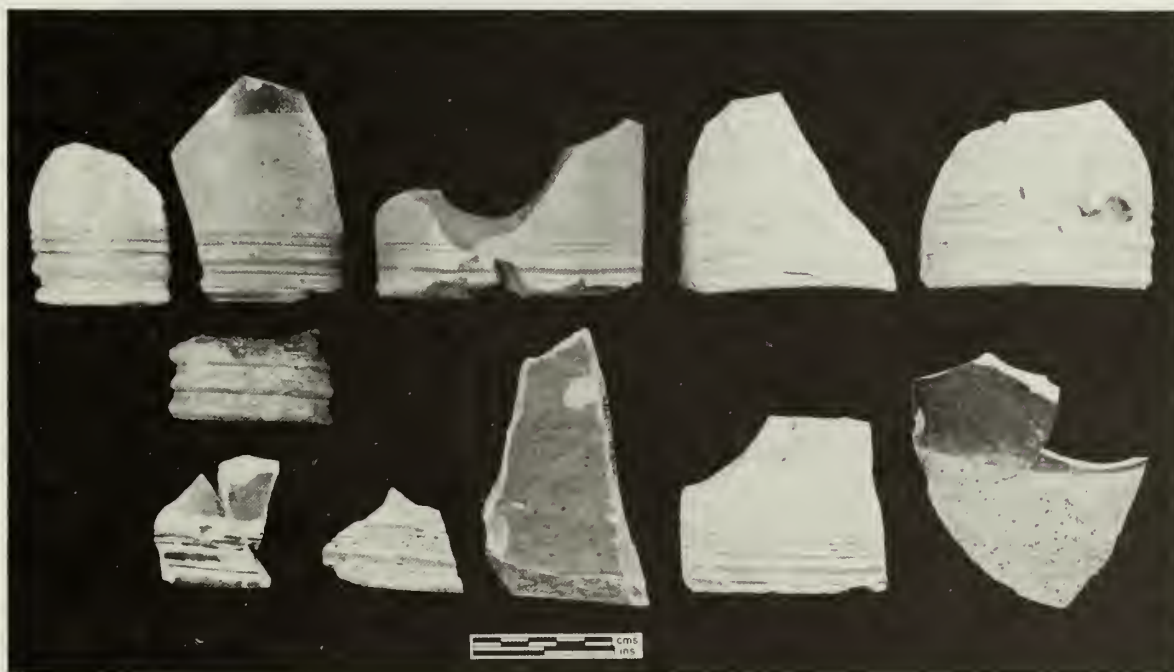
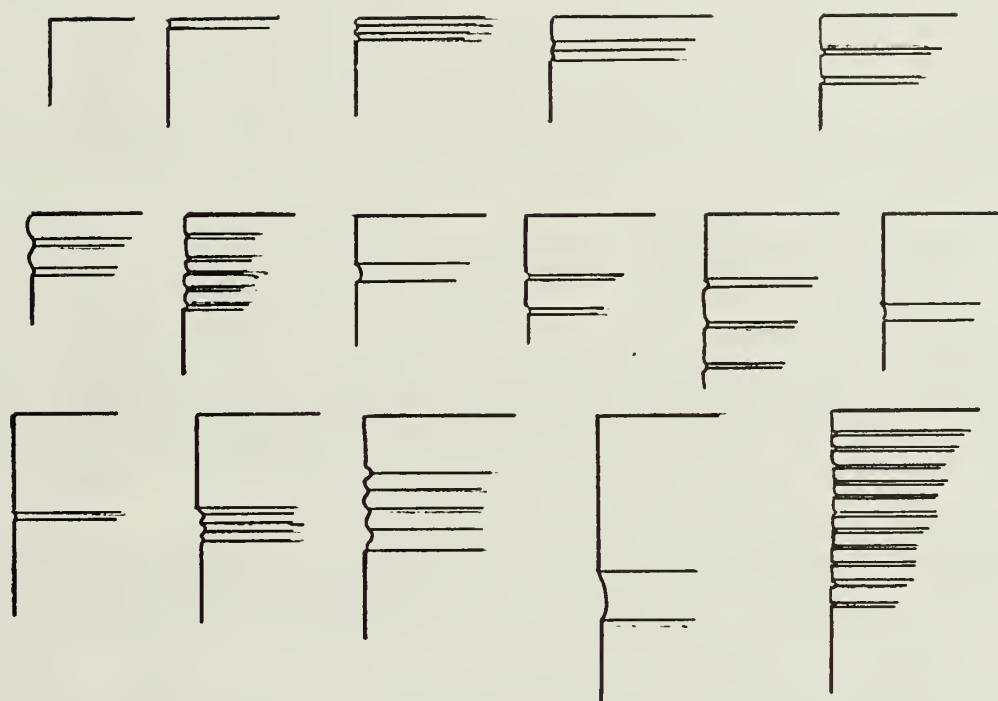


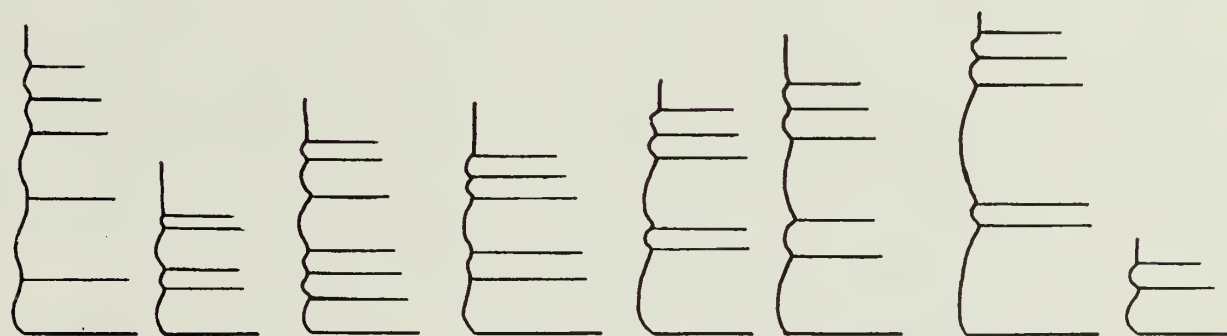
FIGURE 219. MUGS, STONEWARE AND EARTHENWARE, WITH CORDON VARIATION. LOWER EXAMPLES ARE GREEN AND YELLOW GLAZED EARTHENWARE.



FIGURE 220. WR-CROWN MARKS ON MUG AND BOTTLE FRAMENTS.



RIMS



BASES

FIGURE 221. VARIATIONS IN MUG CORDONS.

PIPKIN

Definition: a cooking pot with flat base or three legs, bulbous walls with spout in rim, and solid or open handle applied at an angle.

Ware: earthenware, bisque and glazed.
stoneware, bisque (rare) and glazed.

Description:

Color - in earthenware examples, glaze varies from a red-orange to red-brown to dark brown with darker flecks. Stoneware - brown or mottled brown on top one-half or two-thirds of vessel when dipped in iron oxide. Lower section of varying grey, grey-brown or greenish-grey.

Glaze - earthenware: lead glazed on all surfaces except part of handle, which is glazed one-third of length.
Stoneware - salt glazed on exterior with lesser amounts on interior.

Slip/Wash - none on earthenware.
Stoneware - upper one-half or two-thirds of vessel usually dipped in iron oxide.

Decoration - both earthenware and stoneware pipkins exhibit one or more cordons beneath the rim.

Handle - earthenware: tapered, pulled handles, with ends cut or pinched off. Also some pipkins had large hollow thrown handles, into which a stick could be inserted.
Stoneware: handles are thrown, solid cylinders, terminating in a bulbous knob with gouged out hole in center. Two more refined stoneware handles are thrown hollow cylinders with decorative cordoning at the end.

Rim Variants - slight variations in sizes of rims and placement of cordons.

Base Variants - earthenware basal sherds sometimes have a sharp angle where the side wall meets the base.
Stoneware - often a very rounded turned area where the wall meets the base.

Marks-Stamps - earthenware: six pulled handles have two notches cut into one side approximately one inch from the end (where attached to pot). The meaning of the notches is unknown.

No marks occur on stoneware sherds.

Size - a complete stoneware pipkin measures as follows (in inches); 4-1/2 (rim diameter) by 3-1/2 (base diameter) by 4-1/2 (height). This pot had a capacity of one quart and weighs 1 lb. 12 oz. Another lead glazed earthenware pipkin, found at Gloucester Point, Virginia,

has the following measurements: 8-1/4 (height) with a 5-5/16 rim diameter and a measurement of 7-1/2 at the pots' widest point. The handle of this pot measured 1-3/4 inches (outside diameter).

Variations in size: height - earthenware (3-3/4 to 8-1/4 inches, although the majority in the Yorktown sample only went to 4 inches); stoneware (3 inches to 4-1/2 inches, with the majority measuring 4 inches). Rims - earthenware (4 to 6 inches, with the majority 4-1/2 inches); stoneware (3-1/2 to 6-1/2 inches, with the majority 4 inches). Bases - earthenware (4 to 6 inches, with the majority 4-1/2 inches); stoneware - (4-1/2 to 5 inches); Weight - weighable pots measure as follows: stoneware - 1 lb. 12 oz. Earthenware - c. 1 lb. 8 oz. Both have a capacity of one quart.

Discussion: a number of bisque and glazed earthenware pipkin feet were excavated, with only one foot having a small portion of the base attached to it. Thus, it was difficult to make statements concerning form. The discovery of a large lead glazed footed pipkin at Gloucester Point (see above for measurements) gave us the first definite information as to what form of pot the Yorktown feet were from. It is therefore certain that both footed and flat based pipkins were manufactured in Yorktown.

Illustrations:

Figures 222-238.

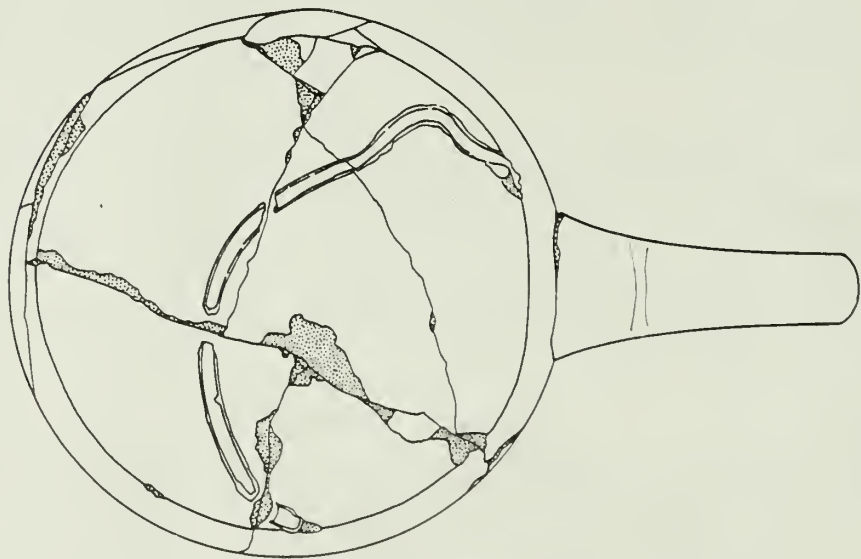
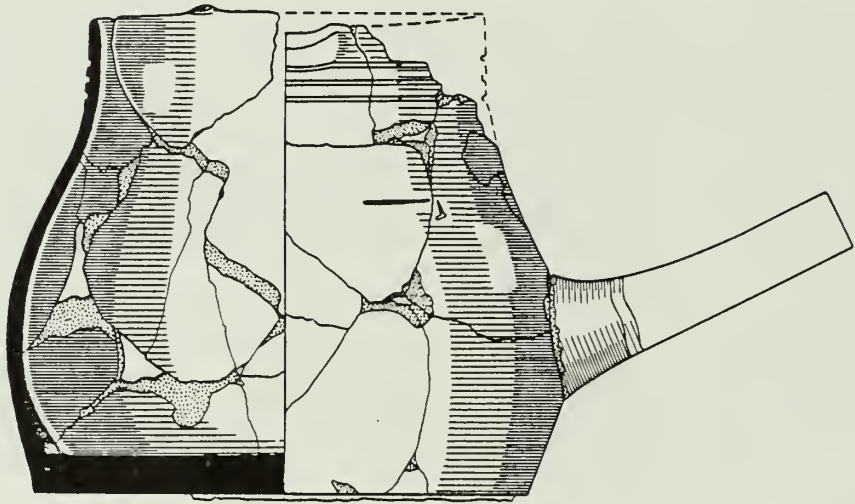
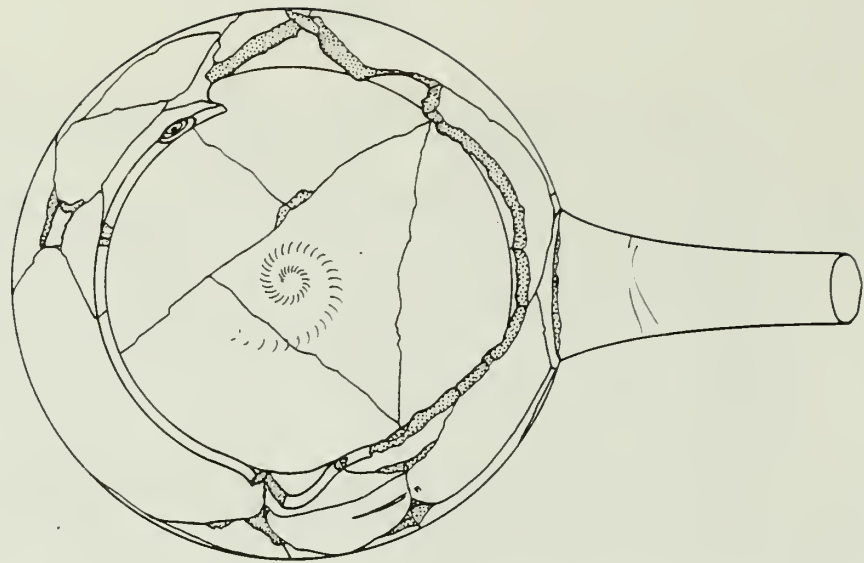


FIGURE 222. PIPKIN, LEAD GLAZED EARTHENWARE.



FIGURE 223. PIPKINS: SALT GLAZED STONEWARE, BISQUE EARTHENWARE, LEAD GLAZED EARTHENWARE.

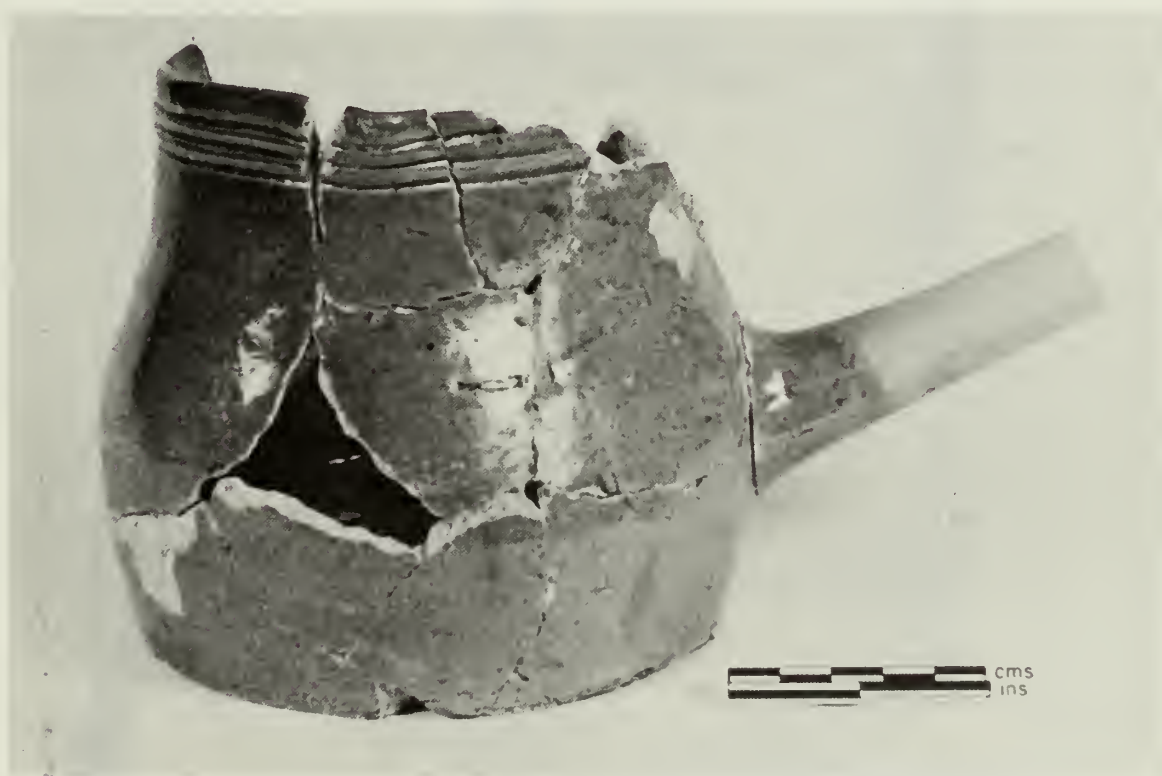


FIGURE 224. PIPKIN WITH HANDLE, LEAD GLAZED EARTHENWARE.

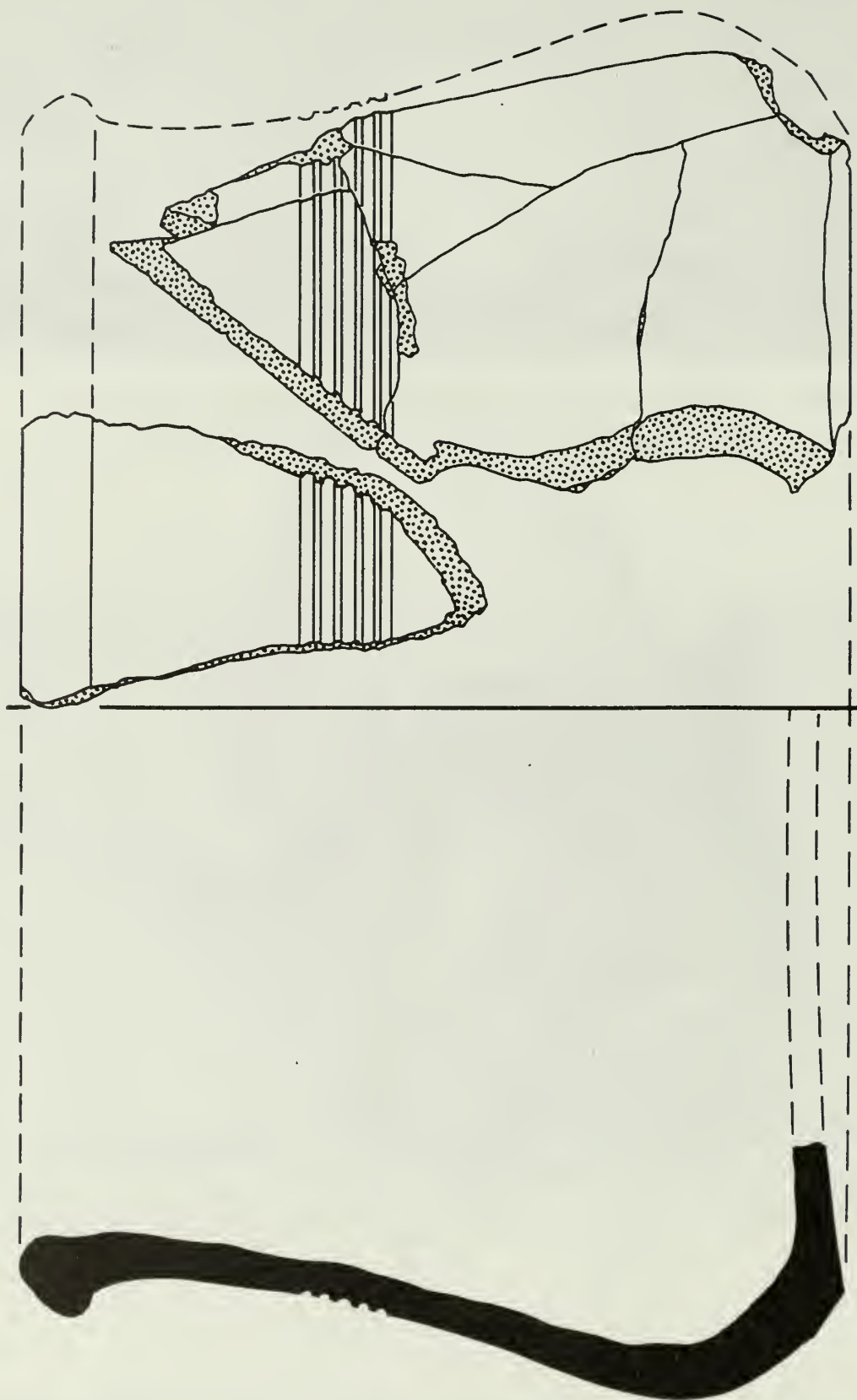


FIGURE 225. PIPKIN, EARTHENWARE.

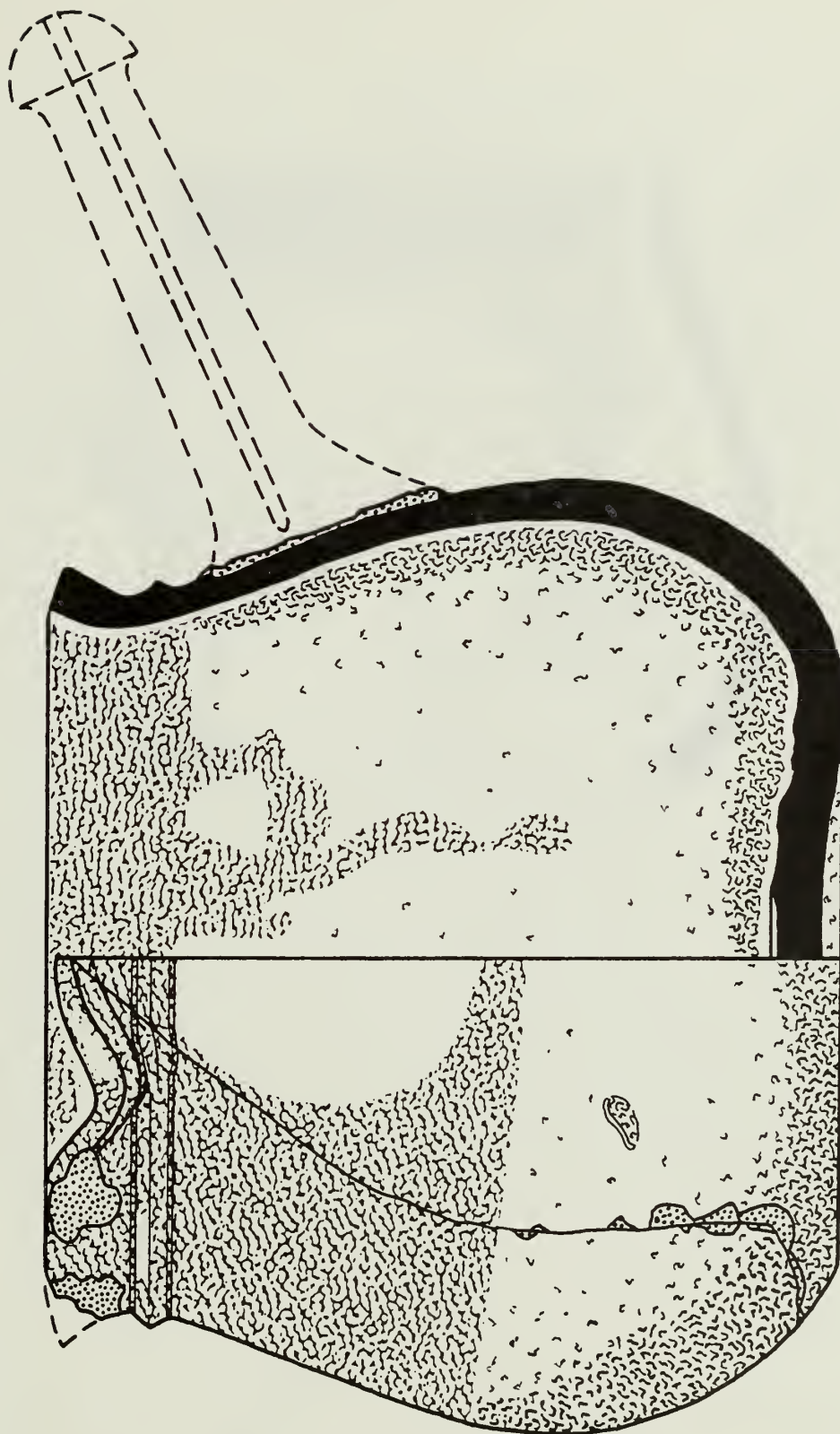


FIGURE 226. PIPKIN, SALT GLAZED STONEWARE.

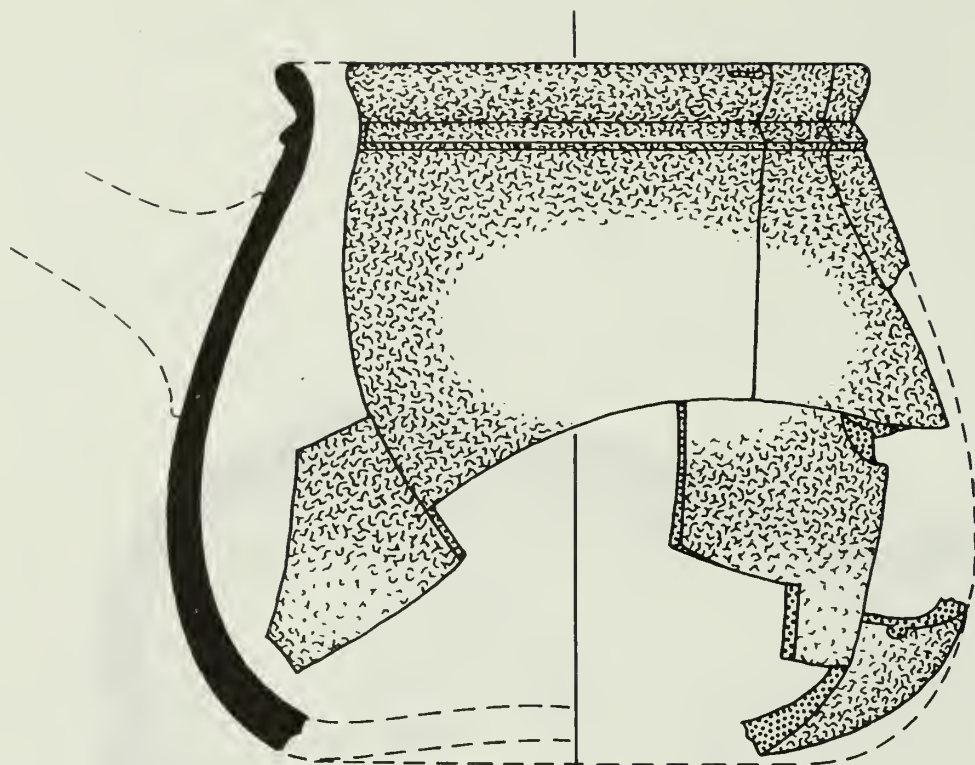


FIGURE 227. PIPKIN, SALT GLAZED STONEWARE.

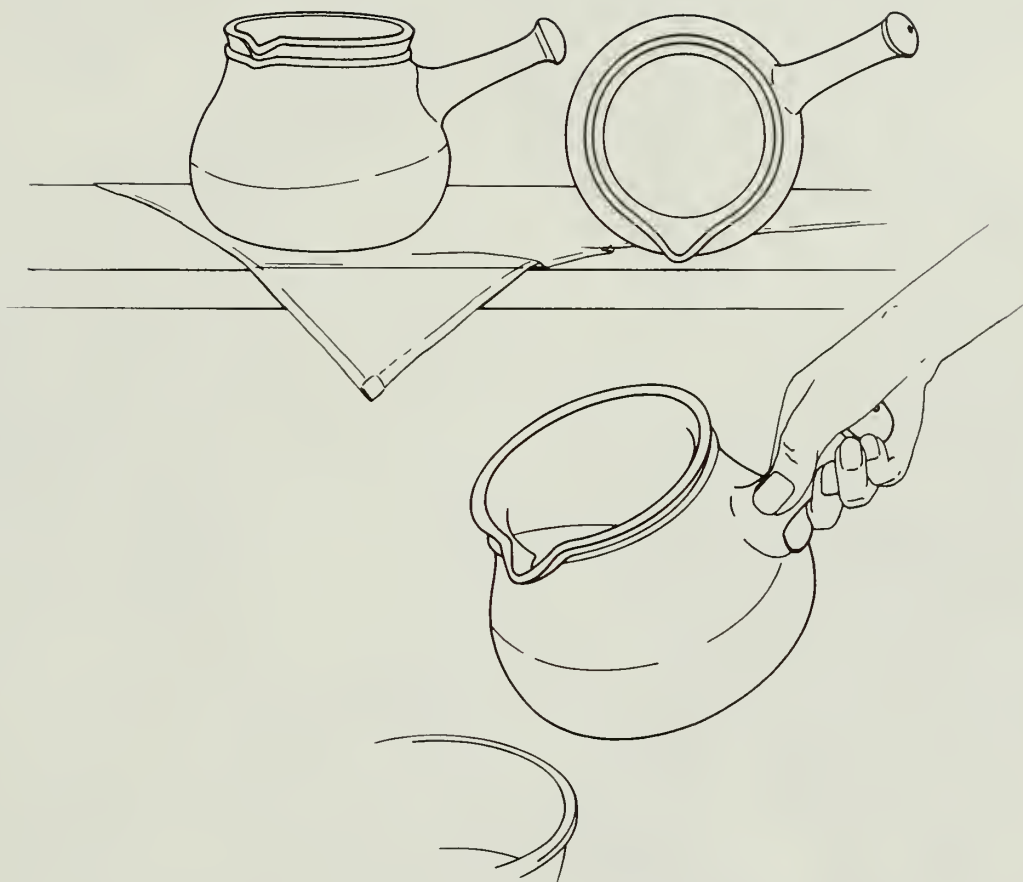


FIGURE 228. PIPKIN IN USE.

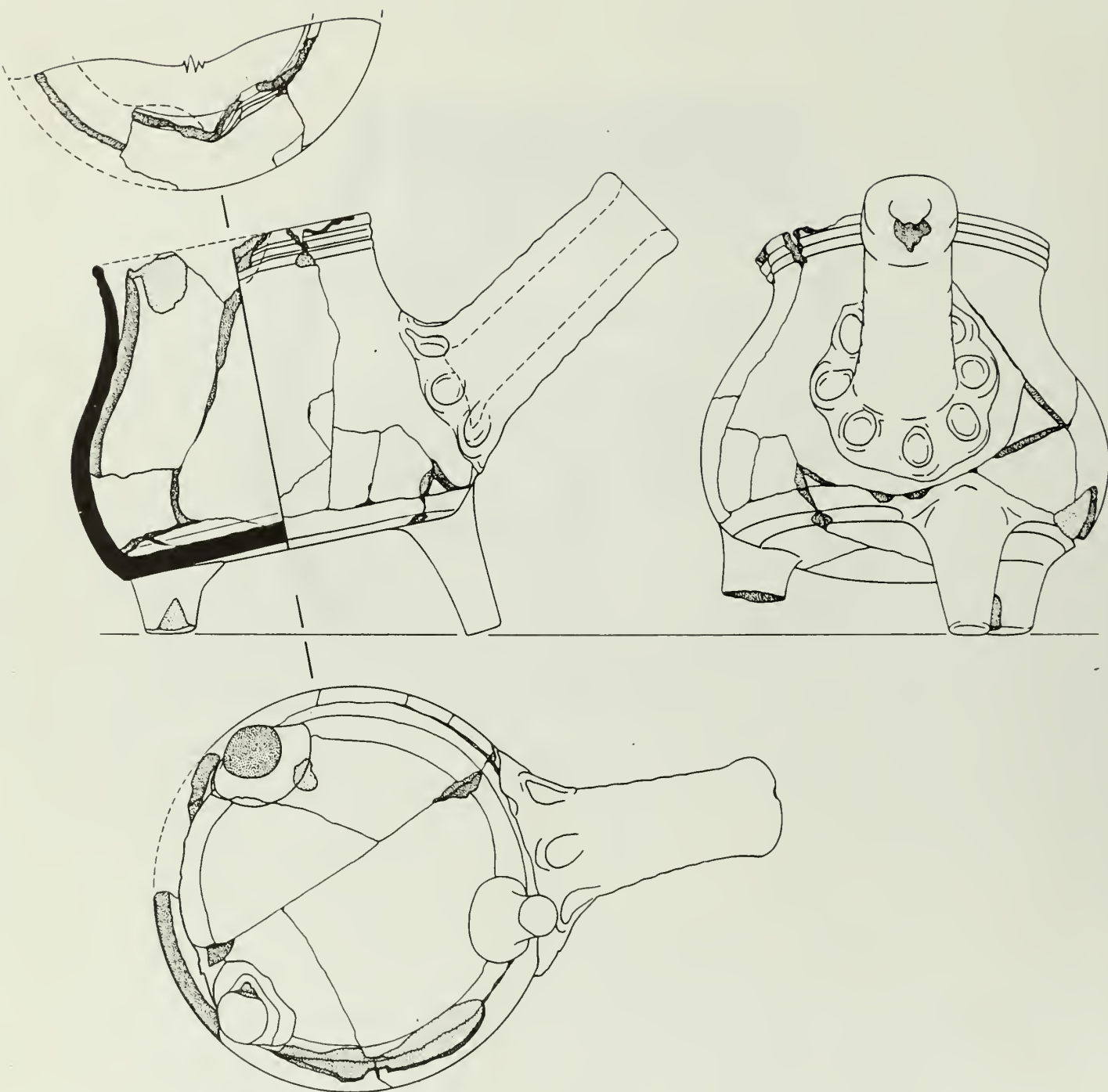


FIGURE 229. PIPKIN WITH THREE FEET, LEAD GLAZED EARTHENWARE. ONE FOOT SHORTER THAN THE OTHERS. FOUND AT GLOUCESTERTOWN.



FIGURE 230. PIPKIN, FOOTED.



FIGURE 231. PIPKIN, FOOTED.



FIGURE 232. PIPKINS: SALT GLAZED STONEWARE (LEFT)
AND LEAD GLAZED EARTHENWARE.
CENTER PIPKIN FOUND AT GLOUCESTERTOWN.

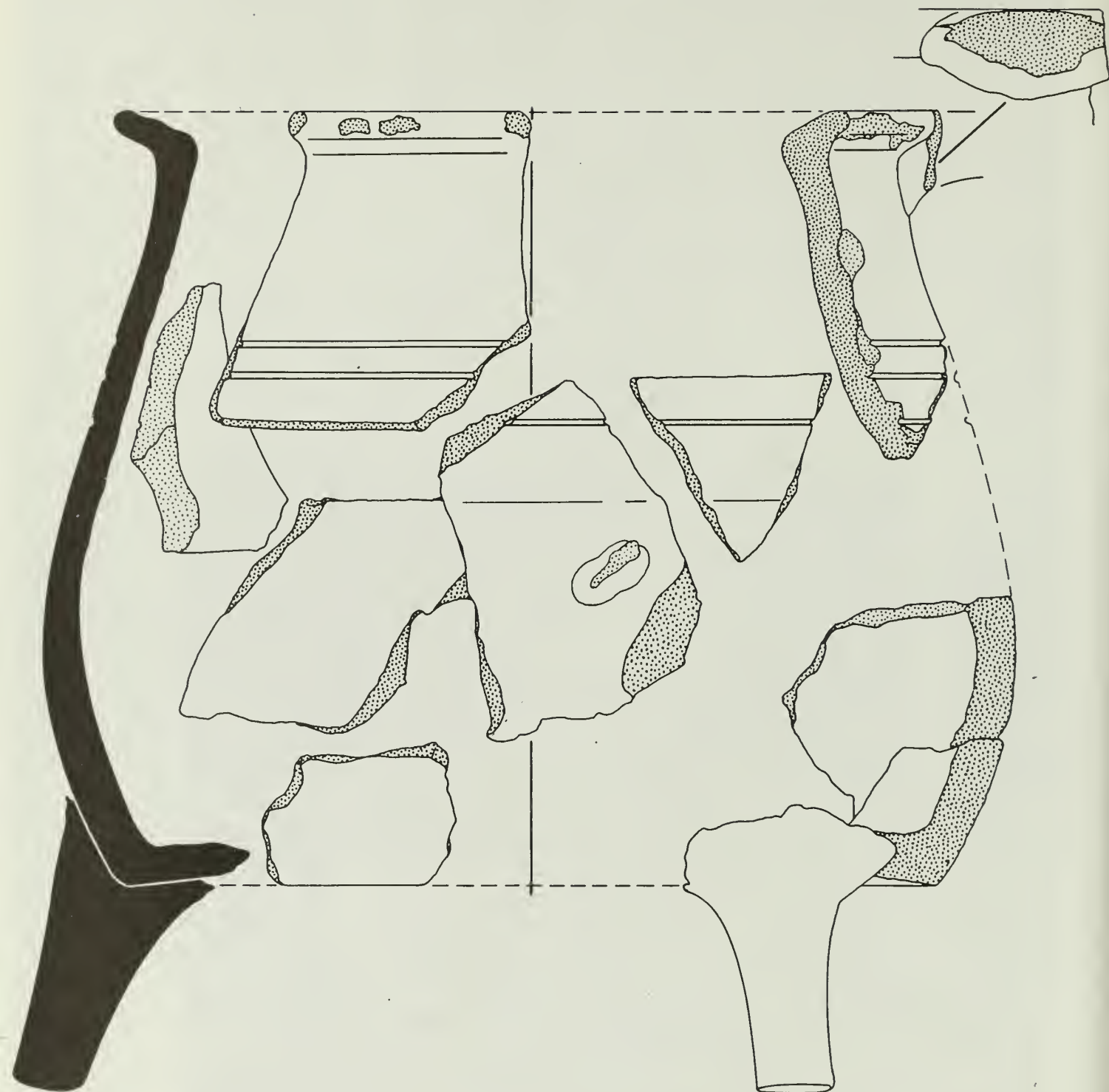


FIGURE 233. PIPKIN, FOOTED, AS ASSEMBLED FROM FRAGMENTS FOUND AT YORKTOWN.



FIGURE 234. PIPKIN FEET FROM YORKTOWN.

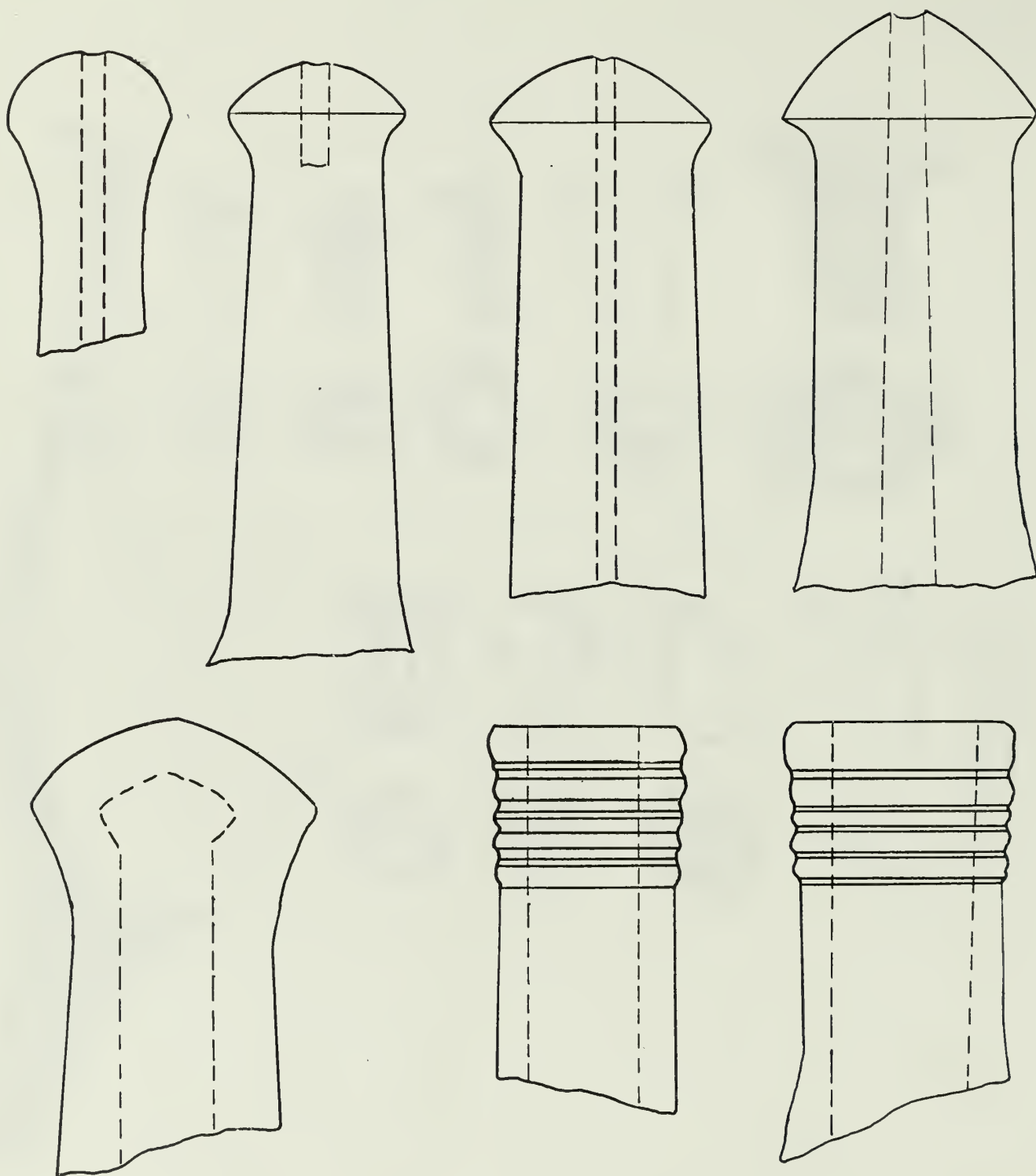


FIGURE 235. PIPKIN HANDLES, STONEWARE.

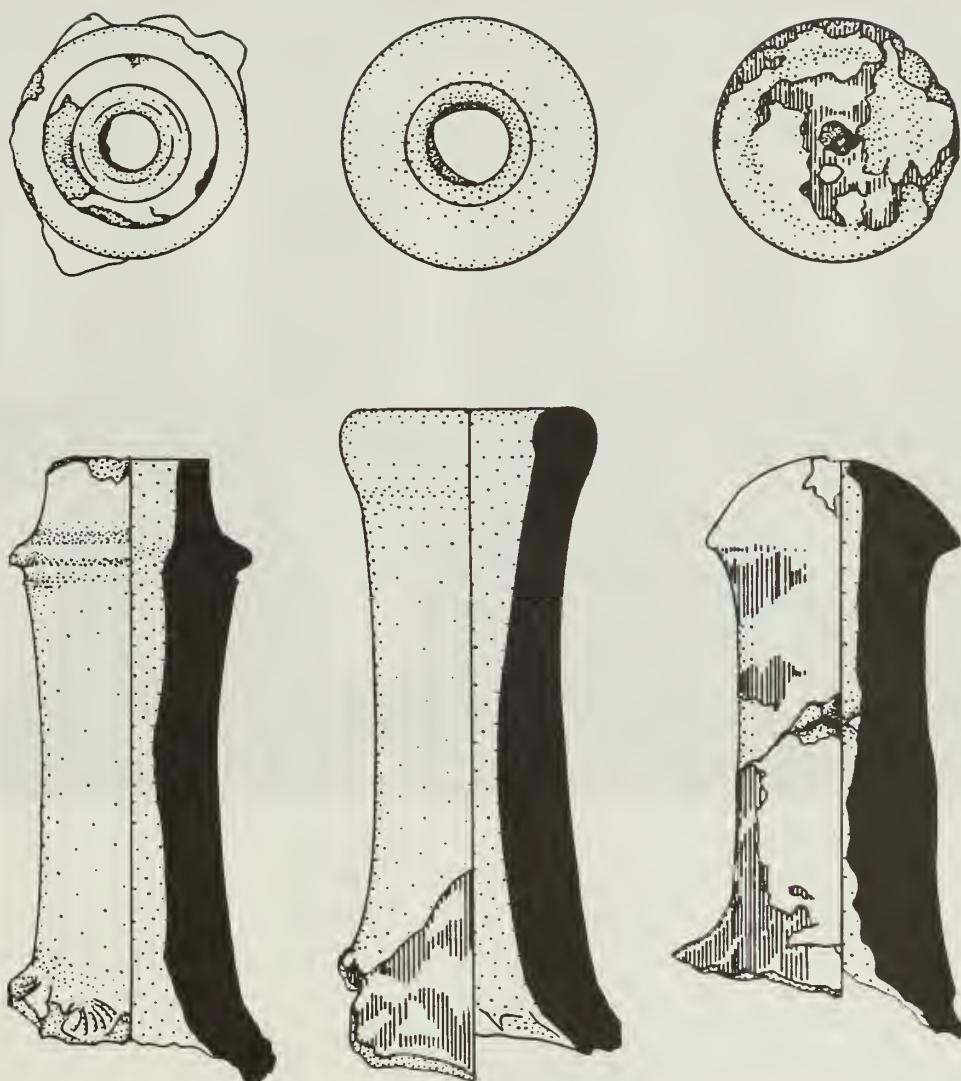


FIGURE 236. PIPKIN HANDLES, EARTHENWARE .

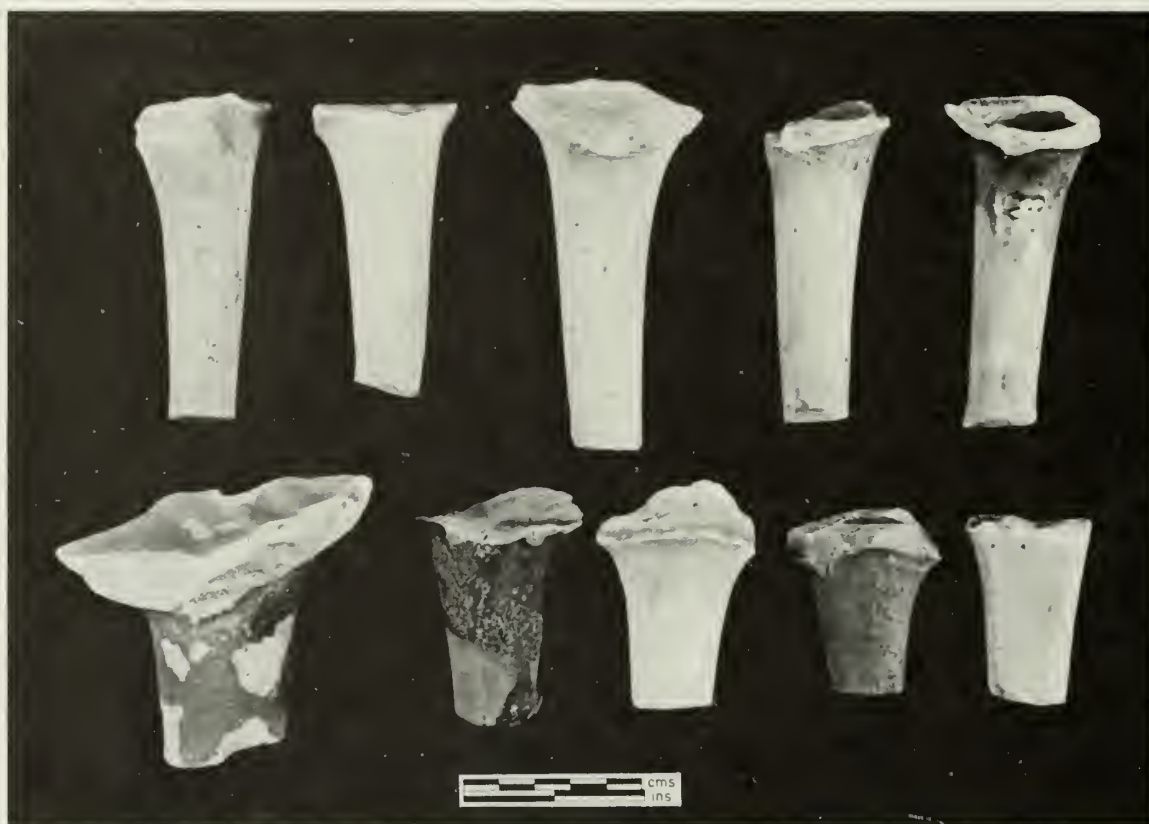
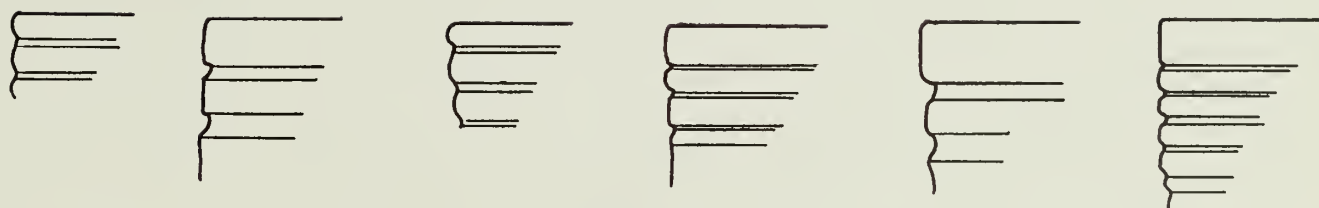


FIGURE 237. PIPKIN HANDLES (TOP) AND FEET (BOTTOM).



STONEWARE



EARTHENWARE

FIGURE 238. PIPKIN RIMS AND CORDONING.

PLATE

Few plate fragments were recovered, so it is impossible to give a detailed description of these forms. However, from the limited evidence, it seems probable that both stoneware and earthenware plates were manufactured in Yorktown. The diameters of these plates varied from 8 to 10 inches, with rims measuring 1/2 inch to 7/8 inch in width. Two rims were decorated with incised lines, while 8 rims were plain.

Both bisque and glazed sherds were found.

Illustration:

Figures 239, 240.



FIGURE 239. PLATE, BISQUE.



FIGURE 240. PLATE (OR BOWL) RIMS,
STONEWARE AND EARTHENWARE.

PLATTER

Definition: large, wide-rimmed, low dishes with flat bases; usually slip decorated, but sometimes plain.

Ware: earthenware, bisque and glazed.

Description:

Color - body color is usually a light red to pinkish, with few dark or reduced sherds; glazed pieces usually yellow in color in non-decorated areas; occasional non-decorated sherds are brown.

Glaze - lead glazed on interior surface, often with glaze runs or areas of sloppily applied glaze on lower or exterior surface. Some green glazed sherds have been found.

Slip/Wash - interior surface white or red slipped to form base for decoration. Slip is clay mixed with water to the consistency of heavy cream and applied to still moist raw ware to allow the clay in the vessel and the clay in the slip to shrink at the same time to make a secure bond. Different colors are made by using different colored clays or by adding minerals such as iron, manganese, copper or combinations of them.

Decoration - Yorktown potters used four different methods of slip decoration after a basic coat of slip had been applied. These were trailing, combing, brushing and marbling or joggling. Trailing is done by filling a slip-trailer with colored slip and allowing it to flow out in thin lines. Slip-trailers are hollow containers with one or several holes which sometimes have quills inserted into them. The liquid clay runs out through the quill onto the ware as the potter moves his hand to control the design. Some slip-trailers were made of fired clay or cow horns and other natural forms. Three sherds with slip-trailed rims were excavated at the site.

Combing was done by applying parallel lines of slip onto a background of wet slip. A comb-like tool was drawn at right angles across the lines forming fine hair lines into a design. A total of 42 sherds in the sample were combed, 35 on a white background and 7 on a red background. One sherd has 5 exactly parallel lines incised through the slip into the clay which may show the use of a tool with at least 5 teeth.

Other sherds had wide parallel brush strokes of different colored slips applied across the rim (vertically). The sherds that included a portion of the flat interior base show a marbled slip decoration which may have been their decorative solution of a series of brush strokes converging awkwardly in the center.

The majority of sherds in the sample are marbled or joggled. This is done by trailing slip in an irregular pattern onto a coating of wet slip, then sharply twisting or "joggling" the plate (Figures 245 and 246). More intricate marbling may be done with a tool drawn across the wet slip. One plate has a combed rim with a marbled center.

Yorktown potters used a white or red slip with two or three colors applied over them. The following color combinations were found to occur: on a white base - red and tan; grey and tan; dark and medium brown; red, grey, and tan; dark brown, medium brown and red; dark brown and red; grey and red, red, and mottled medium brown and red; and tan. On a red base - white and tan; grey-brown and tan; tan; dark brown, white, and tan; grey-brown and dark brown; white, grey-brown; dark brown and white; grey brown and white; white, tan and grey-brown; white and dark brown; dark brown; white, dark brown, and grey-brown, dark brown and tan; and tan, white, dark brown and grey-brown. Red and white slip colors (base colors) occurred at about similar frequencies in the sample.

A few small bisque sherds exhibit circular stripes on the interior or incised, slip-filled grooves on the rim.

Handle - none.

Marks-Stamps - four plates have a crude "O" incised into the clay on the back of the rim. This same type of "O" was found on two mugs.

Size - platters range in diameter from 10 to 15 inches, with the majority measuring 14 inches. Rim widths ranged from 1 inch to 2-1/2 inches. Height of vessel = c.2 inches.

Discussion: platters may have been made using a template to form the inner surface, including the marley and the wide rim with the incised line. This inside profile would be difficult to throw with such regular precision but as the slip hides any throwing or smoothing lines it is difficult to be certain of this technique.

The exterior base shows wheel head or bat impressions with no throwing or turning lines but the outside wall has throwing ridges. Excess clay around the base was slashed off with rough strokes of a sharp tool the same way milk pan bases were cut. The carefully made interior contrasts sharply with the rough exterior, which reinforces the possibility of the use of a template.

As with milk pans, the glazed slip decorated platters were stacked in a vertical position in the klin, leaning against each other as is indicated from glaze defects. The back of one sherd often has the broken rim of another plate glazed to it.

Illustrations:

Figures 241-246.

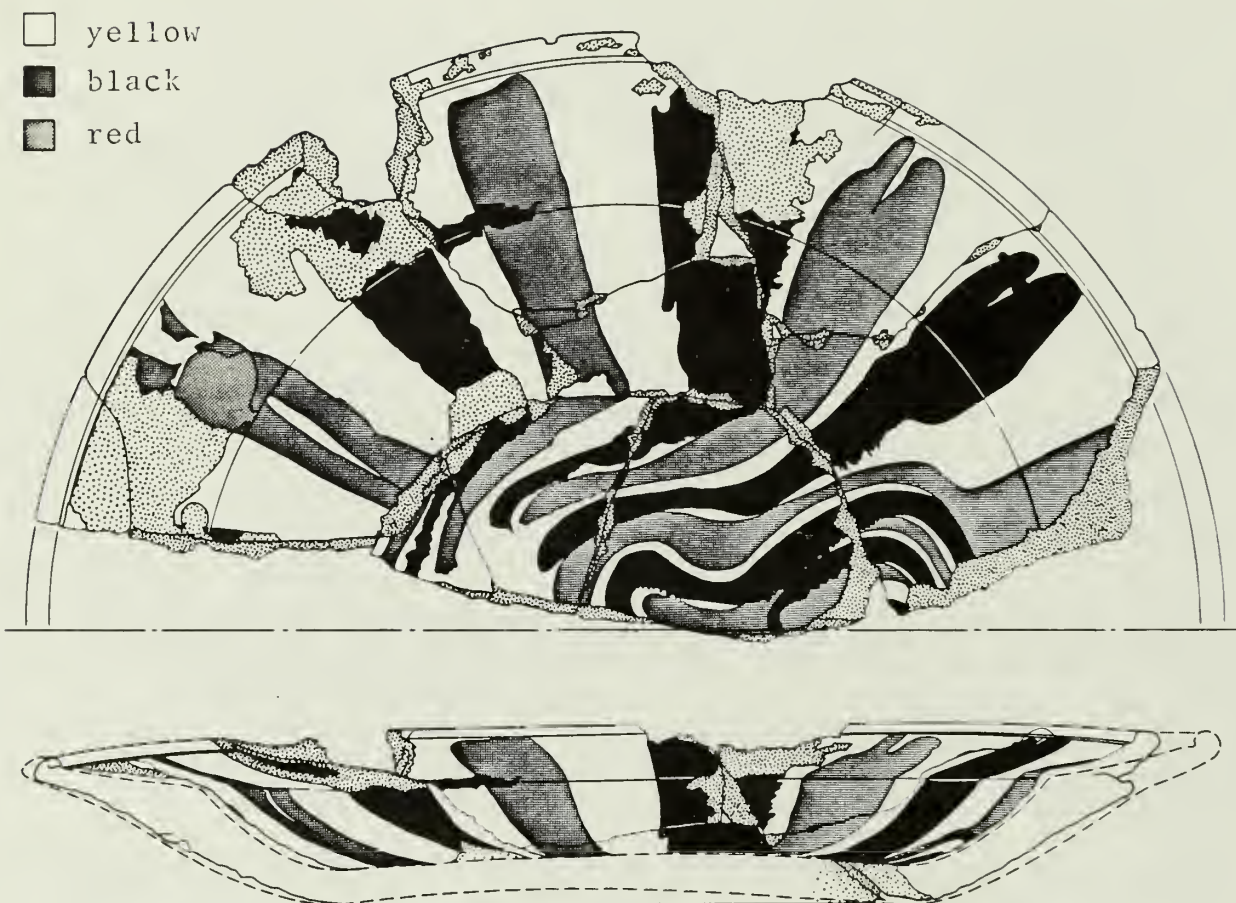


FIGURE 241. PLATTER, LEAD GLAZED EARTHENWARE.



FIGURE 242. PLATTERS, BISQUE EARTHENWARE. VARIATIONS IN SLIP APPLICATION AND DESIGN.

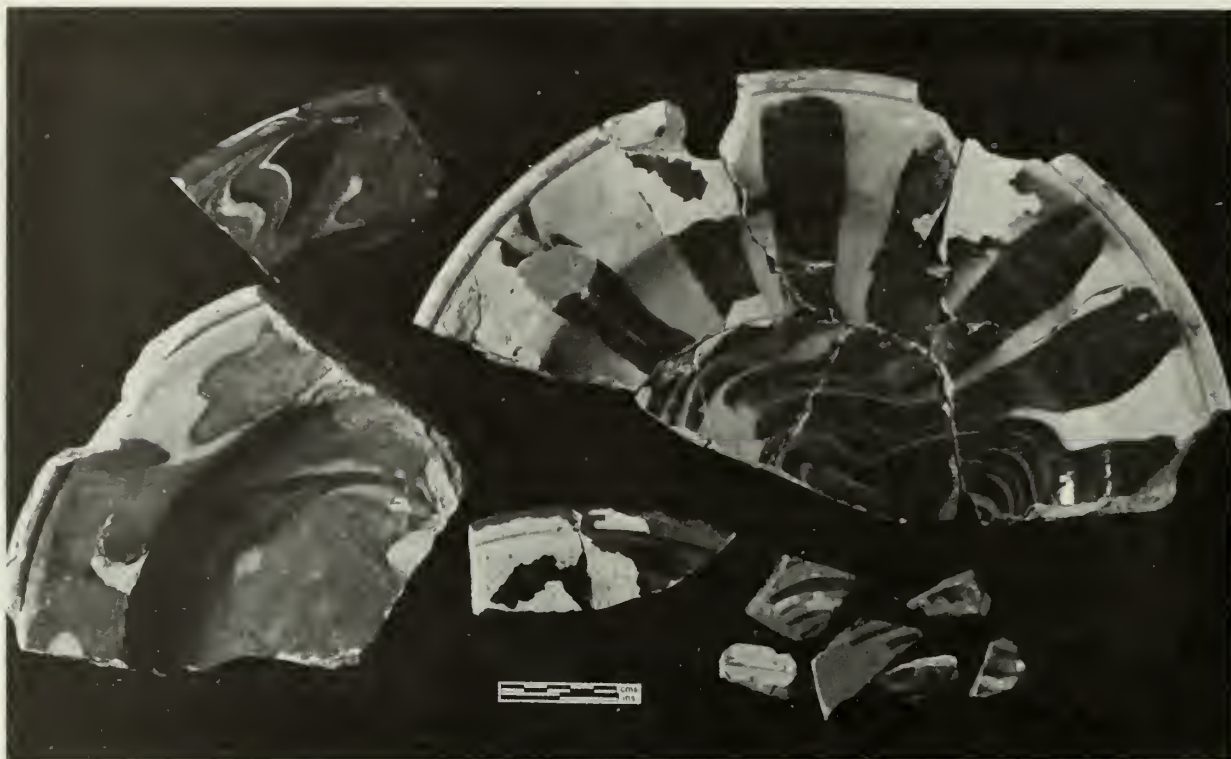


FIGURE 243. PLATTERS, LEAD GLAZED EARTHENWARE.



FIGURE 244. PLATTERS, BISQUE EARTHENWARE.



FIGURE 245. APPLICATION OF SLIP DESIGNS
BRUSH AND SWIRLING.

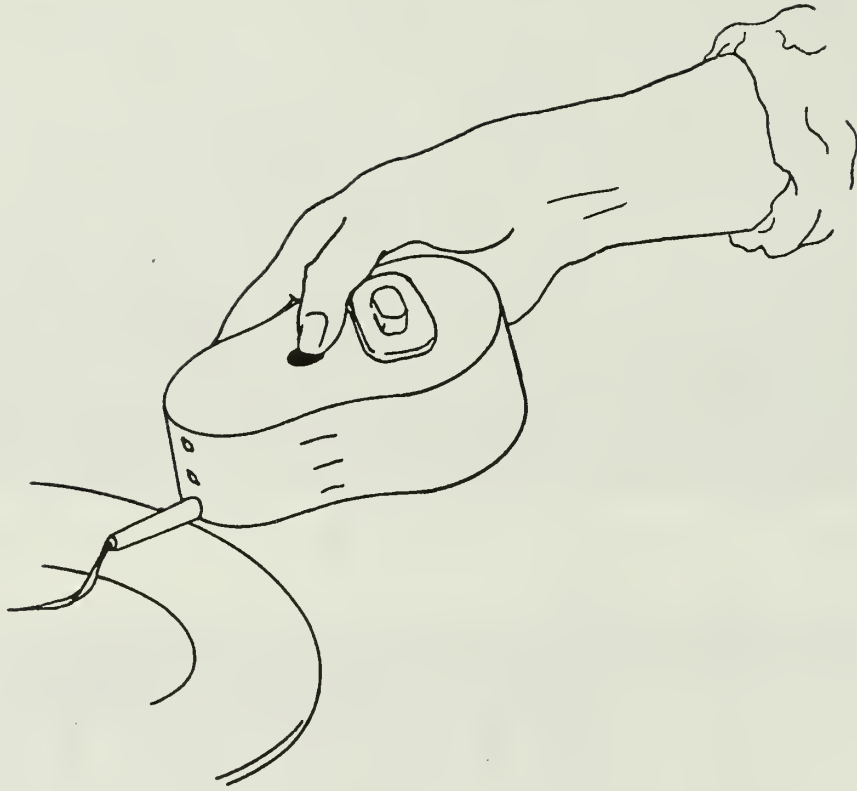


FIGURE 246. SLIP TRAILING CUP.

PORRINGER

Definition: a bowl-like vessel with a flat base, curved out-sloping walls, flattened and usually down-sloping (toward the interior) rim, with rounded exterior overhand sometimes with groove below. One C-shaped handle, circular in section, attached to rim.

One variant of the above has a raised annular base with a triangular shaped handle with incised lines on the upper surface.

Ware: earthenware, bisque and glazed.

Discription:

Color - reduced grey-green or yellow-tan to red-orange to red-brown with darker flecking depending on kiln temperature and atmosphere during firing.

Glaze - lead glazed on all surfaces.

Slip/Wash - none.

Decoration - none.

Handles - ususally one loop or C-shaped handle per pot. Handles occur in three sizes: small ($3/8$ to $1/2$ inch dimater); medium ($5/8$ inch diameter); large ($3/4$ inch diameter).

Triangular handles - see dedication pot discussion.

Rim Variants - width of the rim varies between $3/8$ inch and $3/4$ inch, with majority measuring $1/2$ inch (bisque). For glazed rims, rim widths vary between $3/8$ inch and $5/8$ inch, with the majority $1/2$ inch.

Marks-Stamps - two porringers have crude mark or initial on side (Figure 254), except for 'dedication' porringer (see below).

Size - one complete bisque pot measures 7 inches in diameter and $3-1/4$ inches in height; this pot weights 1 pound 6 ounces. Capacity - 3 cups.

Rim diameters vary between 7 and 8 inches (bisque) and $6-1/2$ inches to 8 inches (glazed).

Measurements of the 'dedication' porringer (in inches): maximum height at handle - $3-3/4$; rim diameter - $6-1/2$; basal diameter - $3-1/8$; handle dimensions - length (to rim) $2-7/8$; maximum width is $2-1/8$.

Weight of 'dedication' porringer - $1-1/4$ pounds; capacity of 3 cups.

Discussion: the combined total of identified bisque and glazed porringer sherds is not an accurate estimate of porringer production, as some bowl rims and porringer rims are similar and therefore difficult to distinguish as to form. Positive

identification of the porringer form depends on the presence of either an inward sloping rim or a handle attached to the rim.

The so-called 'dedication' porringer, as discussed in Chapter 5, has a triangular, solid handle. There is no doubt that this unique and important piece was made at Yorktown, as the fabric of the pot is identical to other earthenwares produced at the site; also an identical bisque handle fragment was found at the site. Recent reevaluation of the initials incised into the 'dedication' porringer suggests that the letters are 'A.C' instead of 'A.G' as formerly thought. Comparisons with 18th C. handwriting tends to support the former initials - 'A.C.'. However, neither initials can be identified in the York County records (Figures 247-252).

The tin-glazed cup found under the 'dedication' porringer is English, probably from Bristol, and dates to around 1700 (Figures 249-253). All surfaces of the handled cup are tin-glazed and the exterior is exquisitely painted in blue, with the lip of the rim painted in red. The cup is beautifully potted and very thin. The cup measures 3 inches in height, 2-1/2 inches in diameter at the rim, and 1-1/4 inches in diameter at the raised annular base.

Illustrations:

Figures 247-256.



FIGURE 247. DEDICATION PORRINGER *in situ*
NEAR SOUTH EDGE OF LARGE KILN.
LOOKING NORTH.



FIGURE 248. DEDICATION PORRINGER *in situ*, CLOSEUP VIEW.



FIGURE 249. TIN GLAZED CUP BENEATH PORRINGER.
NOTE IMPRINT OF PORRINGER.



FIGURE 250. BURIAL OF PORRIGER AND TIN GLAZED CUP BEHIND LARGE KILN.



FIGURE 251. BLUE ON WHITE DELFT CUP WITH DEDICATION PORRINGER.

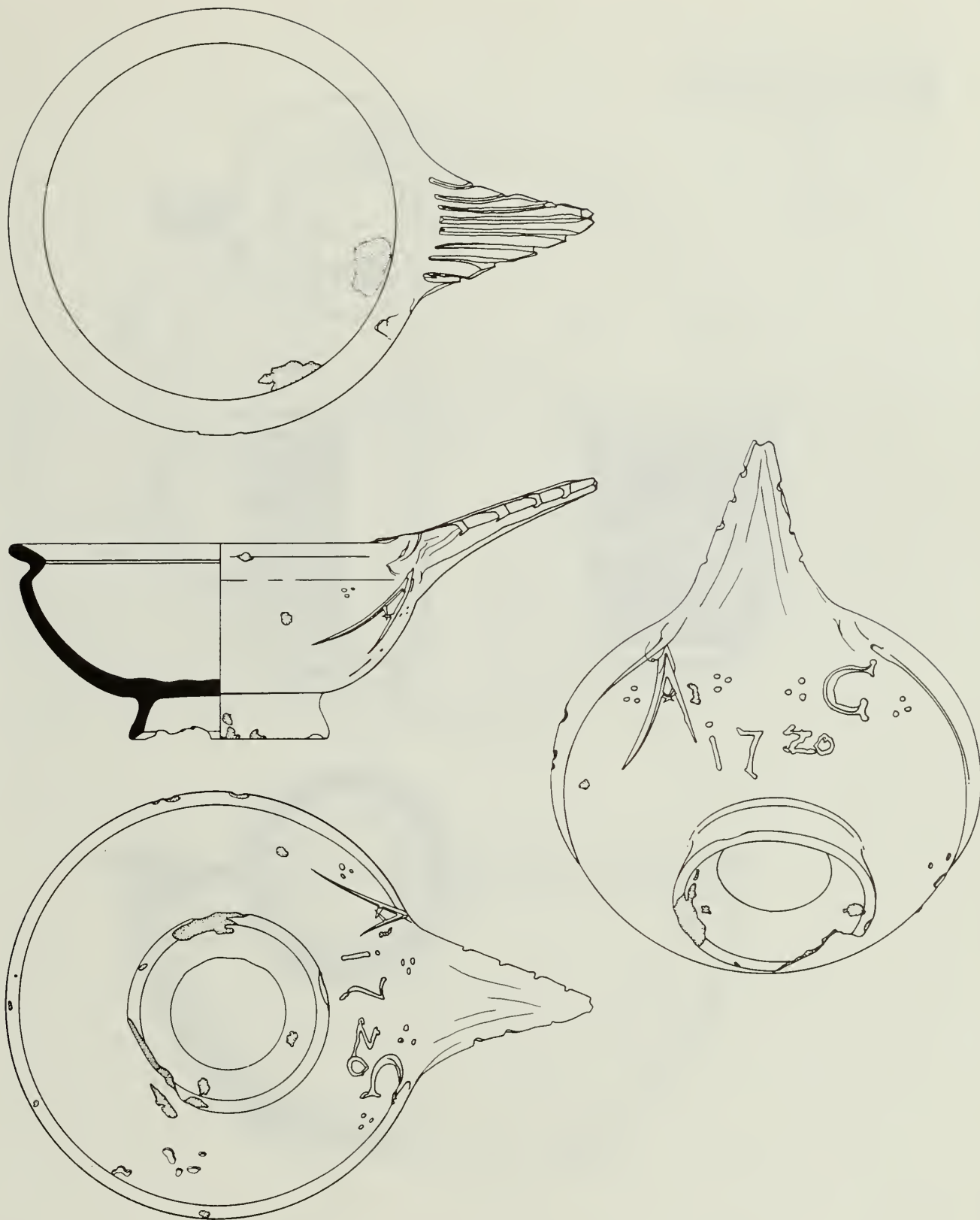


FIGURE 252. PORRINGER, LEAD GLAZED EARTHENWARE. 'DEDICATION' POT, WITH INITIAL AC AND 1720 DATE.

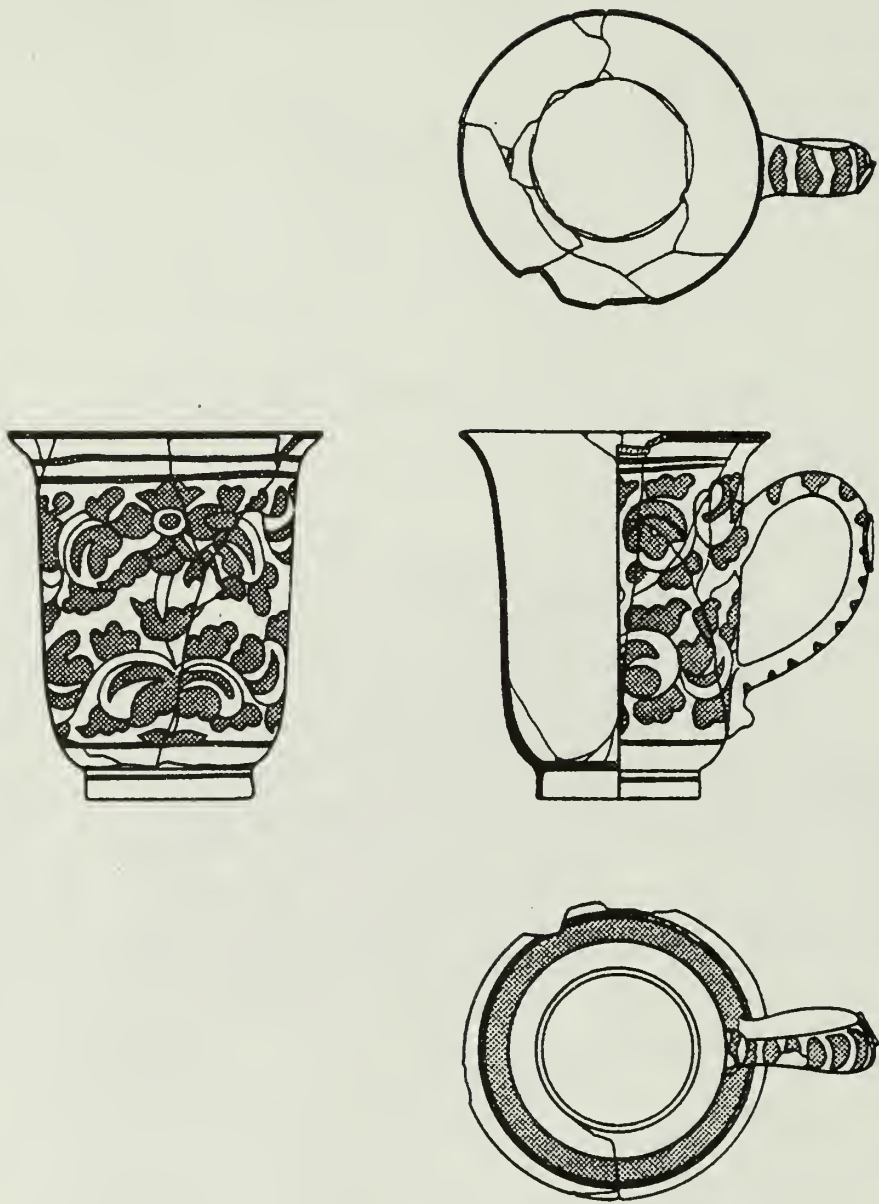


FIGURE 253. TIN GLAZED CUP FROM ENGLAND.

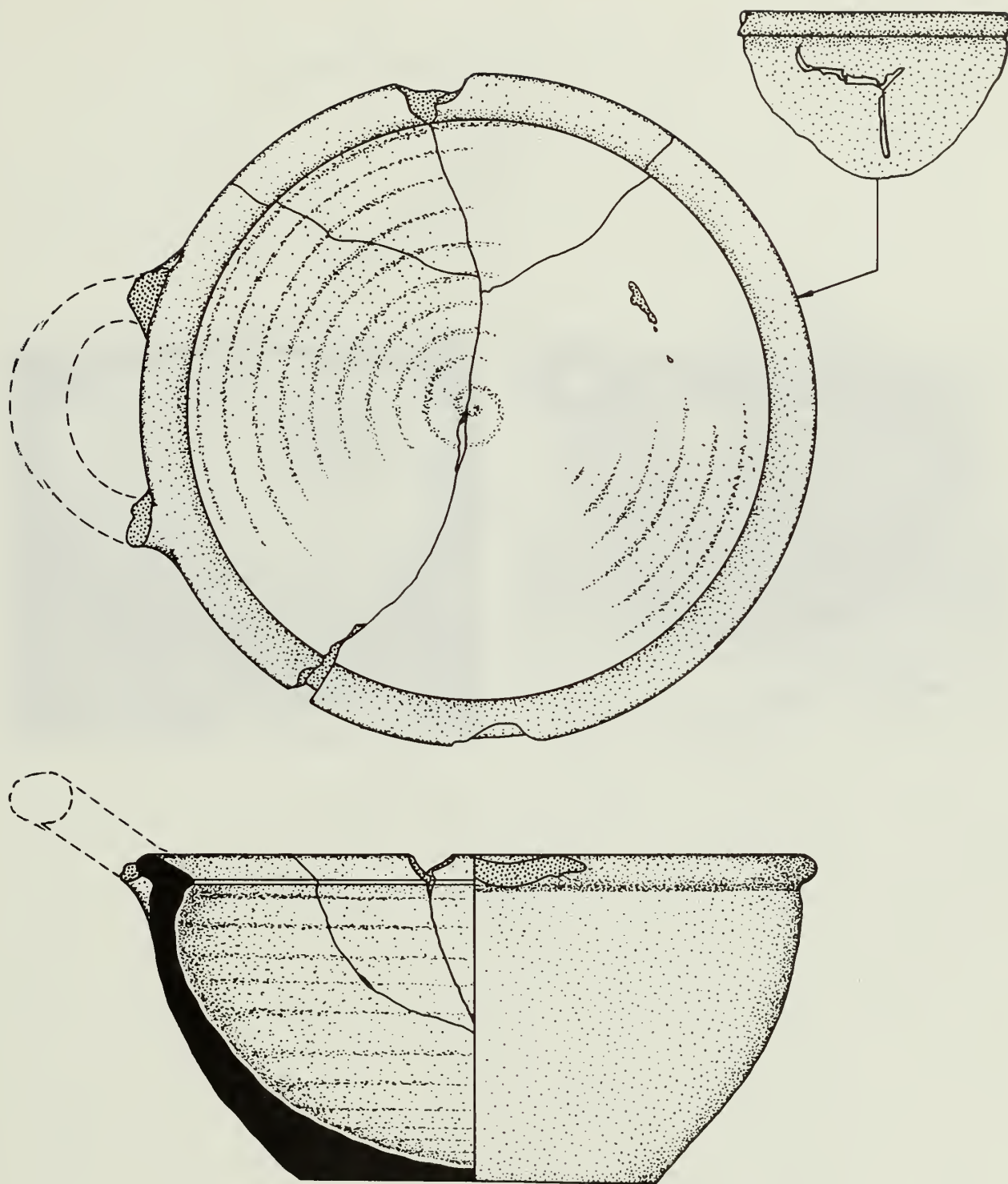


FIGURE 254. PORRINGER, BISQUE EARTHENWARE.



FIGURE 255. PORRINGERS: LEAD GLAZED (7" DIAMETER)
AND BISQUE.



FIGURE 256. PORRINGER IN USE.

SAGGARS AND OTHER KILN FURNITURE (LID, PROP, PAD, WAD)

SAGGAR

Definition: a refractory clay box inside of which pots may be protected during firing in the kiln. Yorktown saggars have four openings cut into the walls to permit the entrance of heated air and volatilized salt. Three of the openings, which vary in dimension with the size of the saggar, are teardrop shaped and the fourth is a wide rectangular slit cut through the rim, extending downward to the inner basal surface. In addition, several shallow rounded gouges were often cut out of the rim in order to facilitate more air movement when saggars were stacked on top of each other. Some saggars exhibit a 5/8 inch to 1-7/8 inches hole in the center of the base for increased circulation.

Ware: stoneware, bisque and mostly glazed.

Description:

Color - grey to red (underfired) body. External appearance is grey to greenish-grey, depending upon the amount of salt glaze.

Glaze - most saggars are heavily coated with a thick green salt glaze from repeated firings, as saggars were used over and over again until they broke.

Slip/Wash - none.

Decoration - a minority have fine incised lines on the entire outside wall; a few have a smooth outside wall with one flat cordon at the rim. The majority of saggars are not decorated.

Handle - none.

Marks-Stamps - six saggars are marked with an X on the exterior wall c.3/4 to 1-1/4 inch below the rim.

Size - saggars range in diameter from 4 to 10 inches and in height from 4 to 10-1/4 inches. There seems to have been three main sizes in use: 1) c.4-1/2 [all measurements in inches] diameter and 4-1/2 to 5-1/2 height, with a weight of c.2 pounds. Capacity = 1 mug; 2) c.6-1/8 in diameter by 6-3/4 high, weighing about 4-1/2 pounds; capacity = 2-3 mugs; 3) 8-1/2 in diameter by 6-1/4 in height, weighing 5-3/4 pounds; capacity - 203 mugs. Some saggars have a similar diameter to #3, but are 9-10 inches in height and weigh c.8-10 pounds each.

Discussion: a major production item at the pottery was thick, straight-sided cylinders or saggars, used to hold the finely thrown mugs during stoneware firing. The saggar protected the mugs from excesses of heat, flames and salt fumes, and permitted stacking in the kiln. Some saggars held two to three mugs, but the majority appear to have held only one mug (Figure 264).

Refractory pads placed inside the saggar separated the mug from the base during salt firings. Columns of saggars were placed one on top of the other, separated by a refractory clay pad(s). The topmost saggar was covered by a saggar lid

The saggars produced at Yorktown are identical to those observed by the senior author at kiln sites in London and in the Stoke-on-Trent area. They also resemble those used by Piccolpasso (Figure 265).

Apparently some potteries in England had special wheels for throwing saggars. No historical records or excavated material show if saggar wheels were used at Yorktown.

Illustrations:

Figures 257-265, 270

SAGGAR LID

As previously mentioned, the topmost saggar in a column was covered by a lid. Numerous salt glazed, as well as a few bisque, saggar lids have been recovered. Diameters varied from 4-1/2 inches to 10 inches, with the majority measuring c.6 inches. Thickness of lids ranged from 3/8 inch to 1-1/8 inches. Some lids with rounded edges were thrown and some with straight edges appear to have been pressed into a mold. One surface of a lid measured 5-3/4 inches in diameter, but tapered outward to 6-1/2 inches in diameter. Another type of lid was made by pressing together wads of refractory clay into a rough uneven surface. Yet another type has an incised ring on the flat surface, just inside the edge.

Illustrations

Figures 258, 261, 263.

PROPS, PADS, WADS

Props or spacers, small pads, and wads or wedges were all used to keep pots and saggars from sticking to one another in a salt glazed kiln. These items of kiln furniture contained more sand and were therefore more refractory in nature.

Props are solid tubes of clay used in the stoneware firing to separate saggars from each other within stacks, between stacks, and between stacks and the kiln wall. Wads of refractory clay were placed on both ends of each prop.

A large number of props were found, especially within the fill of the Large Kiln (Figures 268, 269). Props vary in length from 1-5/8 to 3 inches and in diameter from 1-1/2 to 2-1/8 inches. All props are made of refined clay with no grog, sand or refractory material. All are heavily coated with salt glaze making it difficult to tell how they were manufactured. One prop, split lengthwise, has longitudinal layers of clay showing that it was rolled and not extruded.

Wads of refractory clay were hand-molded into a variety of rough, irregular shapes to fit under or between pots. Square and rectangular flat pad were also used for stacking. Typical sizes include 1-1/8, 1-1/4, and 1-1/2 inches square. Other rectangular pads ranged from 1-1/4 by 1-3/8 inches to 1-7/8 inches.

Other kiln furniture included five small triangular bars and four cone-shaped forms. No saggars with peg or bar holes were found.

No evidence of shelving was found.

Illustrations:

Figures 265-269.

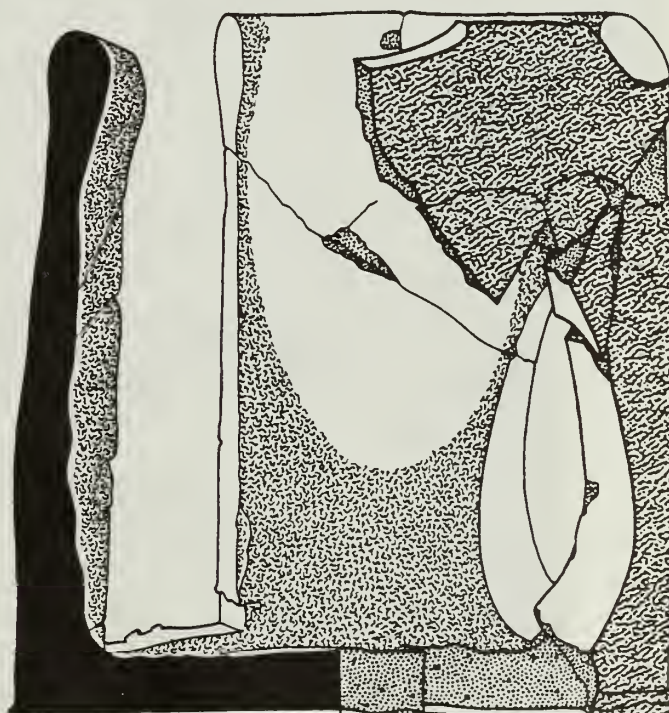
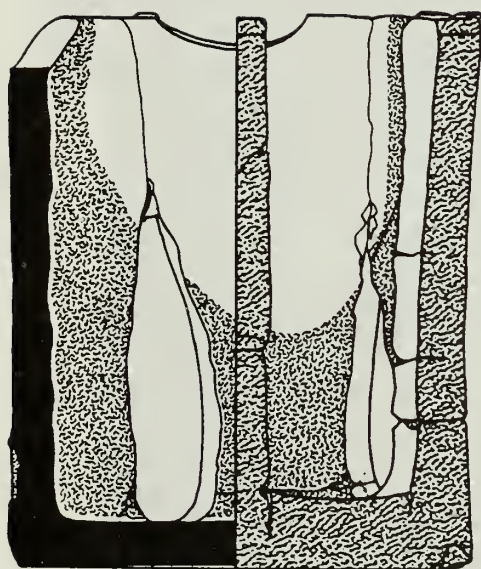
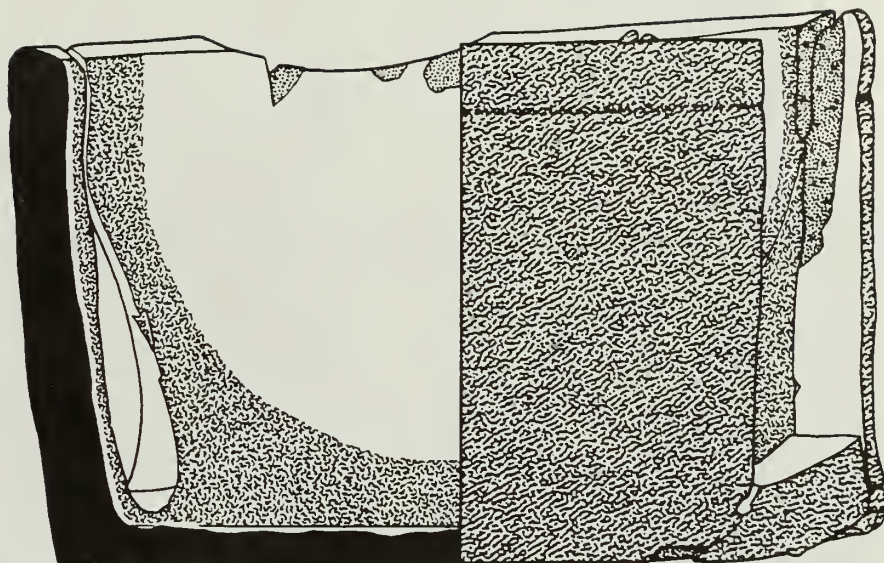


FIGURE 257. SAGGARS, SALT GLAZED.

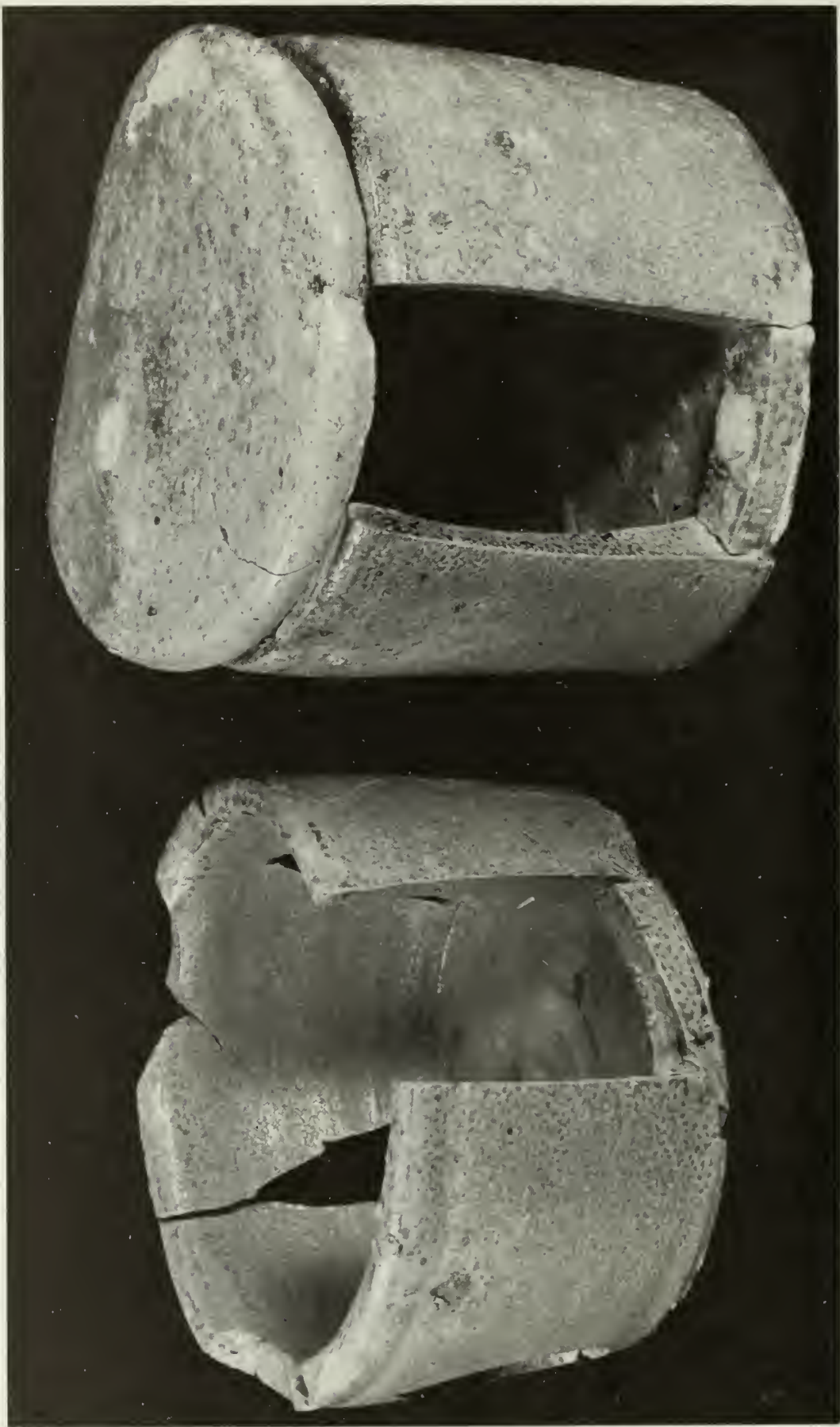


FIGURE 258. SAGGARS AND SAGGAR LID.



FIGURE 259. SAGGARS. POT IN CENTER IS $6\frac{3}{4}$ " HIGH.

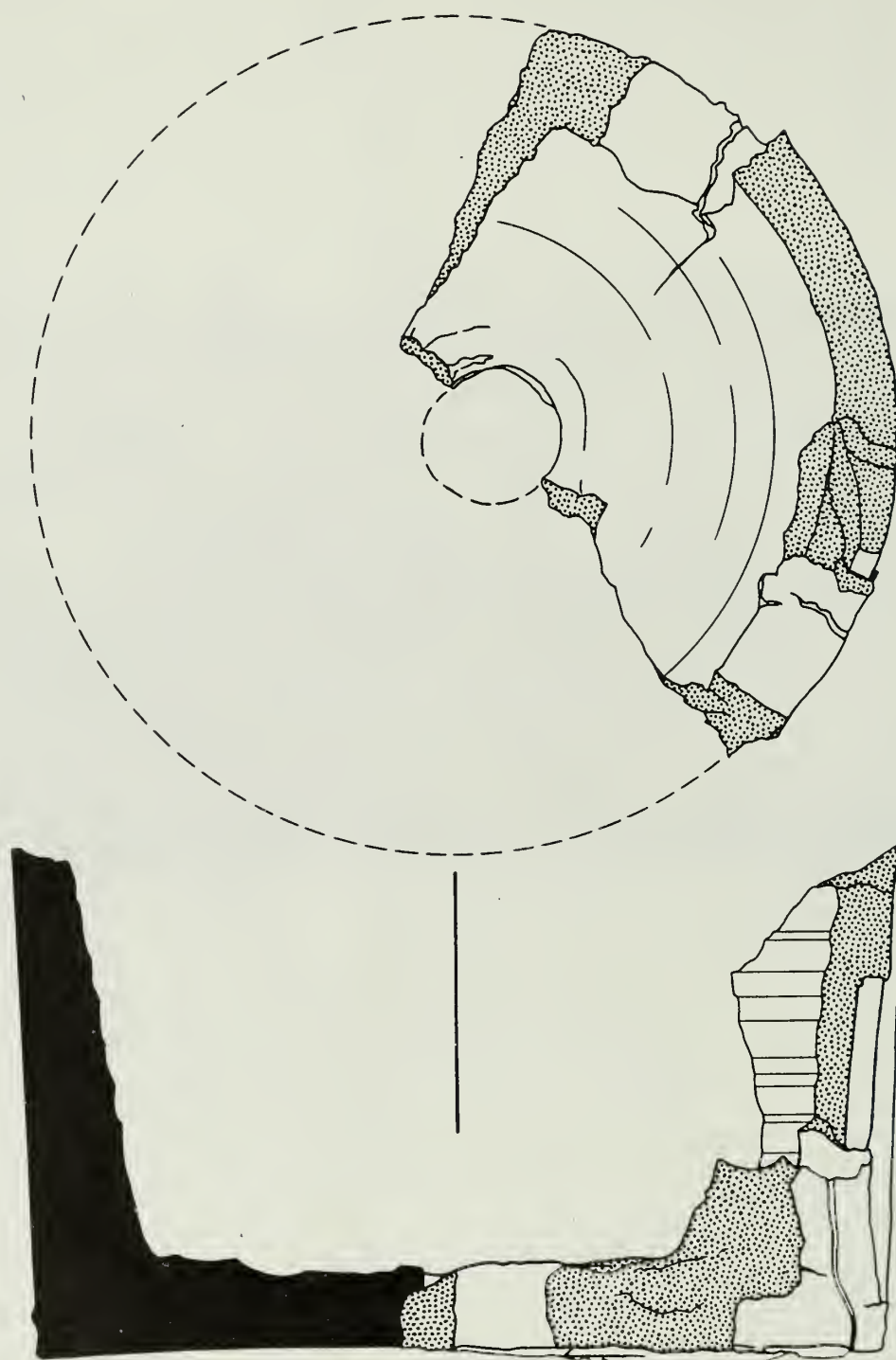


FIGURE 260. SAGGAR WITH HOLE IN BASE.

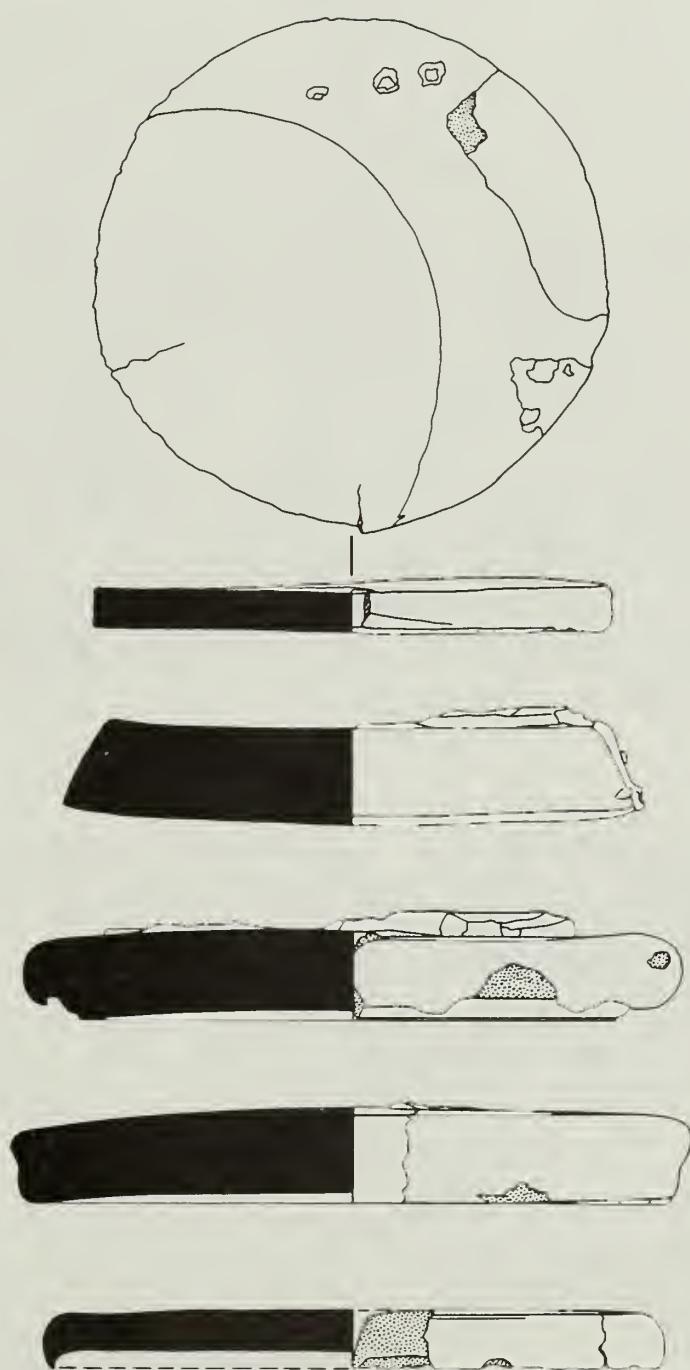


FIGURE 26I. SAGGAR LIDS.



FIGURE 262. SAGGAR BASES. LOWER EXAMPLES HAVE HOLE IN CENTER.

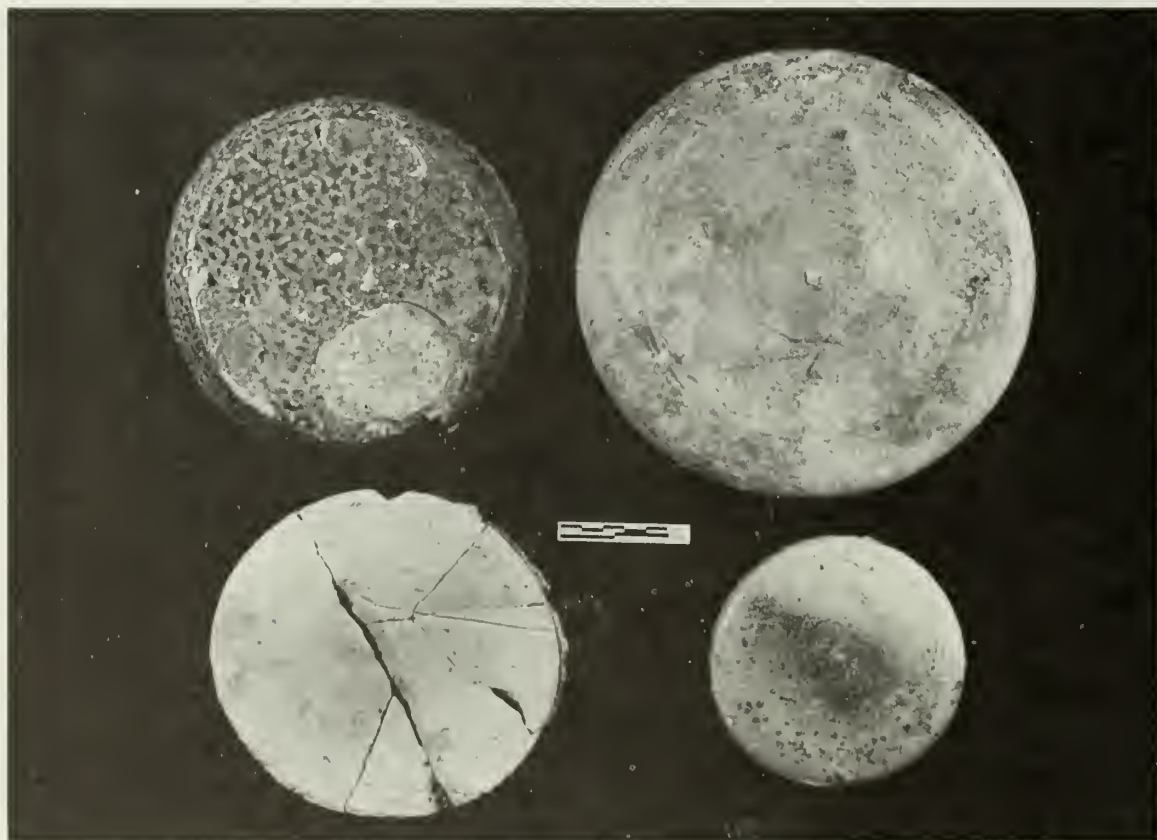


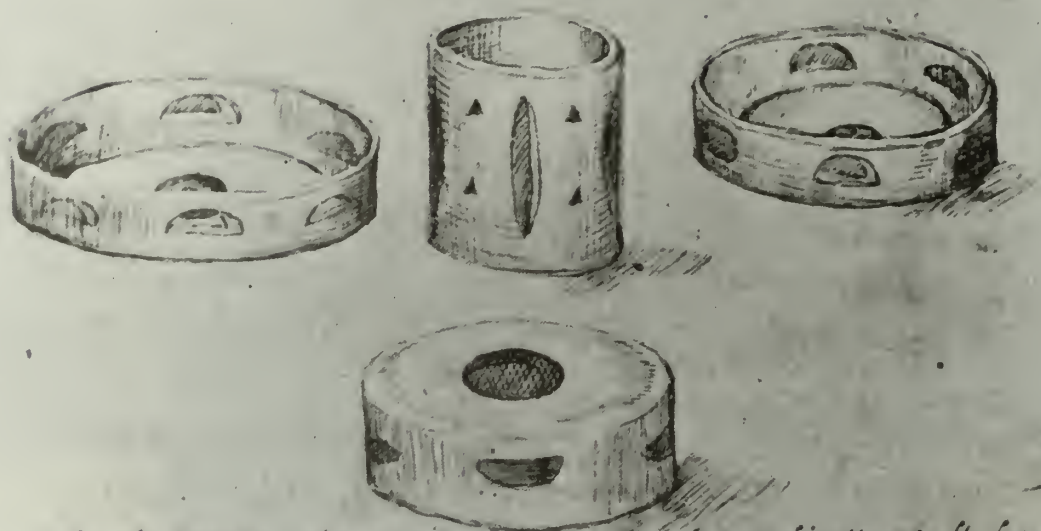
FIGURE 263. SAGGAR LIDS, SALT GLAZED AND BISQUE (LOWER LEFT).



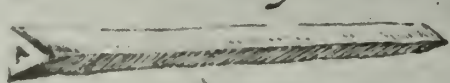
FIGURE 264. MUGS STUCK TO SAGGAR BASES .



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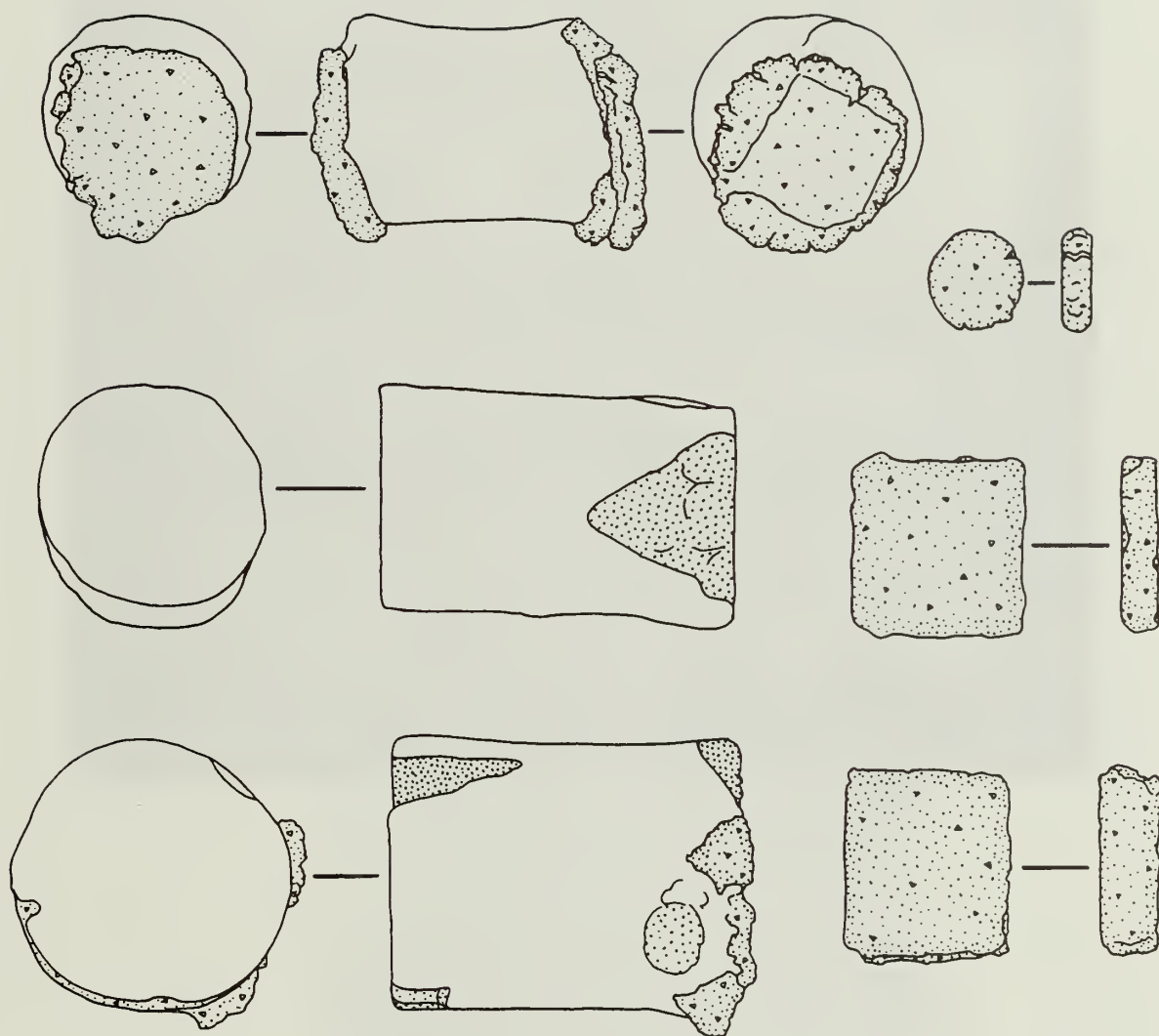


FIGURE 266. KILN FURNITURE - PROPS AND PADS.



FIGURE 267. KILN FURNITURE: PROPS (UPPER = BISQUE, SALT GLAZED, AND PROPS STUCK TO SAGGAR BASE (2)); PADS; PEGS; WEDGES-WADS (LOWER).



FIGURES 268, 269. PROPS *in situ* IN FLUE OF LARGE KILN.

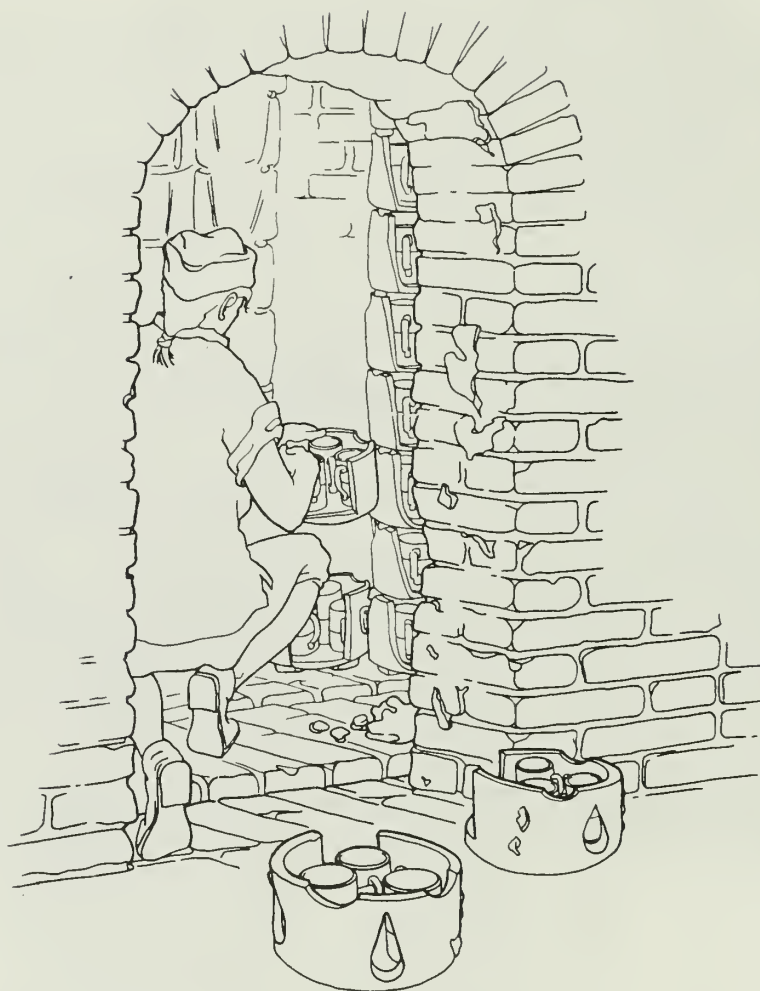


FIGURE 270. STACKING MUG FILLED SAGGARS
IN THE KILN.

SAUCE PAN

Definition: a flat based, open container with slightly out-sloping low walls.

Ware: earthenware, bisque and glazed.
stoneware, glazed.

Description:

Color - earthenware vessels are red-orange to red-brown to dark brown with darker flecking.
Stoneware is light to dark grey.

Glaze - earthenware is lead glazed on all surfaces; stoneware is salt glazed on all surfaces.

Slip/Wash - none.

Decoration - incised lines below rim on some earthenware and stoneware pots.

Handles - none.

Marks-Stamps - none.

Size - earthenware height varies between 1-3/4 to 4 inches, with the majority measuring 2-1/2 inches.

Stoneware varies between 2-1/8 to 2-1/4 inches in height. Diameter at rim (earthenware) - bisque forms vary from 8 to 15 inches, with the majority 10 inches. Glazed earthenware forms vary between 6-1/4 to 12 inches, with the majority 10-1/2 inches.

One complete earthenware (glazed) sauce pan measures 6-1/4 inches (rim) by 5-5/16 (base) by 2-3/8 inches in height. The weight of this pot is 13 ounces.

Stoneware rim diameters measure from 4-1/2 inches to 8 inches, with the majority 4-1/2 inches.

Base diameters: earthenware bisque - 5 to 8 inches; glazed diameters - 4 1/2 to 6 inches.

Discussion: sauce pan forms vary from nearly straight-sided pots with a thin rim and larger forms with more out-sloping walls with half round rims or rolled rims.

Illustrations:

Figures 271-274.

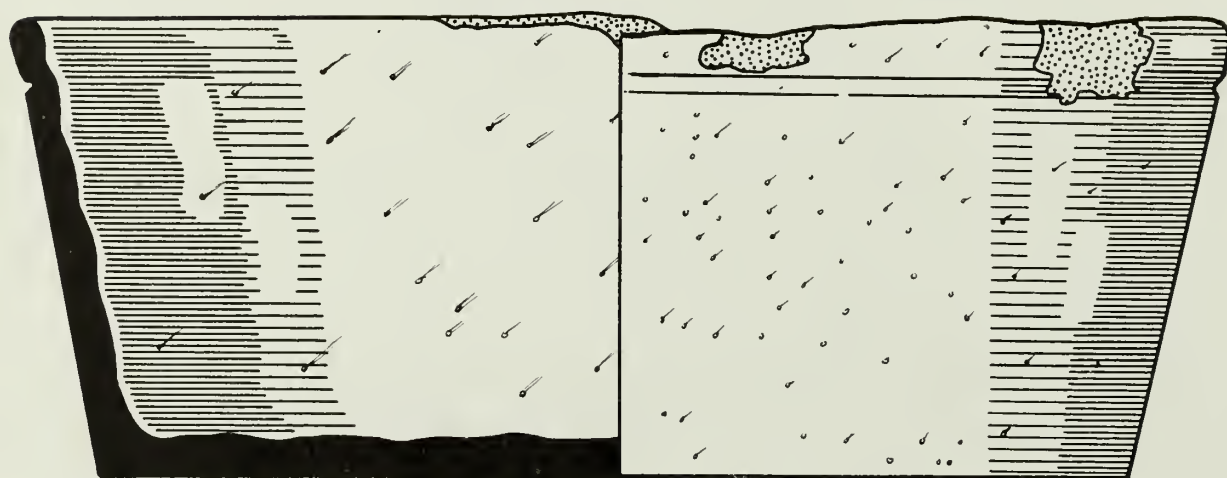


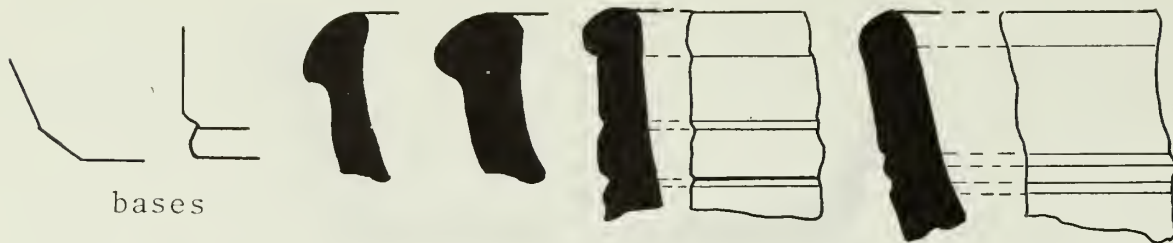
FIGURE 271. SAUCE PAN, LEAD GLAZED EARTHENWARE.



FIGURE 272. SAUCE PAN.

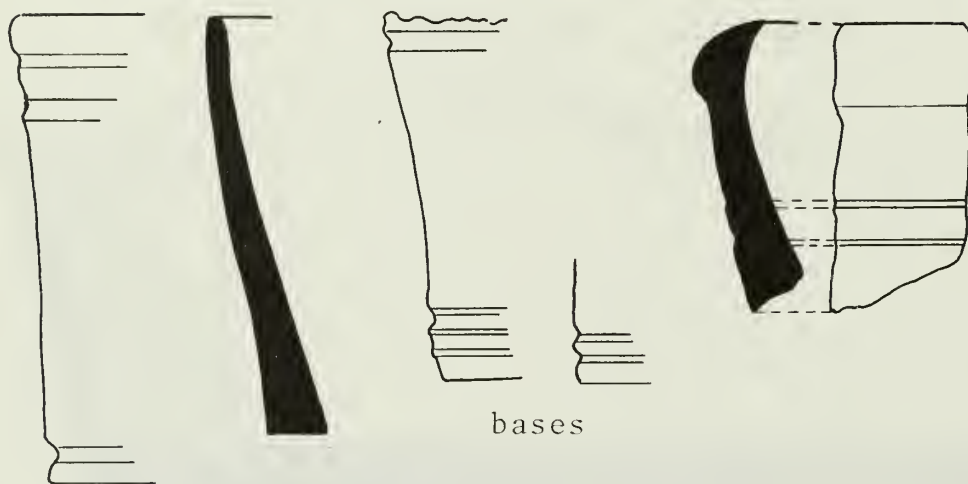


FIGURE 273. SAUCEPANS, LEAD GLAZED AND BISQUE EARTHENWARE.
POT AT LEFT IS $6\frac{1}{2}$ " IN DIAMETER.



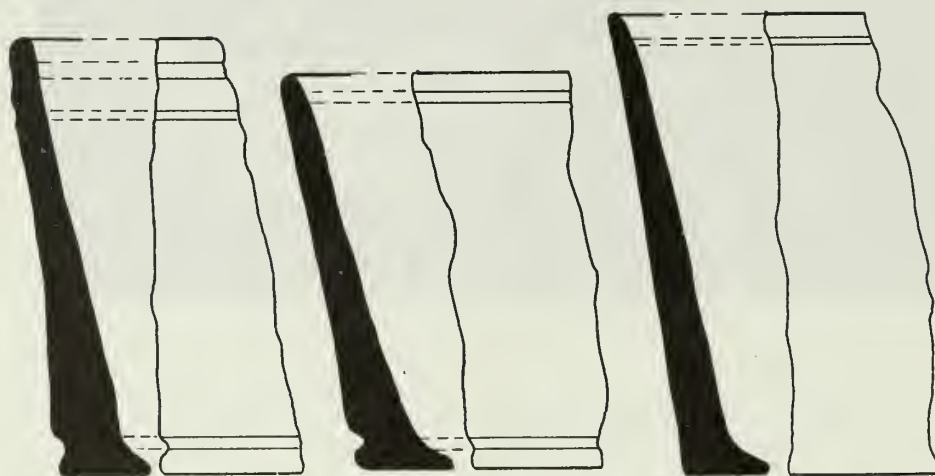
bases

bisque earthenware



bases

bisque earthenware or stoneware



stoneware

Figure 274. Sauce Pan Rims and Bases.

STOVE TILE

Definition: a square tile with a raised design on one surface and an encircling wall or flange applied at right angles to the flat tile.

Ware: earthenware, bisque and glazed (?).

Description:

Color - bisque earthenware is tan, pink, or reddish-pink. As only 3 glazed stove tile sherds were recovered, and since glaze appears only in patches on these sherds, it is impossible to discern whether the glaze dripped from other pots or if they were purposely glazed.

Glaze - unknown.

Slip/Wash - none.

Decoration - the surface of the molded tile is decorated with swag, six leaves, a pomegranite, and a flower [see later discussion].

Handles - none.

Marks-Stamps - none.

Size - the tile measures 7 inches square and 3/16 inch to 1/2 inch in thickness, with the majority measuring 1/4 inch in thickness. The entire stove tile with flanges measured approximately 2-1/4 inches in depth.

Discussion: the discovery that stove tiles were being manufactured at the Yorktown Pottery Factory is significant. A total of 436 sherds were found, representing c.44 separate tiles. This relatively small number of stove tiles may or may not be meaningful, as our sample size may not be representative of the amount of stove tiles being manufactured at the factory. However, several possibilities come to mind: the potters were producing stove tiles to sell; they were experimenting for future production; or they were making stoves for themselves. In any case, stove tile manufacture in Yorktown suggests the presence of a Dutch or German potter, as tile stoves were popular in Europe during the 18th century but not in England. They were also manufactured in Moravian areas of North Carolina (Figures 277-278).⁷ If they were being made to sell, these stoves were probably not sold in English Tidewater Virginia.

Yorktown stove tiles were made in two sections - an upper square tile (7 inches square), which had a raised design, and an encircling wall or flange (two inches deep) applied at right angles to the flat tile. The flanges slope inward to accommodate mortar [see later discussion].

Decoration of the flat tile was achieved in the following manner. The tile was pressed into a mold with a concave design of a draped swag, six leaves, a pomegranite with a bud on each

side and a convex representation of a daisy-like flower. The flower appears to be an added feature as it is concave in the finished tile unlike the rest which is raised. However, it was incorporated into the mold as all flower sections are identical. The design has Dutch or German elements in the swag, in the style of the four top leaves and the use of the pomegranite (although the latter was used in English slipware designs).

Thickness of the upper tile varied from 3/16 to 1/2 inch. Extra clay was sometimes pressed into the resulting hollows on the back when design elements were highly raised on the front. Ninety stove tile sherds had cloth impressions on the back, cloth perhaps being used to keep the clay from sticking to the work table, the roller or the potter's hands. One area on each side of several tiles has incised initials - an 'A' being the only legible one. This might be the same unknown 'A' as on the 'A.C 1720' porringer.

Flanges were made by rolling out slabs of clay, cutting them into strips and applying them to the back edge of the tile with slip. Some flanges have another small roll of clay formed by folding over the strip, thus making a rounded edge. Wads of clay were pressed into some corners for strengthening where a crack might develop as the clay was stretched around the corner. It would be difficult to apply the flanges without damaging the front design so they may have left the tile in the mold for this step.

Flanges were beveled inward so as to create a hidden mortar joint. In other words, the flat edges of the decorative tiles were flush together, while the actual stove tiles were held together by mortar applied between flanges of different tiles.

No corner of half tiles, necessary for assembling a stove, were found. Ceramic moldings for the base and top were also absent.

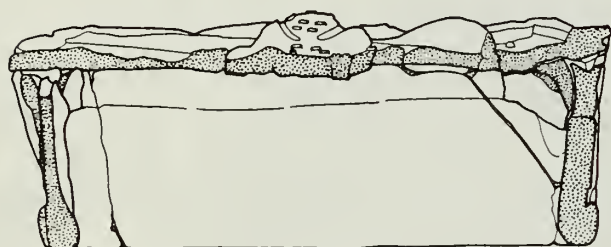
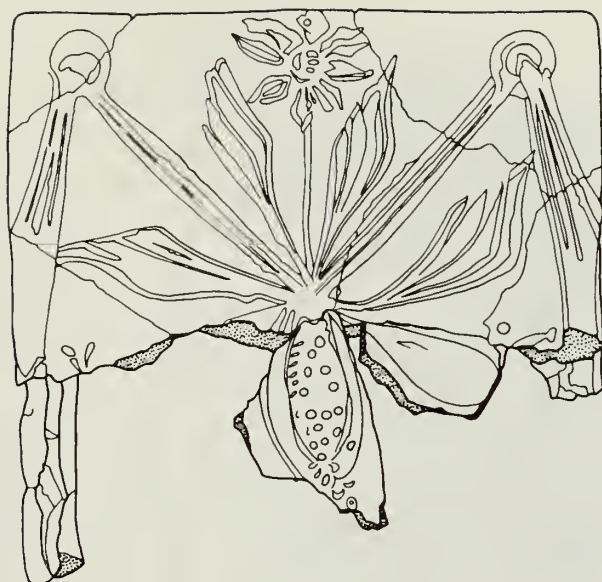
To assemble a stove, bisque tiles were laid up with raw refractory clay between them. More clay lined the interior to protect the tiles from excessive heat. The clay hardened when the first fire was built. It had to be started slowly with a gradual increase in heat to prevent cracking, similar to firing a kiln.

A minimum of forty tiles would be needed for a small stove. The conjectural drawing (Figure 276) is based on c.40 tiles.

Illustrations:

Figures 275-278.

⁷Bivins, John, Jr., The Moravian Potters in North Carolina, University of North Carolina Press (Chapel Hill, 1972), 174-187.



RECONSTRUCTED
STOVE TILE

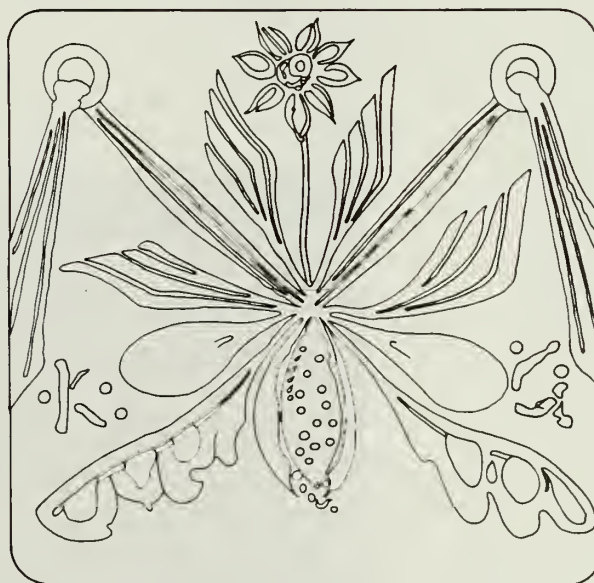


FIGURE 275. STOVE TILES, BISQUE EARTHENWARE.

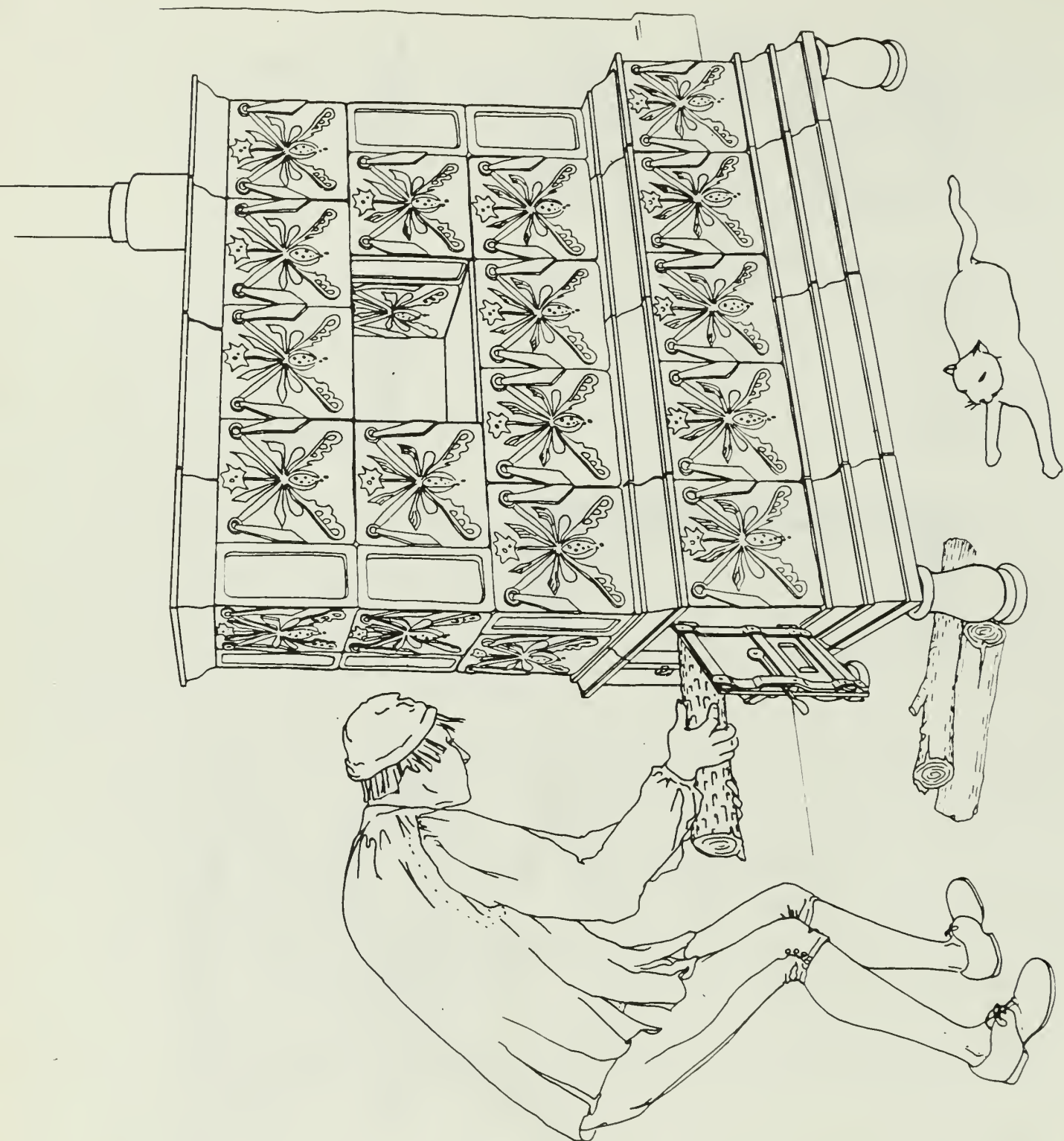


FIGURE 276. RECONSTRUCTED STOVE USING YORKTOWN STOVE TILES.



FIGURE 277. MORAVIAN STOVE MADE FROM TILES
(FROM BIVANS, 1972).



FIGURE 278. PARTS TO MAKE THE STOVE SHOWN
IN FIGURE 277. NOTE STOVE TILES
(FROM BIVANS, 1972).

TEAPOT

Definition: a finely thrown vessel with a turned foot, spout and handle, and lid with a knob handle.

Ware: earthenware, bisque and glazed.
stoneware, glazed.

Description:

Color - earthenware specimens are red-orange in color. The few stoneware examples in our sample had been dipped in iron oxide and were therefore fine mottled brown in color.

Glaze - earthenware is lead glazed on all surfaces. Stoneware is salt glazed on all surfaces.

Slip/Wash - the upper one-third of stoneware teapots were dipped in iron oxide slip.

Decoration - one incised line at shoulder.

Handles - one handle per teapot. Only one handle was found, a thin (3/4 inch wide) flat handle attached to shoulder, with lower point of attachment unknown.

Marks-Stamps - none.

Size - height of stoneware example = 4 inches. Rim and base diameters are 2-1/2 inches.

Discussion: a beautifully potted vessel. It is unfortunate that so few sherds were found - only 17. The teapot had a turned foot, out-sloping curved walls curving inward toward the rim, which was low walled and flat to accommodate a lid. The finely made lid has a knob handle.

This form was definitely made at Yorktown, as bisque sherds were found.

Illustrations:

Figure 279.

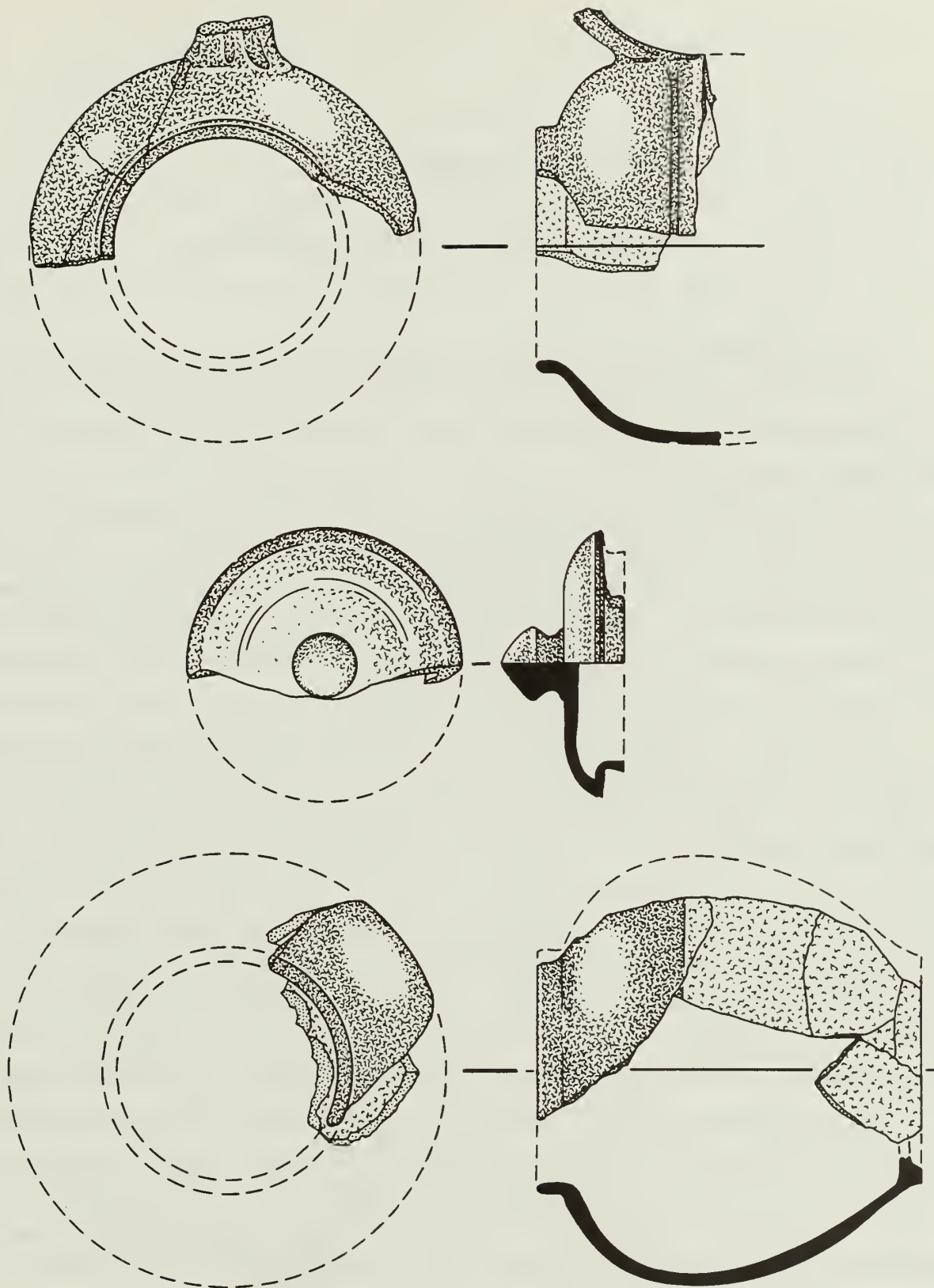


FIGURE 279. TEAPOT, SALT GLAZED STONWARE .

CHAPTER 11

OBSERVATIONS ON PRODUCTION METHODS

The Yorktown Pottery Factory produced both lead glazed earthenware and salt glazed stonewares. The study of the excavated ceramics provides interesting information on colonial pottery production methods and techniques.

Two traditions or styles are represented at Yorktown, one a Dutch or Germanic style and the other an English style. The first is represented by stove tiles, betty lamps, flat incised handles on porringer, tulip and leaf sgraffito designs, and the second by iron oxide dipped, cordoned mugs which are stylistically indistinguishable from English Fulham mugs produced at the same period.

The twenty three identified Yorktown shapes range from coarse utilitarian, lead glazed milk pans with knife trimmed bases to delicate, finely thrown and hard bodied, well salted teapots with expertly turned lids. The diversity of earthenware production of 21 forms and stoneware production of 15 forms reflects both the versatility of the potters and the needs of the 18th century community. However, one point needs to be stressed. The lack of relative dating evidence negates the possibility of knowing what forms were being produced at the same time. It is impossible to say whether or not all 21 forms were being made contemporaneously.

The Yorktown potters were well experienced in their craft, as is evident from the quality of their kilns and ceramic products. The Yorktown potters possibly produced the first salt glazed stoneware yet known for America, and they were experimenting and using a variety of ceramic techniques: the potters were using calcined flint in either the body, slip or glaze; they were dipping their mugs in a white slip in order to cover the dark body; copper green glazes were used on 12 forms; large platters were decorated with

slip, using five different techniques; the earliest known churns were made at Yorktown.

Unusual forms such as bird bottles, chafing dishes, colanders, and funnels show sound design for specific purposes. Robust forms, such as large footed pipkins, have a peasant quality. Other forms show technical excellence - thin cordoned mugs with fine interior-thinned rims, and delicate teapots with well fitting interior flanged lids.

We do not know the full story of the large number of shapes produced at Yorktown. Many rim forms remain unidentified as to vessel shape (Figures 297-304). Other undiscipherable mysteries include the many incised and stamped marks found on some sherds and vessels (figures 289-294), as well as the intriguing writing which appears on one probable bowl fragment found in 18th C. contexts in Gloucestertown - does the name of 'Rogers' incised into this sherd signify William Rogers? (Figures 295-296). A variety of small bisque earthenware pots, approximately 80 in number, were found in a dump area near Waster Pit No. 2 [see Chapter 9 for discussion]. These very interesting pots vary in size between 3 to 5 inches (rim diameter) and 1 to 2 inches in height. The majority have numerals or initials crudely incised into the upper surface. (Figures 280-288). These vessels may have been 'test pots' of some sort.

It appears as though both earthenwares and stonewares were fired in the same kiln. Both the Large Kiln and the Small Kiln have heavily salt glazed interiors. It is possible that earthenware could be fired in a salt glaze kiln but there is so little difference between their earthenware and salt glaze firing temperature that numerous bisque or lead glazed earthenware sherds should be found with traces of salt on them. None have been found to date. The Large Kiln probably served as the main production kiln for both earthenwares and stonewares.

As mentioned above, one significant discovery is the low firing temperature of hard bodied stonewares. It appears that stonewares were fired in a range between C/06 (1005°C) and C/1 (1125°C), which is a temperature range well within the coarse earthenware

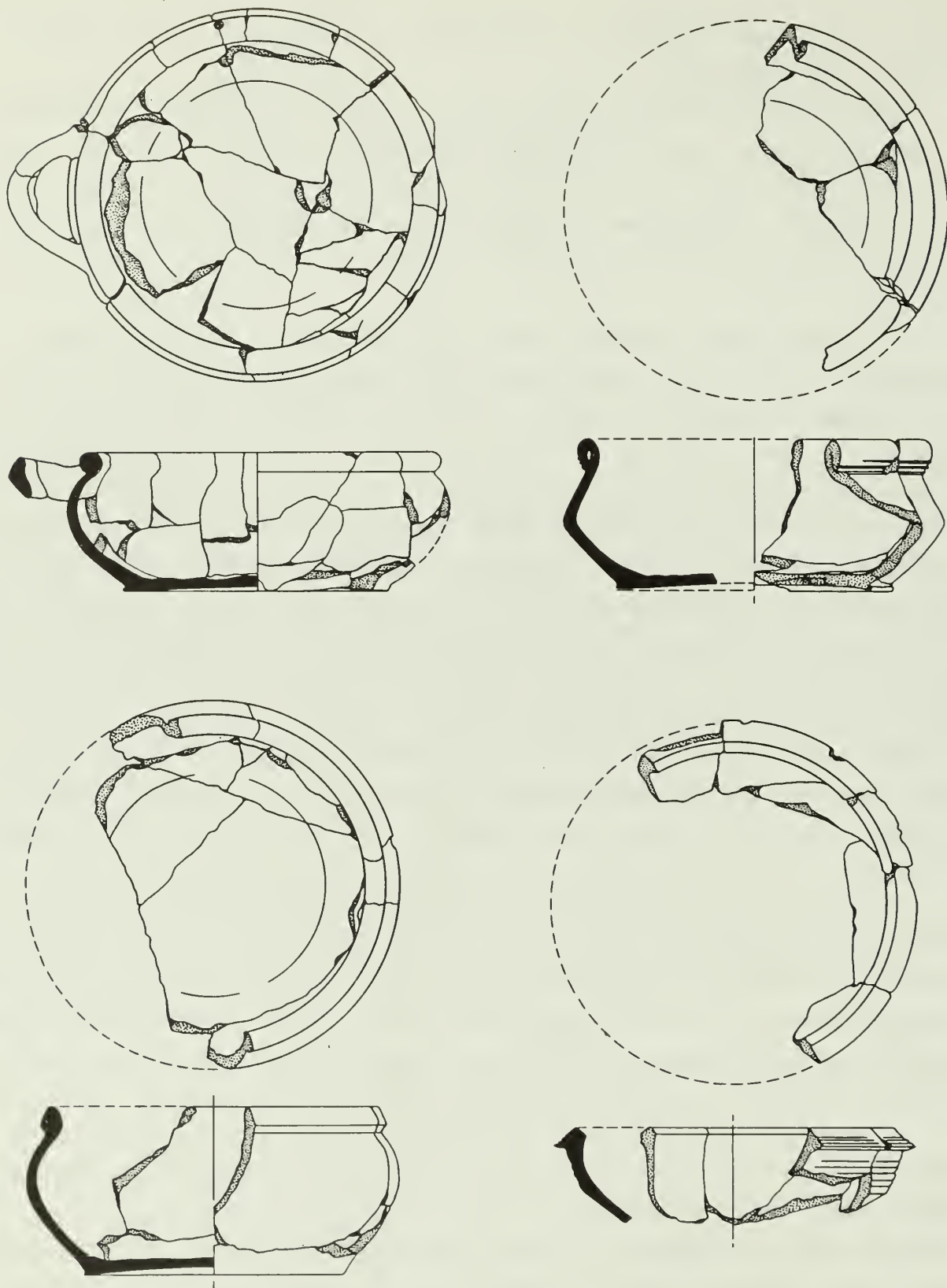


FIGURE 280. 'TEST' POTS, BISQUE EARTHENWARE.

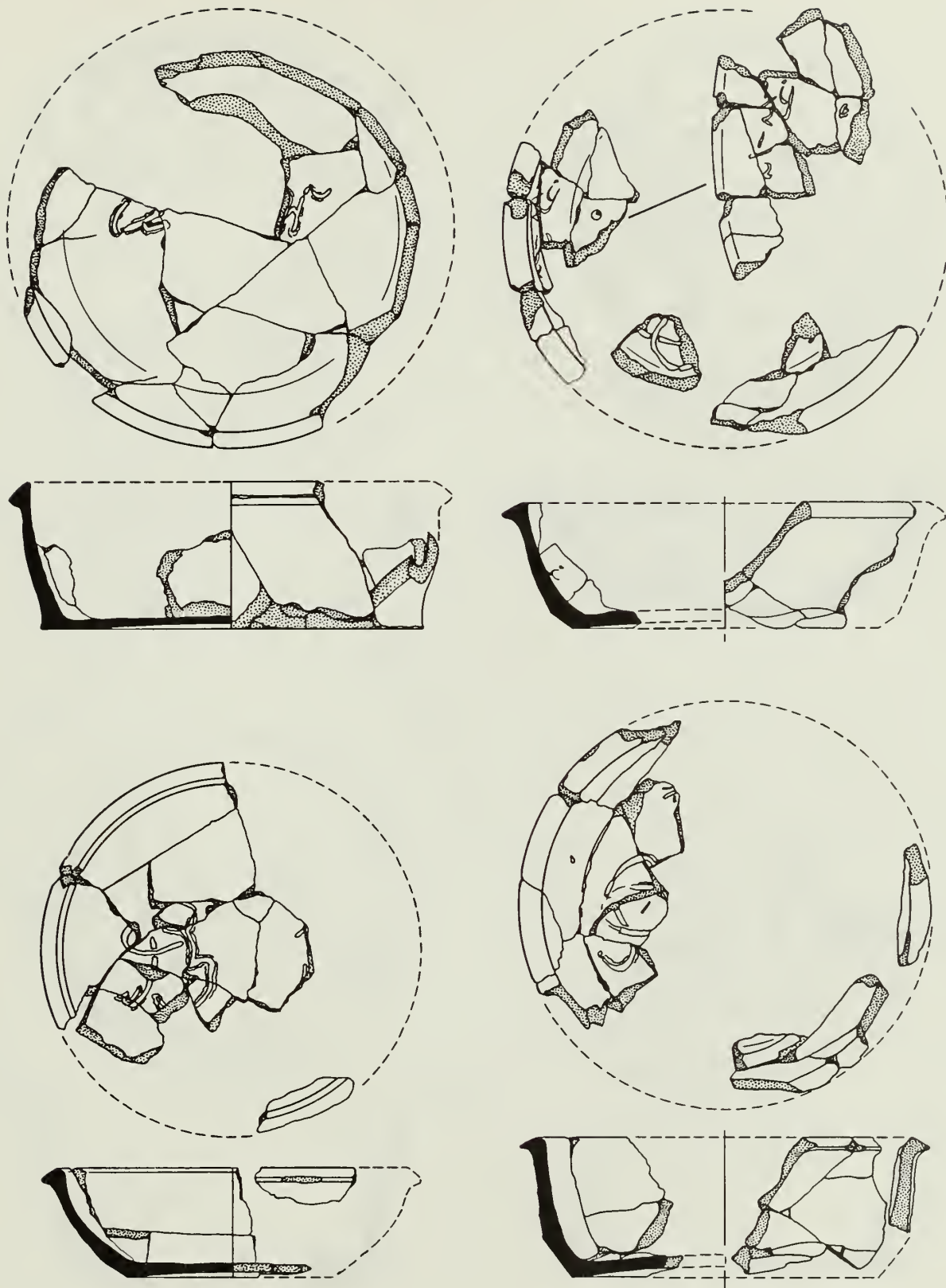


FIGURE 281. 'TEST' POTS, BISQUE EARTHENWARE, WITH INCISED LETTERS, NUMBERS.

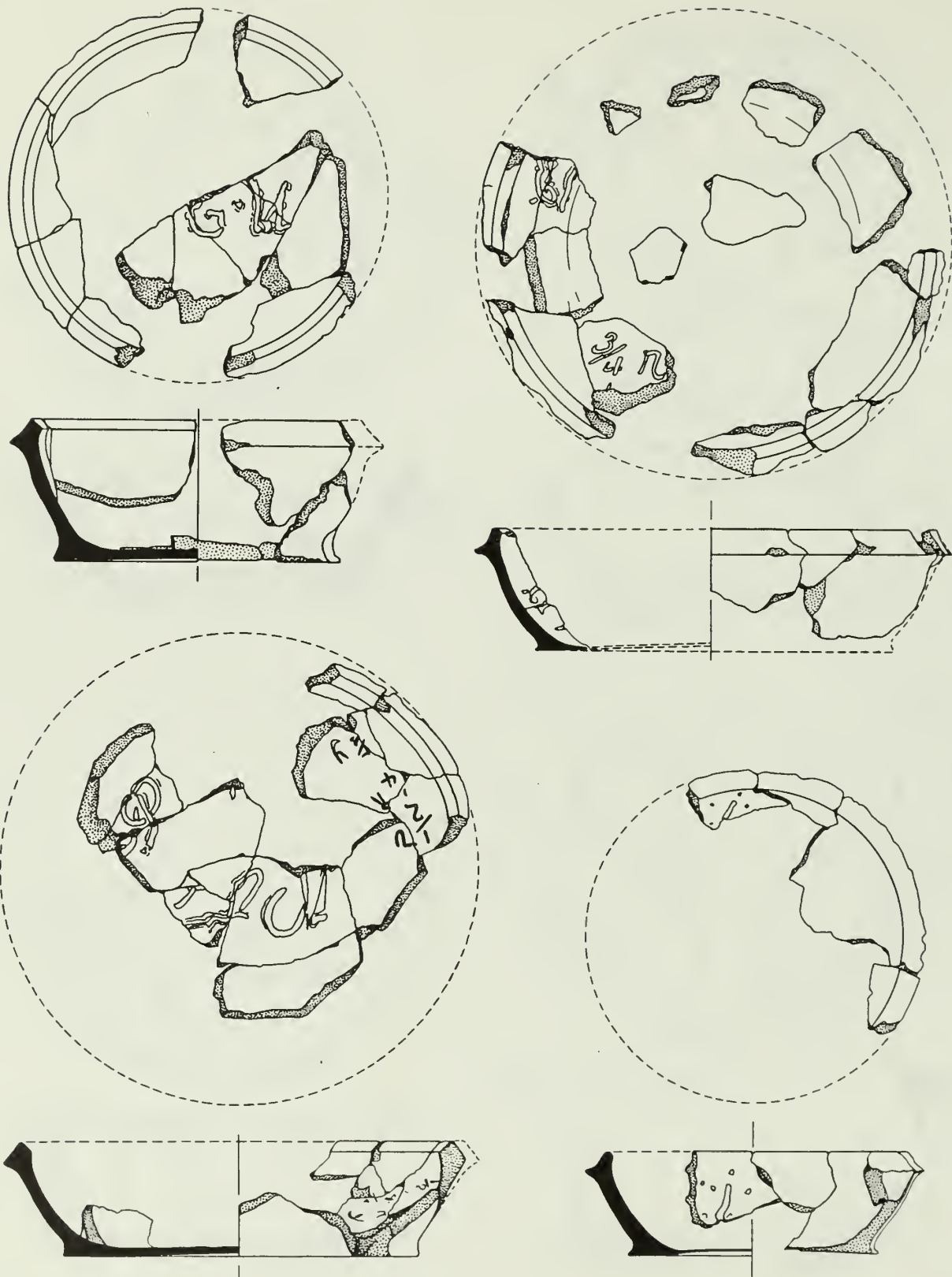


FIGURE 284. 'TEST' POTS, BISQUE EARTHENWARE,
WITH INCISED LETTERS, NUMBERS.

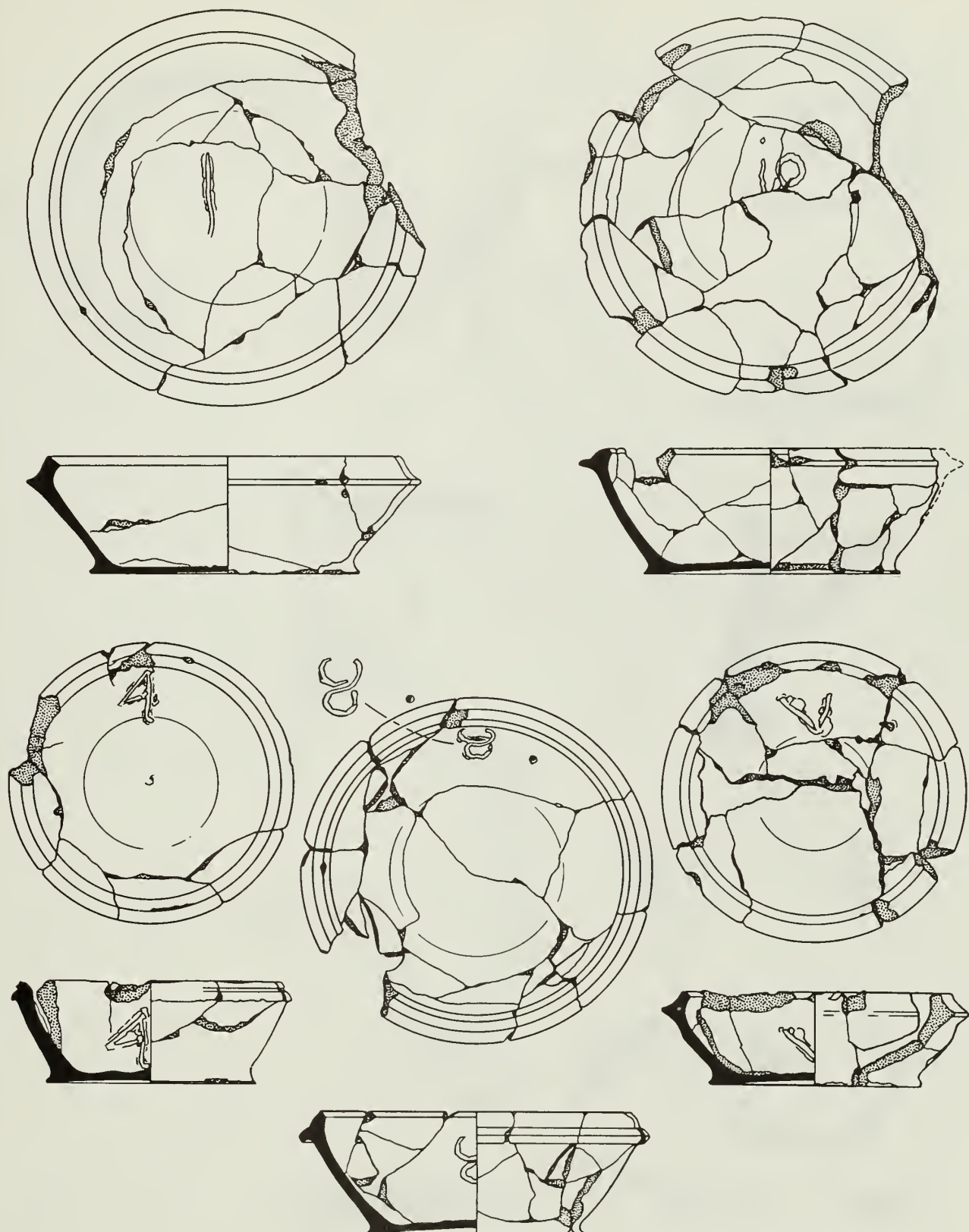


FIGURE 285. 'TEST' POTS, BISQUE EARTHENWARE, WITH INCISED LETTERS, NUMBERS.

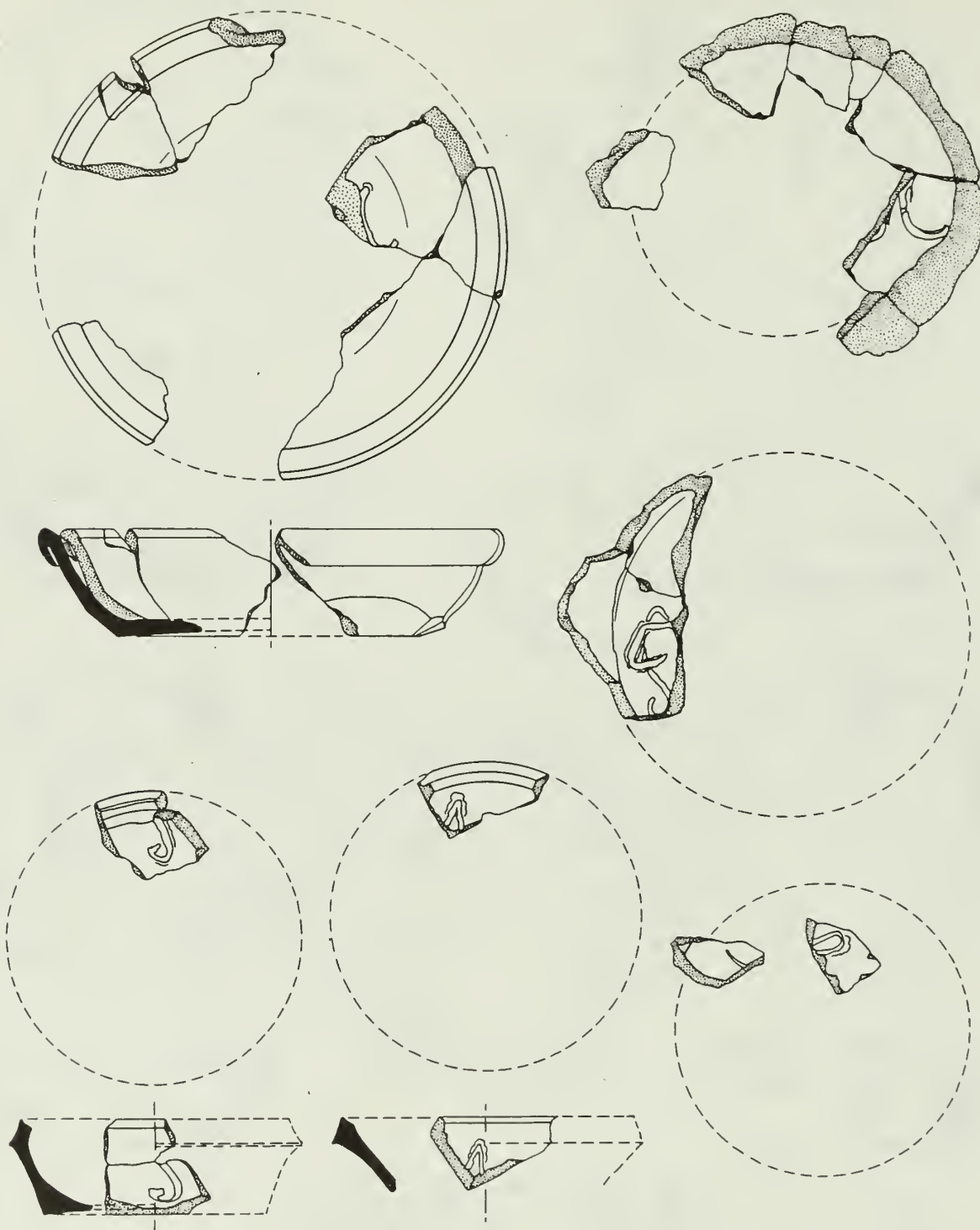


FIGURE 286. 'TEST' POTS, BISQUE EARTHENWARE, WITH INCISED LETTERS.

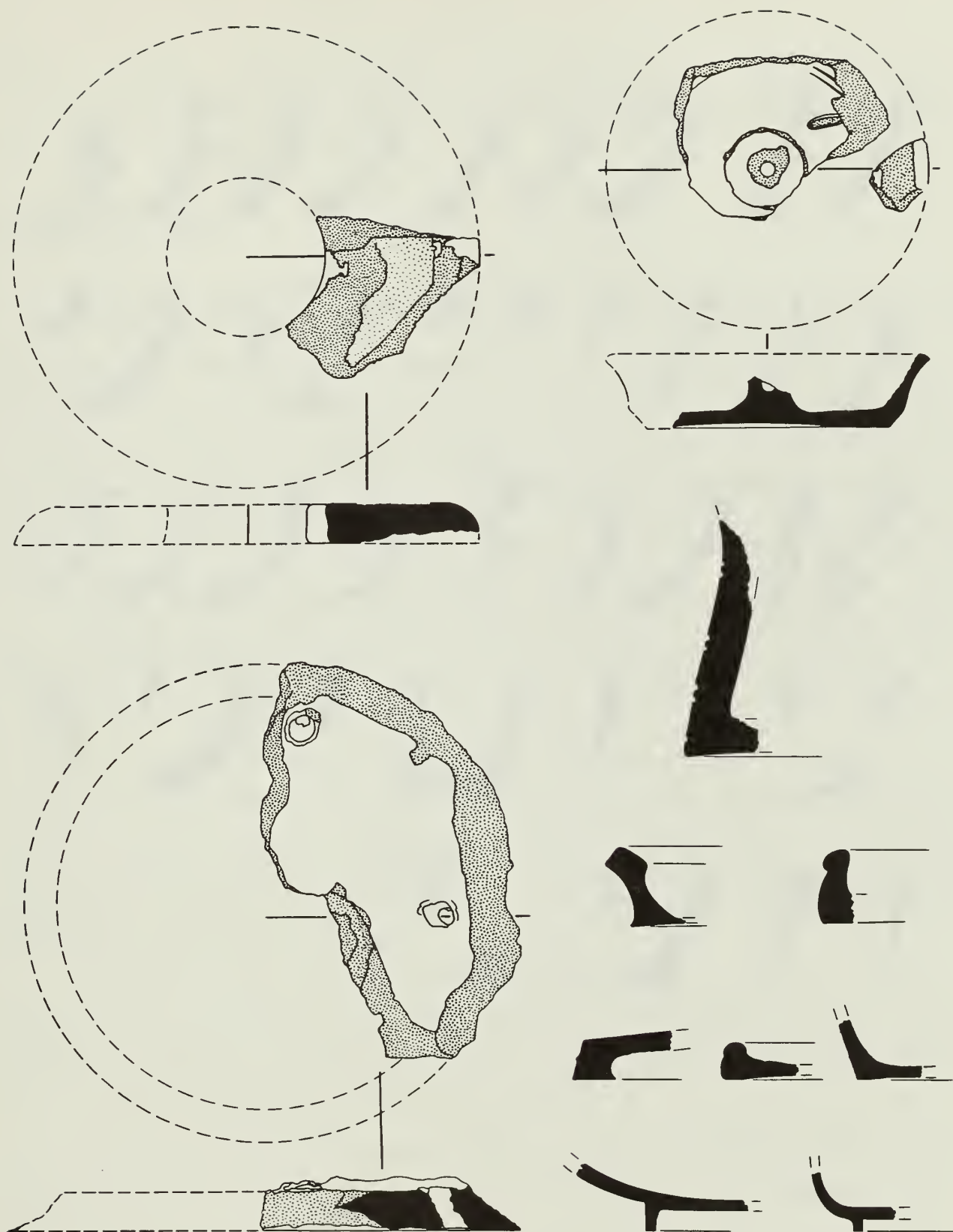


FIGURE 287. MISCELLANEOUS 'TEST' POT FRAGMENTS.



FIGURE 288. 'TEST' POT RIM VARIATION.

firing range.¹ The potters may have been using a refined earthenware body which became dense and mature and therefore well salted at this low temperature.

Source of Clay

Earthenware clays are found around the Yorktown area on beaches, river banks, road cuts, and beneath the ground surface in most places. In the raw, clays appear red, grey, or greenish, but when fired they will be various shades of pink to buff to red, depending upon the firing temperature and kiln atmosphere. The Yorktown area clays contain many impurities, including iron, which gives them the reddish color. Inclusions of red hematite are very noticeable in fired pottery. Earthenware clay becomes dense and mature between 950°C to 1100°C.

Earthenware clays underlie many sections of the Colonial Parkway between Yorktown and Williamsburg. In 1979, test borings in the area of Felgates Creek revealed a 20 ft. overburden of sand on top of at least 85 ft. of dark grey clay.

No archaeological or historical information has been found concerning the exact location of the potter's clay beds. One presumes it was as close as possible to the pottery factory, as distance meant greater expense. Certainly one of the important reasons for locating the pottery in Yorktown was the existence of a ready and dependable clay source nearby.

The source of stoneware clay is even more of a puzzle. Most salt glaze stoneware potters use a high fired stoneware clay which becomes vitreous at 1200°C to 1300°C. The fired color varies from buff to light grey to dark grey or brown.

Reverse thermal expansion tests on dense, hard stoneware pots show extremely low firing temperature within the earthenware range, as previously mentioned. Many low fired salt glazed Yorktown pots have a red body.

The body used at Yorktown for stoneware is much more refined than the earthenware body and it contains none of the hematite or other inclusions. However, the clay used remains a mystery. Salt

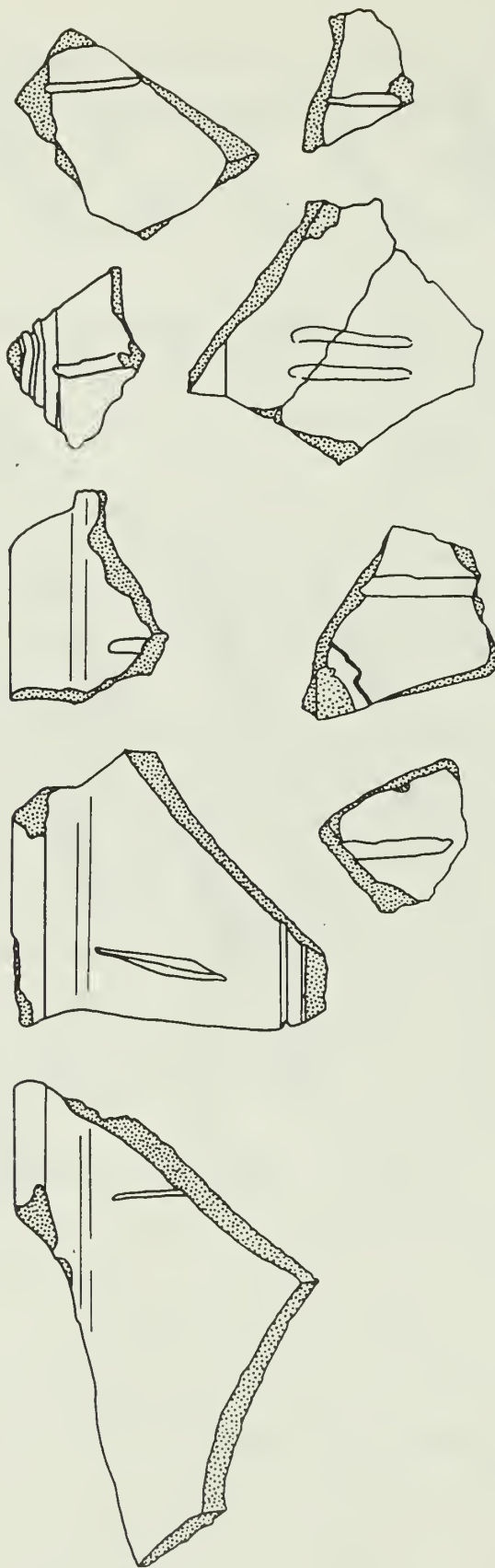


FIGURE 289. MISCELLANEOUS BISQUE EARTHENWARE FRAGMENTS WITH INCISED MARKS.

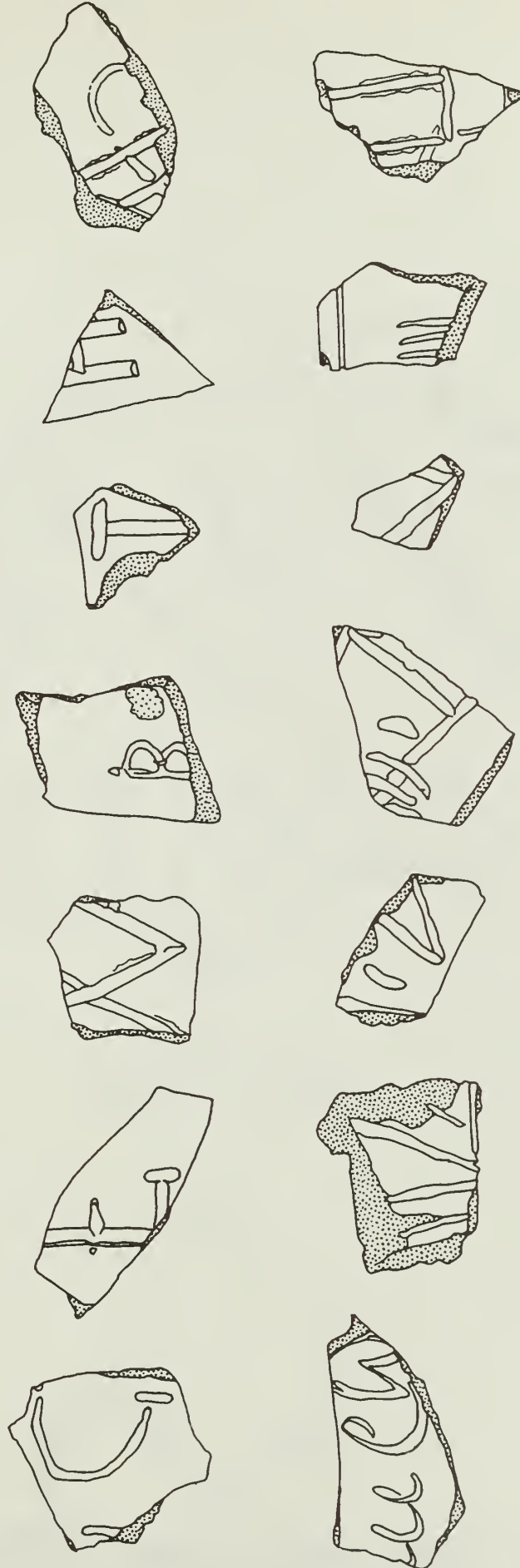


FIGURE 290. MISCELLANEOUS SHERDS WITH INCISED MARKS.
BISQUE EARTHENWARE.

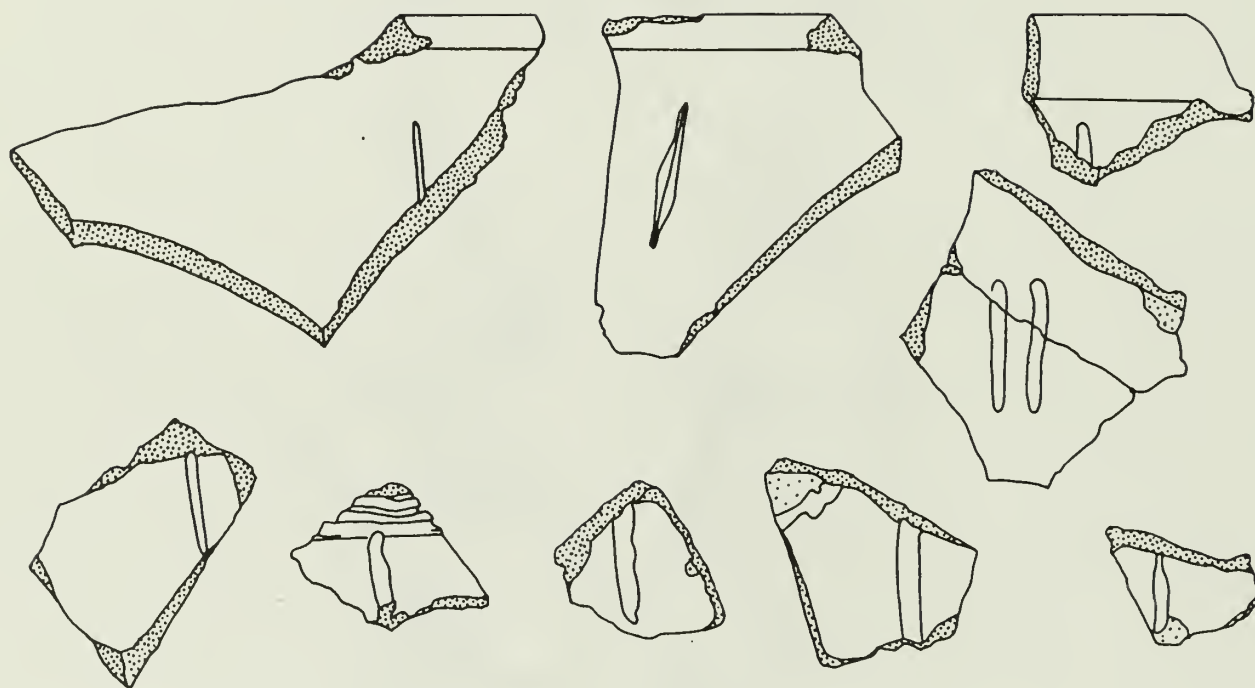


FIGURE 291. MISCELLANEOUS BISQUE EARTHENWARE SHERDS WITH INCISED MARKS.

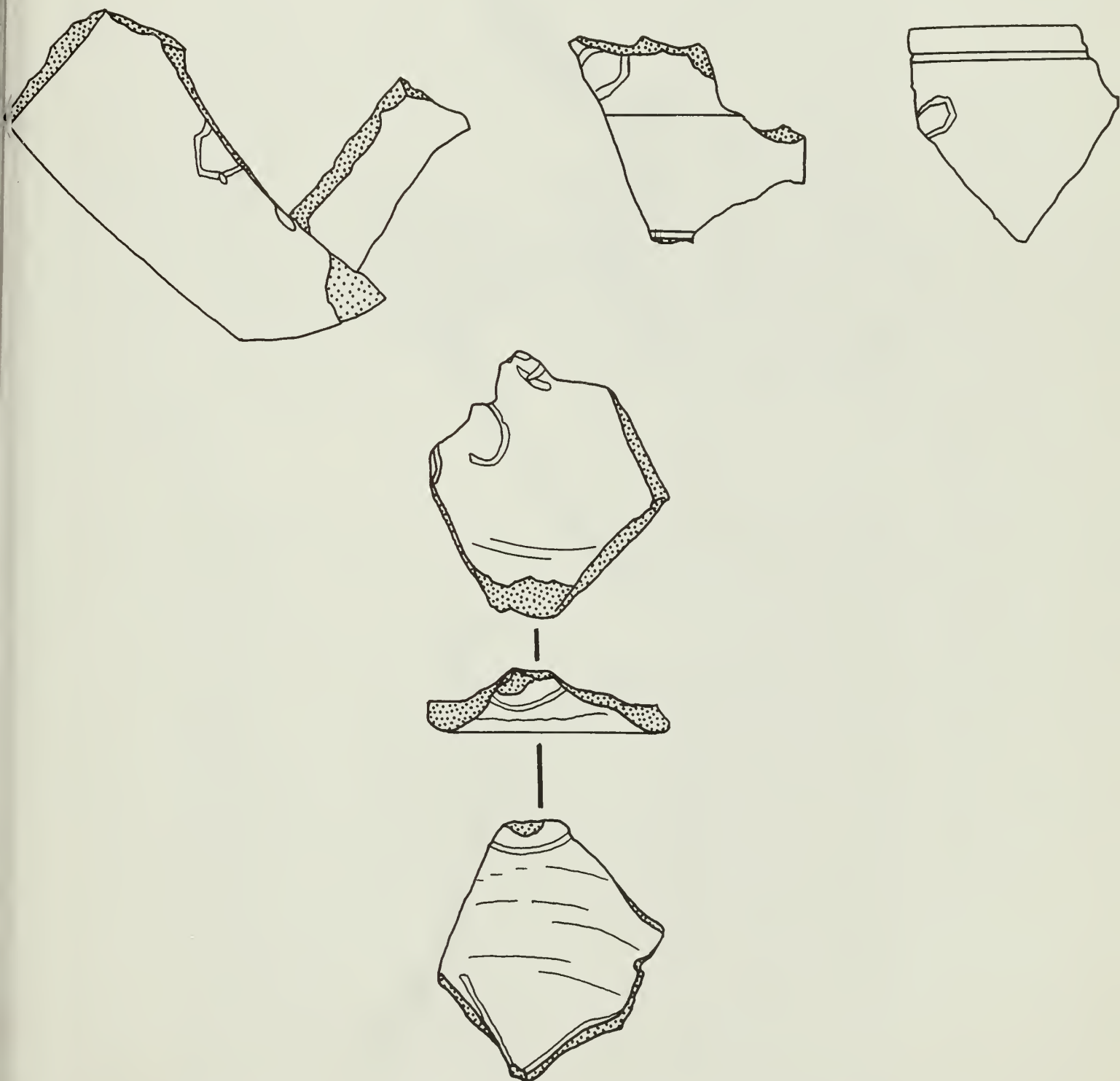


FIGURE 292. MISCELLANEOUS BISQUE EARTHENWARE SHERDS WITH INCISED MARKS.

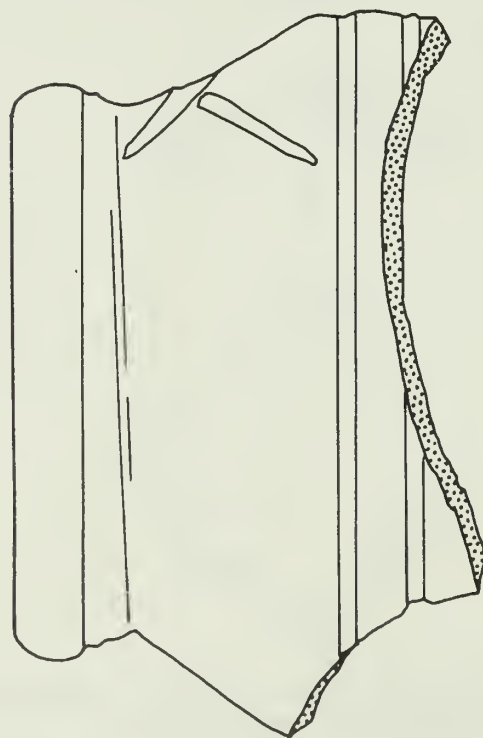
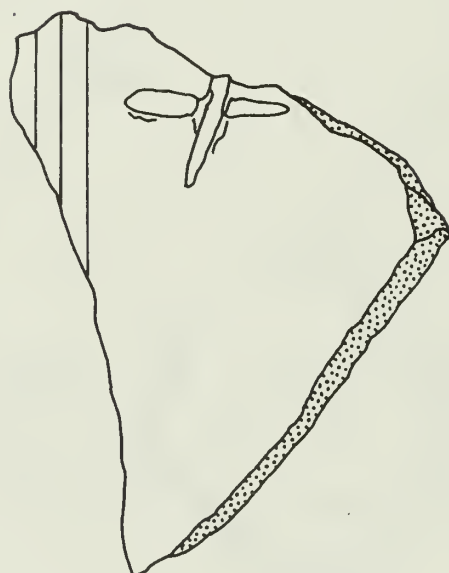
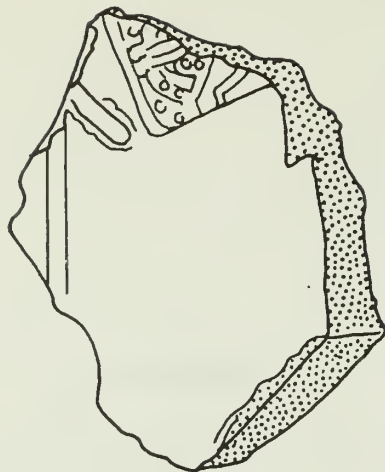


FIGURE 293. BISQUE EARTHENWARE SHERDS WITH X MARKS.

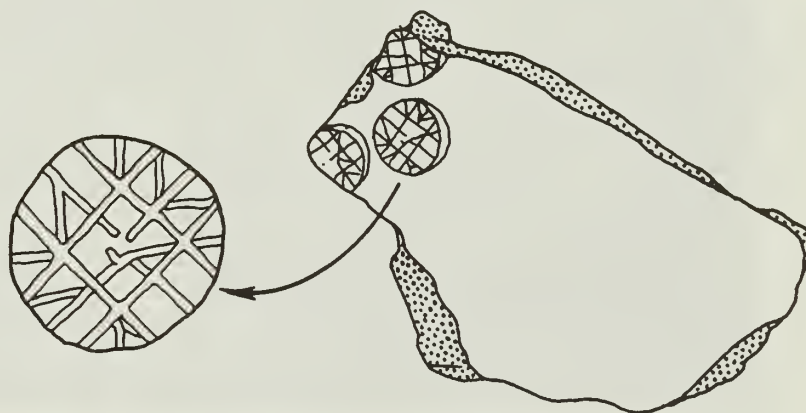


FIGURE 294. STAMPED MARK ON BISQUE EARTHENWARE SHERD.

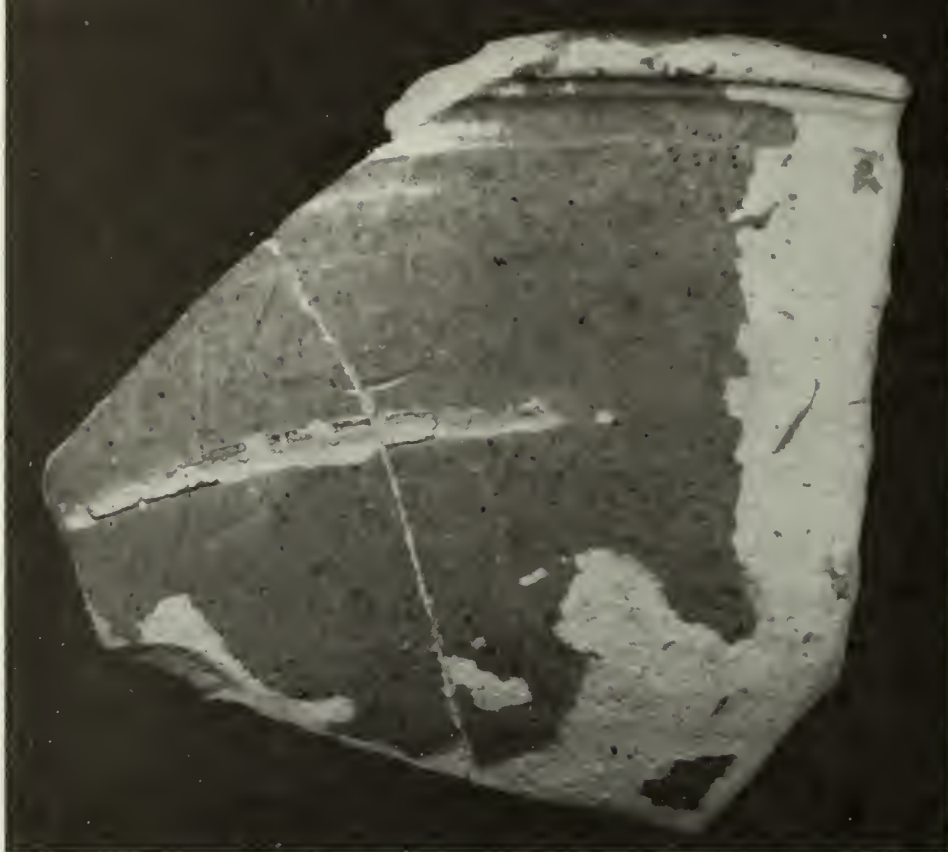


FIGURE 295. BOWL(?) FRAGMENT WITH NAME 'ROGERS' INCISED ON EXTERIOR. LEAD GLAZED EARTHENWARE.

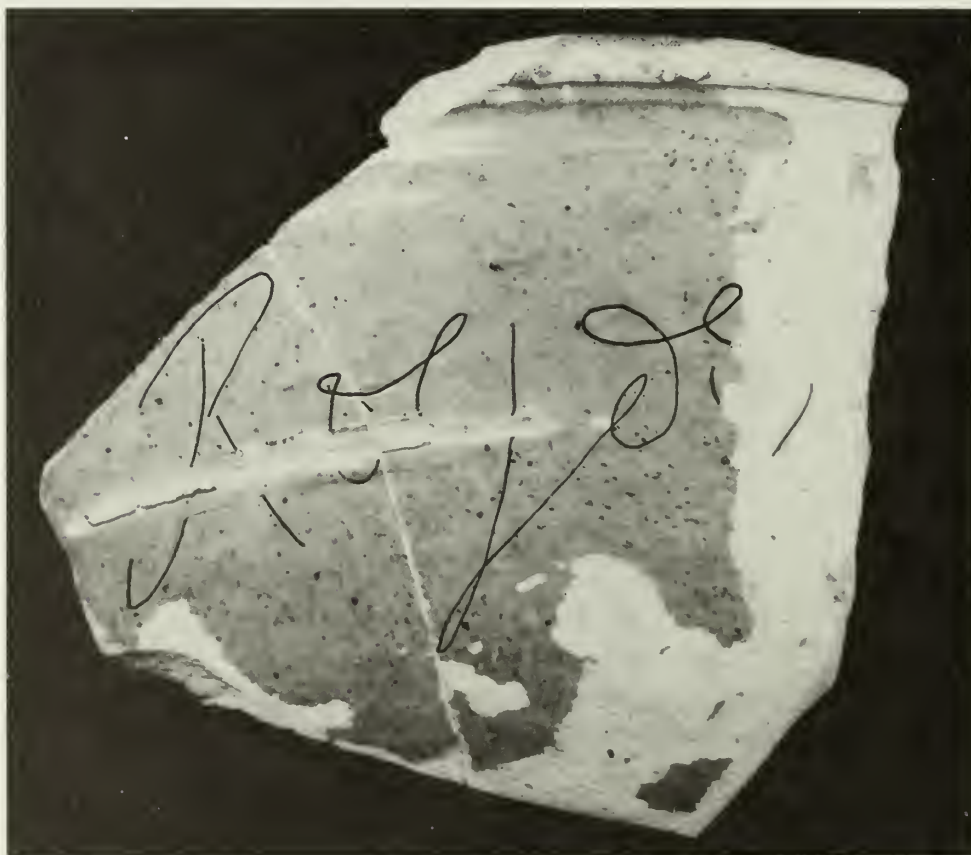
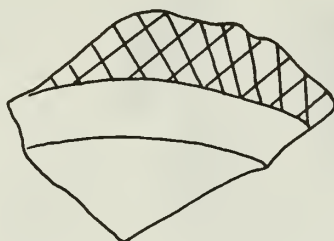


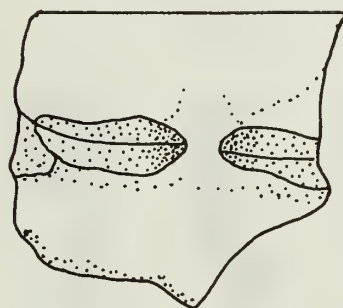
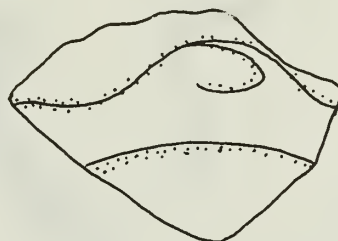
FIGURE 296. SAME POT FRAGMENT (AS IN FIG. 295) WITH INCISION INFILLED FOR CLARITY.



stoneware



plate



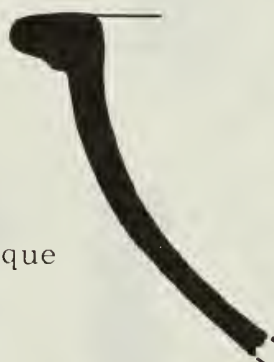
bisque earthenware



lead glazed



bisque



bisque



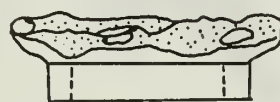
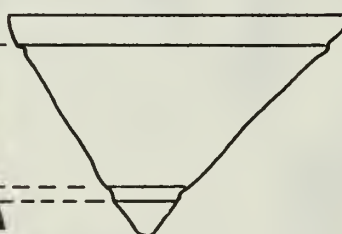
lead glazed



bisque



lead glazed



stoneware footed base

Figure 297. Unidentified Rims and Bases.

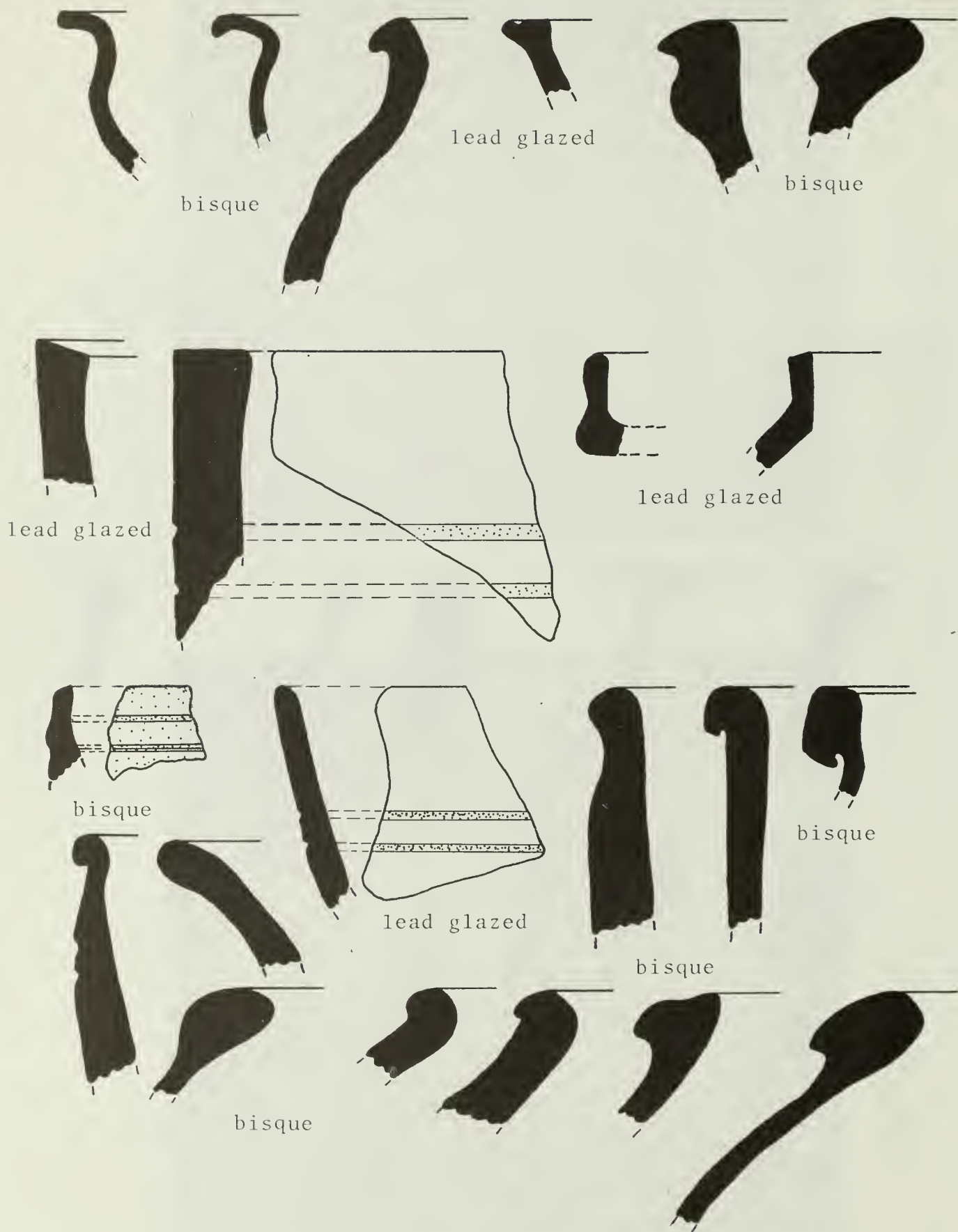


Figure 298. Unidentified Rims.

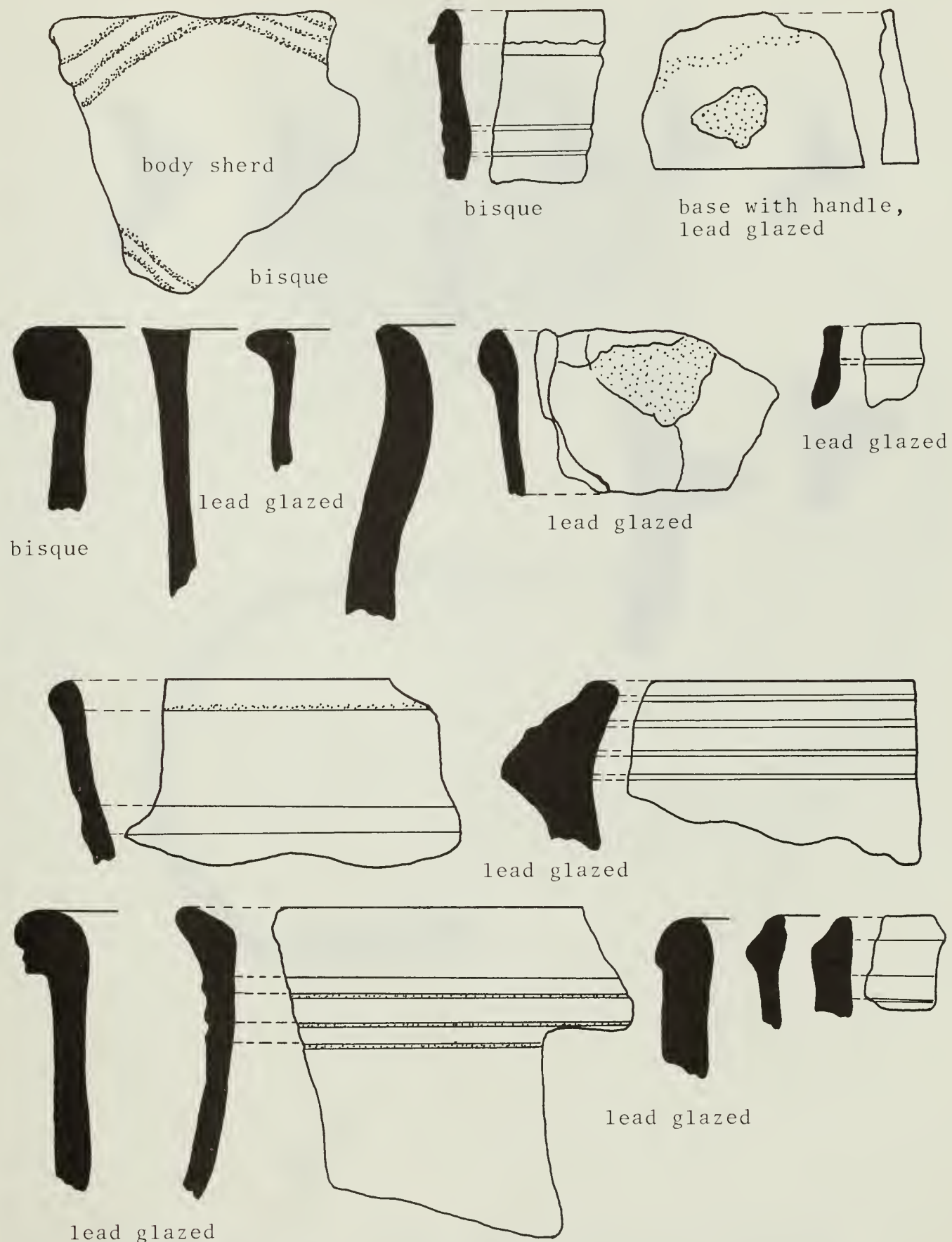


Figure 299. Unidentified Rims and Bases.

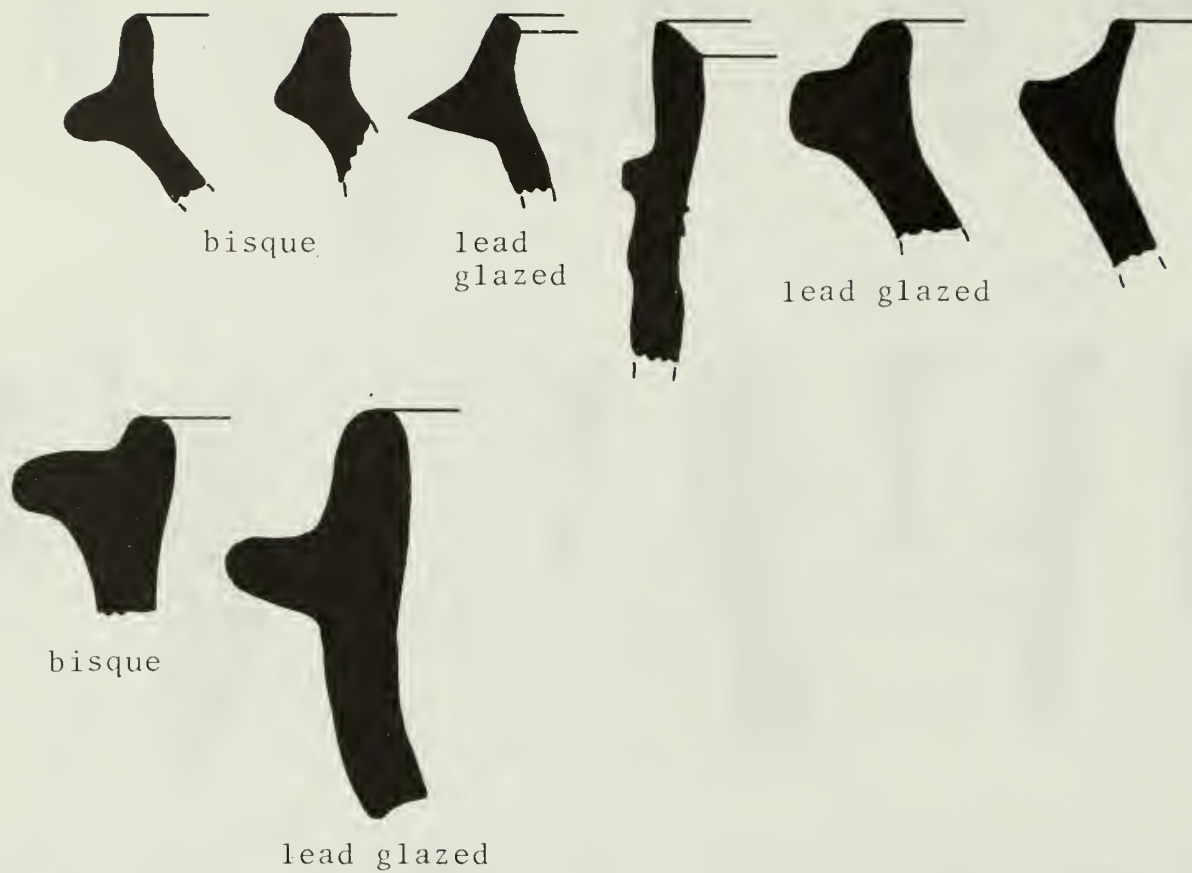
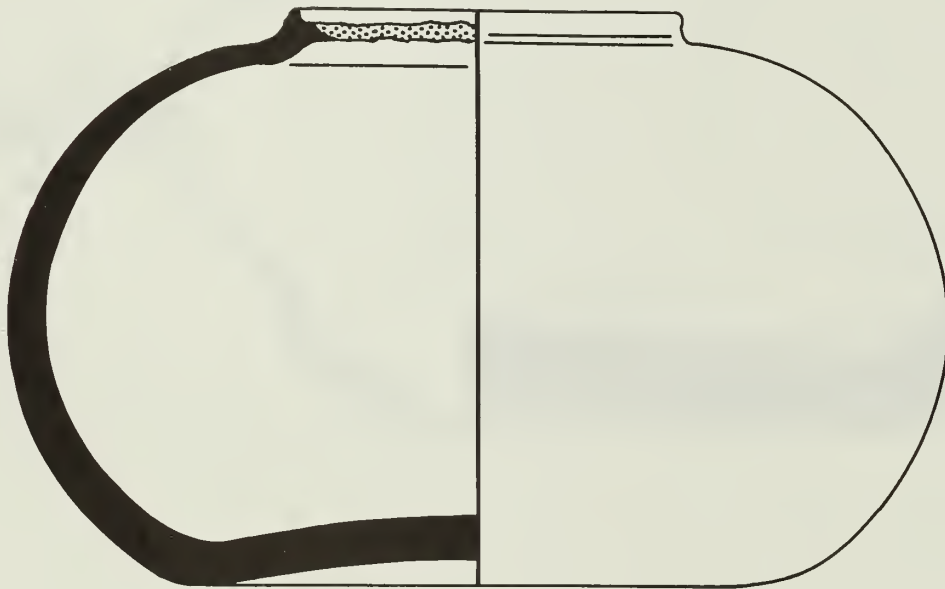


Figure 300. Unidentified Rims.



FIGURES 301, 302. BISQUE EARTHENWARE OR STONEWARE
POT OF UNKNOWN SHAPE OR FUNCTION.

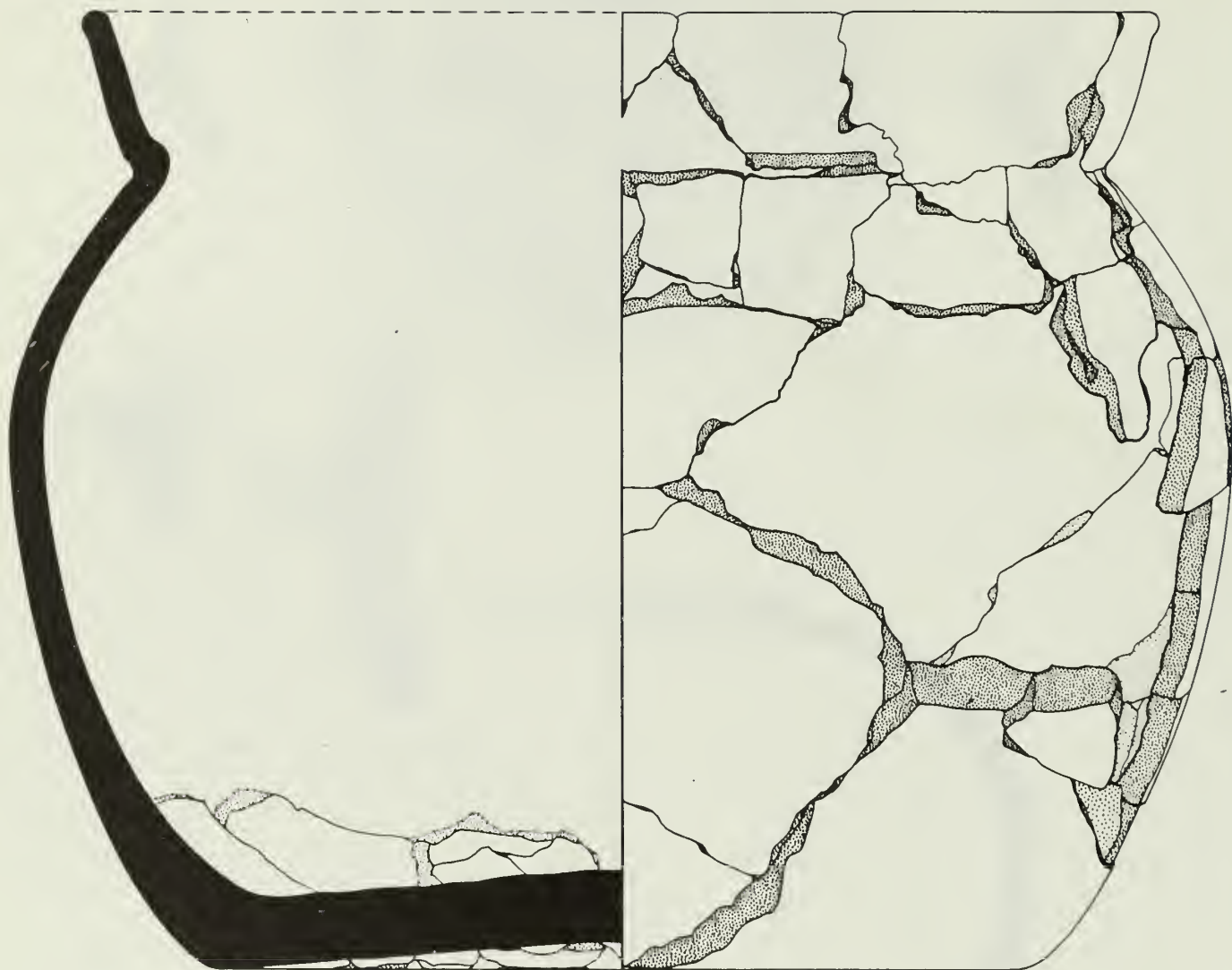


FIGURE 303. BISQUE EARTHENWARE POT.

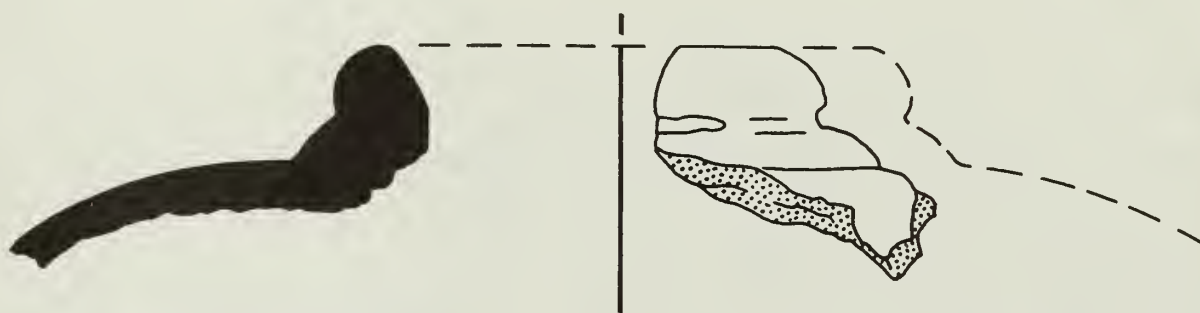


Figure 304. Bisque Earthenware Pot Fragment.

glazing can be done as low as C/04 (1050°C). The Yorktown potters may have used a refined earthenware clay for stoneware production.

White clays may have been used for the white slip used on the slip decorated earthenware platters and on some stoneware mugs, bottles, and storage jars. The source of this clay is not known.

Clay Preparation

The "1 horse mill" listed in the estate inventory of William Rogers in 1739 is the only positive evidence of the Yorktown potter's method of clay preparation. This method has been used at least since the 16th C.² Some country potters in England were still using the horse mill until the 1940's.

Pug mills had "an iron banded wooden tub, down the centre of which ran a heavy iron spindle, turned by means of a long beam hauled round by the pottery horse. A number of long knives protruded horizontally from the central spindle and they were set at a slight angle so that the clay from the clay pan would be slowly sliced and pressed downwards to issue as a long extruded strip of uniform clay from the base of the mill."³ (Figure 305)

Simeon Shaw describes the method of preparing clay around 1600 by use of sun kilns:

"The Sun Kiln is formed usually square, 16 to 20 feet in extent each way, and about 18 inches deep; having at one corner, a smaller place, deeper, and lined with slabs or flags. The Clay, after being brought out of the mine is spread abroad on the adjoining ground, and frequently turned over by the spade during two or three seasons, that it may be well exposed to the action of the atmosphere... Into the smaller vat a quantity of clay is thrown, and by a proper tool blunged in the water by agitation, till all the heavier particles and small stones sink to the bottom; the fluid mass is next poured into a sieve, thro' which it runs into the largest vat, or Sun Kiln, until the whole surface is covered to the depth of three or four inches, which is left to be evaporated by solar action. When this is partially accomplished, another layer, and a third, and a fourth are added, until the mass is 12 to 18 inches deep; and the whole is then cut out, and placed in a damp cellar for use."⁴



FIGURE 305. A PUG MILL OF THE TYPE POSSIBLY USED AT YORKTOWN.

No excavated area on the two lots of William Rogers revealed any large clay drying area corresponding to a Sun Kiln but numerous small masses of raw clay were found in several squares. Several wads of pot trimmings were uncovered as if the potter had finished trimming the base of a pot, gathered the narrow bands of clay trimmings and wadded them into ball.

No evidence was found for the location of a pug mill.

Once the clay had been prepared in a pug mill, it was worked or wedged to a smooth consistency for throwing. This was sometimes done by bare-footed boys stomping on it in a clay pit or by potters cutting it with a wire and throwing it down on a wedging board. (Figure 306). The evidence for such a wedging board may be represented by Feature 1 in Structure 3.

Tools and Equipment

Additional items listed in William Rogers' Estate Inventory that may have been used in the pottery factory include the following: "a parcel turners tools; 26 Cedar Pails, 2 larger Sieves and 1 Hair Sifter, 1 pr brass Scales and weights, 1 pr large Scales and weights, 1 Marble Mortar, Iron Pestle, 1 Bay horse, 1 pr wooden Scales and 40 Bushels Salt."

In the 19th C. scales were used to weigh lumps of clay to get the same amount for throwing a number of pots all the same size.

Glaze and slip materials would need to be weighed to get correct proportions of basic ingredients and colorants.

No potters tools were found on the site. Tools probably would have been owned by individual potters and taken with them when they left the area. Some metal pieces found at the site could represent parts of tools, but none are really recognizable as such.

Typical potters tools needed would have been wood or metal ribs used for shaping or smoothing the outer surface of forms, and special ribs with a series of small and large notches of a particular pattern for mug cordons or cordons on bottle and jub tims. Sponges would be required to remove water or slip from the inside of pots and to smooth the exterior. Wire or string would be needed to cut



FIGURE 306. WEDGING AND WORKING CLAY.
FEATURE 1 MAY HAVE BEEN
SUCH A TABLE.

pots from the wheel. Sometimes lifters of metal or wood were used to transfer pots to carrying boards. Knives or sharp tools were used for cutting off excess clay from the bases of milk pans.

Production Methods

All Yorktown wares were formed or thrown on the potters wheel except stove tiles and floor tiles, which were mold made. (Figure 307).

Some pots show evidence of placing a tool under the edge for lifting off the wheel. Others show the use of a single wire pulled across the base. There is no evidence for the use of a twisted wire pulled straight across or in a loop.

Traditionally, when the pot had dried to a leather hard stage, it was placed upside down on the wheel and the excess clay was cut or "turned" off with a tool, thus forming a flat or footed base. Yorktown milk pans bases were not "turned". Excess clay was cut off with a knife or sharp tool with little care taken to smooth the cuts. (Figures 204, 205). Some forms, especially bowls, show turning marks on the outside wall extending a short distance up from the base. Where the throwing lines and the turning lines meet, there is usually a raised line or a difference in the kind of encircling lines unless they are carefully blended together with a tool or a sponge. Excess clay has been turned off stoneware pipkin bases making a rounded curve. Here the turning marks are easily distinguished from the throwing ridges or lines. Some bowls and chamber pots, and all teapots, have a well turned raised foot. Most other forms have a flat base.

Rims vary with the shape and use of the pot. Earthenware pipkins have three cordons just below the rim and a small spout on the rim. Stoneware pipkins have one raised cordon just under an outflaring rim with a small spout. Earthenware bottle rims have two to four cordons at the rim while stoneware rims have one wide cordon at the top with four to five small cordons beneath.

Storage jars and cream pots have a thickened outflowing rim or an exterior flange or overhang to hold a string-tied cloth.



FIGURE 307. THE "POOR POTTER" AT WORK.

Two lead glazed lid sherds and one lead glazed churn lid have been found.

Most earthenware forms were glazed on both the interior and exterior surfaces except milk pans, which were usually glazed on the interior only. Bird bottles were glazed only on the exterior.

Lead glazes were applied by pouring the glaze into the pot, rolling it around and then pouring it out. The outside was dipped in a container of liquid glaze.

Stoneware pots with iron oxide on the top areas were turned upside down and dipped in a thin iron oxide slip. (Figure 308).

Stoneware forms were glazed on the exterior and down into the interior as far as the volatilized salt could penetrate.

Eleven earthenware vessel forms were glazed with green lead glaze: milk pans, cream pots, mugs, bowls, porringers, bottles, bird bottles, betty lamps, chafing dishes, jugs, and storage jars. As copper was one of the most expensive of glaze colorants, its use in glazes on so many different forms may reflect the economic state of the Yorktown pottery.

The transparent green glaze over the white slip on the bottom half of earthenware mugs resulted in a bright, intense green color. This was very effective, especially when combined with iron oxide slip on the top half. The green did not change the color of the dark brown slip.

When applied over the red earthenware clay with no slip, the color varied depending on the color of the fired clay resulting from temperature and kiln atmosphere differences. A thin application gave a mottled green, but when thickly applied a uniform green was produced.

As discussed later in this chapter, earthenwares were fired twice, first to a bisque state and secondly, after glazing. This two step process is clearly shown by the large number of bisque sherds found on the site and by glaze drips on bisque ware showing that bisqued and glazed wares were fired together. Some glazed bowl rims and bisque bowl rims are fused together showing alternate bisque and glaze pot stacking.

Some stoneware forms were also fired twice [see later discussion].

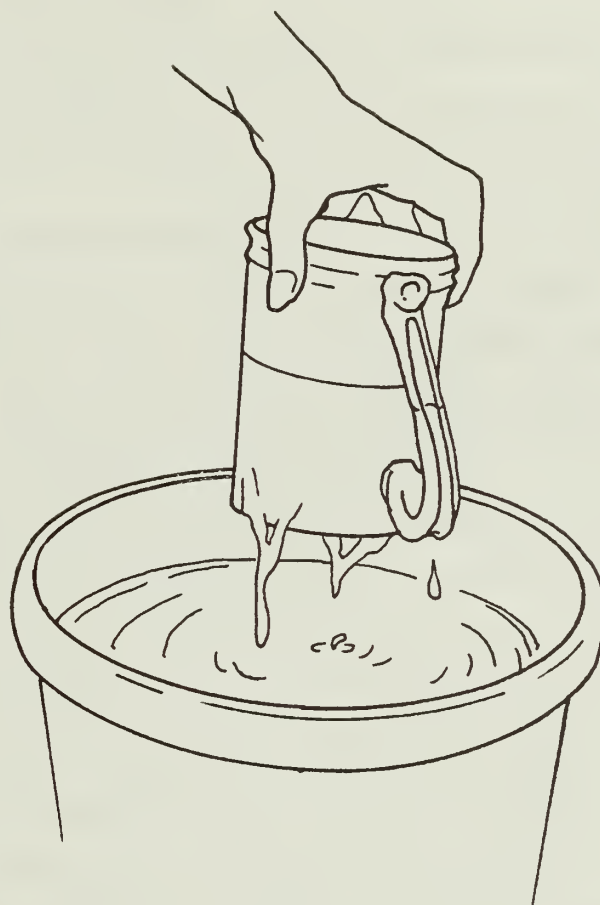


FIGURE 308. DIPPING MUG IN IRON OXIDE SOLUTION.

Lead

Numerous small chunks of Galena (lead sulphide) and melted lead have been found on the site. Lead was the most important ingredient for earthenware glazes, but as there are no surviving records of raw materials used in the Yorktown pottery production, it is necessary to look at other extant records of the same period in order to learn the techniques used.

Galena has been known since ancient times. It is found in veins, pockets and replacement deposits in carbonate rock. It occurs with zinc, copper and silver. It is a heavy, brittle, silvery grey material and has perfect cubic cleavage.

Medieval potters dusted dry galena powder on raw pots, sometimes first covering the pots with a boiled flour water paste. According to Dr. Plot, dry galena was still being used in 1686 and was "beaten into dust, finely sifted and strewed upon them [the pots], which gives them this gloss but not the color; all the colours being chiefly given by the variety of slips."⁵

When galena was mixed with water to form a dipping consistency, the heavy insoluble ore sank to the bottom. After much experimentation, potters added clay and made a workable slip.

One English formula for using galena was as follows:

12 dippers of slip from River Taw clay

12 pounds of galena ground to crystals

1/2 pound of ground flint⁶

The sulphur content of the galena sometimes resulted in a rough matt surface and unpleasant yellow stains in the glaze. Because of this, galena was eventually replaced by litharge or lead oxide. This continued to be used in England as late as the 1920's and 1930's. Scrap lead was converted into litharge by heating and then stirring until it lost its metallic appearance. By adding sand and water, the lead could then be brushed onto raw ware.

Before lead was readily available in the colonies, potters oxidized "tea lead" from the linings of tea chests and scrap lead in order to get their basic glazing ingredient. This was a troublesome and time consuming process, so potters preferred to import red lead even though it was more expensive.

In New England, the powdered lead was mixed with a quantity of sand or fine loam screened through a horsehair sieve. Water was added and the whole ground to a creamy consistency in a glaze mill.⁷

Red and white lead was imported for other purposes besides glazes. Mann Page of Rosewell, Virginia, ordered "100 pounds of white lead, 5 pounds red lead, 20 pounds yellow ocre, 3 pounds lamp black and 2 pounds white coperass" from John Norton & Sons, London, for repairs to his house.⁸

The horse mill listed in William Rogers' Inventory could have been used for grinding lead. In the Buckley Potteries in Wales, lead and water were put into a large circular pan and ground against the brick bottom by two large stones attached by chains to a crossbar which was turned by a horse.

A description of early glazing techniques and its hazards is given in a 1700 treatise on disease by Bernadiano Ramazzini, a Professor of Physic in the University of Padua:

"Now the Potters make use of burnt and calcin'd Lead for glazing their ware; and for that end grind their lead in Marble Vessels, by turning about a long Piece of Wood hung from the Roöf, with a square Stone fasten'd to it at the other end. While they do this, as well as when with a pair of Tongs they daub their Vessels over with melted Lead before they put 'em into the furnace; they receive by the Mouth and Nostrils and all the Pores of the Body all the virulent Parts of the Lead thus melted in Water and dissolv'd and thereupon are siez'd with heavy Disorders."

It is probable that many potters eventually died from lead poisoning. It is also highly probable that the ingestion of lead from glazed earthenware pots contributed to the early death of many colonists.

Iron Oxide

The Yorktown potters technique of covering the upper section of several forms with an iron oxide slip or wash was a traditional English method. Stoneware mugs, storage jars, chamber pots, pipkins, bottles, teapots, as well as some earthenware mugs and bottles, were

turned upside down and dipped by the Yorktown potters into the liquid mixture to varying levels from one-third to two-thirds of the pot. (Figure 308).

Iron oxide or some form of iron or red clay was also used in the slip on decorated platters.

The sources of raw materials used in Yorktown are unknown. However, William Rogers Estate Inventory lists "2300 lbs old Iron", which may have been a source of the iron oxide colorant.

Piccolpasso (1524-1579), in listing colorants that were available at this period, includes "iron rust" called "Ferraggia".¹⁰

Daniel Rhodes refers to the use of "Rust Scrapings" as a source of Iron oxide when "rough, spotty or speckled effects are desired."¹¹

Joseph Smith, in his book of folk pottery from different regions, mentions sources of colorants: "iron oxide, which was present in the clay or could be added with iron filings, produced a range of browns."¹²

William Evans, in a recipe for "Dips and Smears", says to "Calcine iron scales (from the smithy), pick, pulverize and pass through a sieve, hair, or coarse lawn; and mix one pound in one quart of earthenware slip."¹³

North German potters used rust as a source of iron oxide.¹⁴

Salt

The Yorktown Pottery Factory may have produced the earliest salt glazed stoneware in America. It is impossible to say whether or not stoneware was produced in Yorktown in 1720, the date of the dedication vessel. However, stoneware is often found in association with earthenware, and it seems probable that both were produced at the same time.

In a salt glaze stoneware firing, glaze is not applied directly to the ware, as with earthenwares. The usually raw or bisqued pots are stacked in the kiln, separated with kiln furniture or placed in saggars. When the kiln had reached the temperature the potter judged to be hot enough [theoretically when the clay body had reached

maturity], common salt was thrown into the kiln through portholes in the roof or side walls. The salt rapidly disassociates into a vapor and the sodium in the salt combines with the silica in the clay to form a thin glaze. Repeated salting builds up the glaze coating to the desired thickness. As the glaze covers everything in the kiln, including the walls, successive saltings build up a thicker coat on the walls and less salt is required for later firings.

Draw trials were sometimes used to check the progress of the salting and the thickness of the glaze. These were doughnut-shaped clay circles that were placed in front of the spy hole and were hooked or drawn out with a hooked metal rod during firing. No draw trials were found at the Yorktown pottery. They may not have been in use at this period. If not, the potter would have had to judge temperature by the color inside the kiln and the amount of salt needed by results of specific amounts used in previous firings.

The amount of salt required to glaze pottery in the Yorktown kilns would vary with the size of each kiln. Rhodes says that "for a 12 cubic foot capacity kiln a total of about 5 to 7 pounds of salt may be needed, throwing in about one pound at a time."¹⁵

Based on the size of the Yorktown kilns, the following amount of salt would have been needed for each firing:

Large Kiln - 310 cubic ft. x 1 lb. of salt for every 2 cubic ft. - c.155 lbs. of salt required.

Small Kiln - 80 cubic ft. x 1 lb. of salt for every 2 cubic ft. = c. 40 lbs. of salt required.

In adding salt to the Yorktown kilns, the potters probably had to stand on a ladder or some sort of scaffolding, especially for the Large Kiln. In Thomas Stevenson's Inventory of 1758 and Peter Bagnall's Inventory of 1761 a glazing ladder is listed.¹⁶

The actual process of salt glazing is described by Rhodes:

"The salt vaporizes rapidly and dense clouds of vapor roll through the kiln. While salting, it is necessary to close the ports or openings of the kiln to retain the vapors in the kiln until they can react with the ware.

Because of the necessity of firing part of the time with the damper closed, and because of the necessity of using

an open-fired kiln, salt glazed ware is frequently flashed by the flame. This gives it an uneven color, sometimes darker on one side than on the other....In salt glazing the exact color is hard to control. Ware may vary considerably from one firing to another because of slightly differing atmospheric conditions."¹⁸

The poisonous gases expelled from salt glazing kilns may have been one reason for the location of the Yorktown pottery on the edge of town. However, the Gwyn Read development, begun in 1738, obviated the "isolation" of the factory for the remaining 7 years of its existence.

Flint

A large (6 x 5 inches) piece of calcined flint and hundreds of smaller pieces of grey and black flint constitute substantial evidence for the use of flint at the Yorktown pottery, for use in either the clay body, slips or glazes of wares.

The large piece of calcined flint has a one inch wide strip of thick green salt glaze running down one side, confirming the use of the salt glaze kiln for calcining flint. Raw flint is difficult to crush but calcined or burnt flint (which turns white in color) becomes brittle and can be more easily crushed and powdered. The raw flint was imported to Yorktown from England.

Flint is used in clay bodies to make a harder fired body, to prevent warpage, and to improve the changes of glaze fit. In glazes, flint is the main source of silica. In slips, especially in the 18th C., calcined flint was used as a whitening agent.

The thirteen "experimental mugs" found in the Small Kiln area of the Yorktown pottery appear to have been used as test pieces for a white slip to cover a darker body. Although the slip on these mugs has peeled back or popped off, many other mug, storage jar, and other forms are covered or partially covered with a smooth white slip, attesting to the eventual successful use of a white slip. Results of early tests show a high incidence of calcium in the clip.

The Yorktown evidence parallels that of English potters, as the latter were also searching for a white slip to cover a dark

clay body at about the same time. They were also experimenting with methods by which a lighter or whiter body could be produced.

Our knowledge of the early use of flint in ceramic bodies begins with John Dwight, who in 1698 recorded the ingredients for a white body in his notebook: "Calcin'd beaten & sifted flints will doe instead of white sand & rather whiter buy ye charge & trouble is more."¹⁹

In the early 18th C. there is "much confusion concerning the introduction of white pipe clays and flint into North Staffordshire during the first quarter of the eighteenth century."²⁰ According to Simeon Shaw, John Astbury was the first Staffordshire potter to use flint in whitening slip to cover a darker body. Shaw related Astbury's discovery as a mere accident at the time (1720).

"When first is [flint] was introduced, the potters put it to calcine in their overns when fired; after which it was pulverized in large iron mortars, by men, and then passed ihro a fine hair sieve. These processes were, however, exceedingly laborous, and extremely deleterious; every possible precaution employed being ineffectual to prevent great quantities of the finest particles of the silex floating in the air of the apartment, and being inhaled by the workmen, producing the most disastrous effects, by remaining on the lungs in spite of every expectorant, causing asthma, and often premature death."

"Later it was ground in water, after being calcined, by a water wheel - or a steam engine. The nodules [of flint] were thrown under stampers to be broken then thrown into large vats and voered with water. On the vat bottoms are chert stones while larger masses of chert stones are being carried around the vat by a paddle. The calcined flint nodules are ground by abrasure against the chert until the water is a thick whitish pulp which is then either²¹ used wet or dried upon a kiln into a fine powder."

At the Yorktown site, assemblages of rounded stones were found in the Structure 1 area. A possibility exists that these stones were used for grinding calcined flint or glazes. Potters today use the same principle for grinding glazes by mixing glaze materials with water and putting them into a ball mill with numerous small flint stones. The mill is set on rollers that turn it over and over causing the stones to mix the glaze thoroughly and smoothly.

Evidence of flint, both natural and calcined, and hundreds of sherds with a smooth white slip, suggest parallels between England and Yorktown.

Lathe Turned Ware

Because of the large number of cordon patterns found on Yorktown mugs and other forms, a possibility exists that this type of decoration was achieved by using lathes.

When a pot was leather hard it was placed on a horizontal lathe and turned down, smoothed and decorated with incised lines or cordons. William Evans (1846) describes turning in this way:

"The turners lathe resembles that employed by mechanics only the spindle is longer and some of them have a collar, moveable by a catch, for the particular manipulation called engine turning. On the end of the spindle, outside the head-stock, is a screw, for the several different chucks required by vessels of different sizes. A pulley with three grooves of varied sizes is also on the spindle, on which is the cord passed round the wheel, which is fixed on a crank shaft. Connected with this crank is a treadle; and beside the frame which holds the spindle, stands the treader, usually a young woman, who, by a motion of one foot, keeps up the velocity required and can perform some manipulations requisite, without the attention of the turner being distracted from the vessel before him... Standing in front of his chuck, he fixes his vessel on it by a slight pressure with his tool, as the spindle has retrograde motion; then the proper motion being communicated with a tool of soft iron, properly sharpened by filing, he takes off the superfluous quantity, and then the treader catches hold of the cord, and gives the spindle retrograde motion, during which the turner lays a broad tool on the vessel, and gives a certain polish to the outside; after which he applied a sharp tool to cut it loose, and then he places it on the board before him."²²

Stacking of Earthenwares in the Kiln

Close observation of pots and sherds reveal information on the stacking methods utilized by the Yorktown potters when filling their kilns with wares. No kiln shelving has been found at the site, so wares had to be stacked on top of each other.

In stacking, unglazed or bisque earthenware pots can be stacked on top of or inside one another with no danger of sticking together. However, when glazed pots are stacked in the kiln other methods are used to prevent the pots from fusing together.

At Yorktown, milk pans were stacked on edge, in a series, leaning against each other, as is shown by the direction of flow of the melted glaze and the fact that milk pan rims stuck to milk pan backs. As most milk pans were glazed only on the interior surface to just over the rim, the glazed rim of the one behind would be resting on the unglazed back of the one in front. The glazed rim would often stick to the one in front but they could be chipped apart more easily than if two glazed pieces had melted together. Some bisque milk pans have glazed rims adhering to the back showing alternate bisque and glaze stacking.

One glazed colander has a green glazed rim melted to the outer wall near the base at such an angle that they appear to have been stacked on edge against each other like milk pans.

Bowls, porringers and pipkins were stacked upside down on top of and overlapping each other, as shown by stacking scars.

Some bowls have a one inch long by 1/4 inch wide bare area that might be a scar from a stacking wad, but no wads with lead glaze on them were found.

One bisque storage jar sherd has a lead glazed rim stuck to it, again showing alternating bisque and glaze stacking and also rim to rim stacking.

Bottles and storage jars were traditionally stacked base to base and rim to rim in columns or stacks.

Stacking of Stonewares in the Kiln

In salt glaze firings it is necessary to use some method to keep pots separated from one another so as to prevent fusion, as volatilized salt covers everything in the kiln. Kiln furniture, consisting of saggars, flat pads and wads, and cylinders, were utilized for this purpose.

Mugs could not be stacked on top of each other as the thin walls would not withstand the weight. Mug rims could easily chip when removing any wads. Consequently, mugs, and only mugs, were fired in protective saggars.

Filled saggars were placed on the top of the other in the kiln (Figure 270). Small wads of clay, having a sandier texture, were placed between saggars. Each column of saggars was topped with a saggar lid. Within each saggar, small slightly flattened balls of clay were placed under mugs to prevent the mug bases from fusing to the saggars. Several saggars have small pieces of crushed rock, quartz or sand on the interior base for the same purpose.

Cylinders were probably used between stacks or columns of saggars to stabilize them, although we have no positive evidence that this was done. All cylinders have a wad of clay at each end with no sherds adhering to the refractory, sandy clay to reveal their use. Most cylinders are three inches long, which would seem to be too long to use between saggars in a stack. Two cylinders have pieces of brick stuck to them, which may indicate placement directly on the kiln floor or against other bricks in the kiln. A few triangular bars were found that were probably used for stacking purposes.

Stoneware bowls may have been stacked upside down in overlapping stacks as earthenware bowls were stacked but no sherds with scars have been found to prove this.

Storage jars and bottles are usually stacked base to base and rim to rim in a salt glaze kiln. Several storage jars have a circular ring of heavy salt accumulating on the interior side wall near the bottom. Below this ring there is little evidence of salting, or none at all. This may have indicated the stacking of one pot within another but there are no fused sherds to show this. However, some stoneware bases have sections of three wads on the interior showing that smaller pots were stacked inside larger pots and that some forms were stacked right side up. One pot has wads on the base both inside and outside.

Firing

A brief study of the firing time for kilns from the Middle Ages to the present day gives clues to the time necessary to fire the Yorktown kilns.

The firing of medieval kilns in England is explained by John Musty:

"Once the kiln was loaded, the firing would have taken approximately 24 hours, half of which would be occupied in bringing the kiln from cold to its peak temperature. It could not therefore have been entirely a day-time activity unless the loading and unloading operations were treated as separate events outside the firing schedule.

An estimate of the amount of timber needed for a firing, based on the experience obtained from experimental kilns, suggests that it might have been on the order to 5 cwt. Thus at Wattisfield 60-100 faggots were needed to bring the temperature up to 1000°C, one faggot being consumed every 5-15 minutes.

The preliminary results of one of the Laverstock replica firings shows that there was a 50°C. rise in the first hour, and in 3-4 hours the temperature had reached 150°C.; in 12 hours the peak temperature of 1000°C. was reached.

Subsequent to reaching the peak temperature, special care and expertise would be needed in undertaking the closing down and cooling operation as at this stage would be determined the degree of oxidation of the wares which would affect both the color of the fabric and the glaze."²³

Simeon Shaw relates that "up to the conclusion of the 17th C. the oven was always adapted to the quantity of Articles made during each week; and no manufacturer of that period fired more than one oven full weekly, commencing on the Thursday night, and finishing about mid-day on Saturday,"²⁴

Shaw also describes a salt firing:

"the vast volumes of smoke and vapours from the ovens, entering the atmosphere, produced that dense white cloud, which from about eight o'clock till twelve on Saturday morning [the time of 'firing-up,' as it is called], so completely enveloped the whole of the interior of the town, as to cause persons often to run against each other; travelers to mistake the road; and strangers have mentioned it as extremely disagreeable, and not unlike the smoke of Ethna and Vesuvius."²⁵

One cannot really compare the time needed to fire bottle kilns with the much smaller Yorktown kilns, but the comparison adds an outer limit to the possibilities. Brears describes the Weatheriggs Bottle Kiln, which was in regular use until 1959. He does not discuss the size of the kiln, but it was so large it had 8 firemouths and it needed 5-6 tons of coal to bring it to 1000°C. (C/02-01) required to mature the local clay. The actual firing of this kiln took 30-36 hours and another 2-3 days to cool.²⁶

In discussing ground hog kilns of the southeastern United States, Greer mentions that a small groundhog kiln of about twenty feet total length can be completely fired with wood in 12 to 18 hours.²⁷

Daniel Rhodes has designed a wood-fired kiln of 20 cubic ft. capacity which fires to Cone 9 or 1285°C. in about 14 hours using about two cords of wood. Val Cushing, a professor at the New York State College of Ceramics at Alfred, fires a three chambered kiln with pine to C/10 or 1305°C. in 28 hours.

An unusual sherd with a thick base and side wall, probably from a bottle or storage jar, was excavated from in front of the Small Kiln firebox at Yorktown. Both the outside and the inside of the pot are fired but the center is unfired or raw clay. There is no way it could have filled in after deposition in the ground. This unusual sherd can be explained as follows. Between 450° and 500° the chemically combined water is driven off leaving the mineral meta Kaolin. This is the point when the clay changes to pottery and is irreversible. It appears that the outside and inside of this pot reached this point while the center, perhaps from being exceptionally thick, did not reach this temperature and remained clay.

Bisque Earthenware

The Yorktown potters fired earthenware twice, first before glazing (bisque firing), and secondly after applying the lead glaze (glost or glaze firing). It is impossible to know if all

earthenware forms were fired twice, but it seems highly likely. As Table 5 indicates, of the 140,232 sherds studied from the site, a total of 67,406 or 48.067% were bisque. Of the earthenwares, an astonishing 75% of the sherds were in the bisque state. The Yorktown potter evidently saw advantages to firing his earthenwares twice. Reasons for bisque firing include the following: 1. pots are difficult to glaze in the raw state as the ware absorbs the water in the liquid glaze and will warp or collapse if it absorbs too much water; 2. raw glazed pots are difficult to stack in the kiln.

Because of the tremendous amounts of bisque wasters found at the site, it is inferred that the Yorktown potters had difficulties in firing bisque wares, more so than in firing glazed wares. The glost firings were probably easier, as the wares were hardened from the bisque firing.

Evidence of one particular bisque firing failure was found at the Yorktown site. In the Structure 6 area, hundreds of bisque sherds were found in a small area, as if they had been dumped at the same time. All sherds were from bisque pots with the same color, reflecting the same kiln temperature and firing conditions. When mended, the sherds represented about 80 vessels. There were 41 straight sided cream pots, measuring 8 to 10 inches high and 7 to 7-1/4 inches in diameter, 4 storage jars, one with ear handles, 10 to 15 bottles, and 10 pipkins. The pipkins were made with a coarse, sandy refractory clay, perhaps to withstand the direct heat of a cooking fire. The thinly thrown bottles were made with a more refined clay and must have been stacked in the same kiln section, as they are identical in color and denseness. Many other unrecognizable fragments from the same area attest to this possible bisque firing failure.

There is little information in the historical records about the number of firings in earlier periods. However, Shaw says that "up to the conclusion of the 17th Century all the Kinds of Pottery, whether glazed with lead ore, or with salt, was fired only once."²⁸

Bisque Stoneware

The discovery of several thousand bisque stoneware sherds from at least eight forms is evidence for the double firing of some stoneware forms. This is contrary to the established practice of once fired salt glaze and negates the most important advantage of salt glazing, as pots are usually placed in the kiln raw and come out fired and glazed. Yorktown sherds identified as stoneware bisque have either a white or a red slip or both and are fired to a low temperature, as noted by the slip color and body. Supporting this evidence are a number of sherds with either red or white slip and drips or lines of lead glaze running down the pot. One large bisque stoneware storage jar has three lines of lead glaze running down the pot (Figures 192, 193).

In order to distinguish between intentionally low fired bisque stoneware and other stoneware - those pots that might have been fired in the salt kiln without acquiring enough salt - the color of the iron oxide slip and the condition on the interior of the pot can be checked. If the slip is a dark reddish brown and the interior has small grey or tan, sometimes glossy spatters, this indicates it was salted but did not receive enough salt. Sometimes these sherds will show faint glossy specks on the outside. This condition could happen if the pot were positioned in a section of the kiln where the salt fumes did not reach or if the temperature was too low for the necessary chemical reaction.

As with earthenwares, one explanation for the two stoneware firings is to avoid breakage in stacking raw clay pots, especially large ones. Evidence shows that some forms were stacked neck to neck and base to base or inverted in a pyramid, each pot overlapping the ones below.

Mugs were fired in saggars which would make them easier to stack, but as mugs were thin and fragile and their handles protruded from the slot in the saggar, they may have found it to be less costly, because of breakage, to low bisque these forms as well.

Bisque stoneware forms are as follows: storage jars; bottles; pipkins; floor tile; jugs; mugs, saggar lids; and cylinders. Some of these could have been placed in empty areas of bisque or lead glaze earthenware firings or even inside bisque earthenware pots.

FOOTNOTES

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CHAPTER 12

FREQUENCY AND DISTRIBUTION OF CERAMICS

A total of 140,232 sherds were studied from the Yorktown site. The present chapter will discuss the frequency of wares and shapes and the distribution of ceramic artifacts by defined provenience groups. Tables 5-10 summarize the evidence.

It should be noted at the outset that the majority of sherds found at the site were deposited in their archaeological context after the pottery factory had stopped producing wares. Although the sherds themselves are significant, their position on the site may sometimes have little meaning, except in a post-occupation sense.

The relative frequency of pottery fragments and shapes have meaning for the areas investigated archaeologically. However, it is assumed that the excavated sherd types are representative of the site as a whole.

In the total sample of ceramics, earthenware was more prevalent than stoneware (Table 5). Combining earthenware and stoneware totals, the amount of bisque and glazed sherds found is nearly equal, giving credance to the importance of two separate firings of wares. However, when earthenware and stoneware are compared, there is a great discrepancy. Bisque earthenware is more frequent in its occurrence than glazed earthenware by three to one, possibly signifying more breakage during bisque firing. Although the presence of bisque stoneware on the site is very significant, its frequency in relation to glazed stoneware is very low.

One of the problems of studying the Yorktown material was the prevalence of body sherds, which in most cases could not be identified as to shape or form. Of the total sample, nearly 68% of the sherds could not be identified as to shape, leaving only

	<u>Frequency</u>	<u>Cumulative Frequency</u>	<u>Per Cent</u>	<u>Cumulative Per Cent</u>
Earthenware	85512	85512	60.979	60.979
Stoneware	54720	140232	39.021	100.000
Bisque	67406	67406	48.067	48.067
Glazed	72826	140232	51.933	100.000
Earthenware Bisque	63804	63804	45.498	45.498
Earthenware Glazed	21708	85512	15.481	60.979
Stoneware Bisque	3602	89114	2.568	63.547
Stoneware Glazed	51118	140232	36.453	100.000

Table 5. Frequency of Wares from Entire Site

32% (45,374) as the main study sample. Of this amount, 18,932 sherds or 42% were identifiable as kiln furniture - saggars, lids, pads, props - leaving 26,442 (58%) sherds of the pottery forms manufactured at Yorktown. This relatively small number of sherds, however, has produced significant and hopefully representative information.

Table 6 summarizes the frequency of forms found on the entire excavated site. Of the 23 forms produced at Yorktown (saggars are not listed in Table 6, as they are listed as kiln furniture), one form clearly stands out as being the most frequently found - the milkpan, comprising nearly 40% of the identified sherds. It is possible that milkpans were the major production item at Yorktown.

The second most frequent shape represented in the sample are mugs, followed by bottles, bowls, storage jars, platters, pipkins, and cream pots. Other shapes follow in small quantities.

Once again, the meaning of this frequency distribution is unclear. This distribution represents those sherds found in the excavated areas of the site. To what extent it mirrors actual production is unknown.

As previously mentioned, kiln furniture represents 42% of the identifiable ceramics found at the site. Table 7 lists the kinds of kiln furniture and their relative frequency. It is interesting to note that saggar fragments are the most frequent kind of kiln furniture. Saggars also represent the most frequent type of ceramic found at the entire site, even more so than milkpan fragments. A total of 13,370 saggars fragments were found, in comparison with 10,498 milkpan fragments. If saggars were included in Table 6, saggars would represent 33.6% of the total identifiable sherds and milkpans would represent only 26.4%. Saggars were thus a very major production item. As they are much thicker and sturdier than pots, and since they were used over and over again, the amount of saggars found on the site must represent only a small proportion of those actually made.

Since saggars were apparently used only to house mugs, the amount of saggar production signifies that mugs were important production items as well, perhaps very profitable items.

<u>Form</u>	<u>Frequency</u>	<u>Cumulative Frequency</u>	<u>Per Cent</u>	<u>Cumulative Per Cent</u>
Betty Lamp	65	65	0.246	0.246
Bird Bottle.	141	206	0.533	0.779
Bottle	2627	2833	9.935	10.714
Bowl	2240	5073	8.471	19.185
Chafing Dish	13	5086	0.049	19.234
Chamber Pot.	200	5286	0.756	19.990
Churn.	30	5316	0.113	20.103
Colander	41	5357	0.155	20.258
Cream Pot.	898	6255	3.396	23.654
Floor Tile	63	6318	0.238	23.892
Funnel	8	6326	0.030	23.922
Jug.	181	6507	0.684	24.606
Milk Pan	10498	17005	39.702	64.308
Mug.	3520	20525	13.312	77.620
Pipkin	1192	21717	4.508	82.128
Porringer.	257	21974	0.972	83.100
Plate.	28	22002	0.106	83.206
Platter.	1590	23592	6.013	89.219
Sauce Pan.	400	23992	1.513	90.732
Storage Jar.	2179	26171	8.241	98.973
Stove Tile	253	26424	0.957	99.930
Teapot	18	26442	0.070	100.000
Kiln Furniture . . .	18932	45374		
Non Kiln Furniture (121300)				
Identified Sherds (45374)				
Non Identifiable . .	94858	140232		

Kiln Furniture = 13.50% of total
 Non-Kiln Furniture = 86.50% of total

Identified Sherds = 32.36% of total
 Non-Identified Sherds = 67.64% of total

Table 6. Frequency of Identified Shapes
 From Entire Site.

Saggar	13370	13370	70.621	70.621
Saggar Lid	960	14330	5.070	75.691
Prop	432	14762	2.282	77.973
Pad	4170	18932	22.027	100.000

Table 7. Frequency of Kiln Furniture from
Entire Site.

In order to discover any patterns in the horizontal distribution of ceramics at the Yorktown factory site, the main areas of excavation were divided into 8 provenience groups. These groups are as follows:

<u>Provenience Group</u>	<u>Structure Name or Number</u> (Figures 19-20)
1	= Large Kiln
2	= Small Kiln
3	= Area around Small Kiln (with marl walls)
4	= Area south of Small Kiln (outside marl walls)
5	= Structure 1 (Workshop Room)
6	= Structures 2 and 3 (Workshop Building)
7	= Structure 4 Area
8	= Structure 6 Area (includes Waster Pit 2 area)

Note: No sherds counted for Structure 5 area, as deposits mixed.

Provenience Groups (PG) 1 and 2 represent areas immediately associated with the Large and Small Kilns respectively.

Examining frequency of total sherds first, three provenience groups produced 86.4% of the ceramic finds at the site: PG 6 (41.26%), PG 5 (26.25%), and PG 3 (18.89%). In essence, the main factory complex, consisting of (from south to north) the Small Kiln (PG 2, 3), the Large Kiln (PG 1), and Structures 1, 2, and 3 (PG 5, 6) (main production building-rooms), produced the overwhelming majority of pottery found at the site - 115,669 sherds or 89.94% of those sherds classified by provenience groups. Relatively small amounts of pottery were found in other areas of the site - PG 4, PG 7, PG 8. (Table 8).

Earthenwares were more frequent than stonewares in 5 of 8 provenience groups: PG 3, PG 4, PG 6, PG 7, PG 8. It is interesting

<u>Provenience Group</u>	<u>Frequency</u>	<u>Cumulative Frequency</u>	<u>Per Cent</u>	<u>Cumulative Per Cent</u>
1	4031	4031	3.135	3.135
2	525	4556	0.408	3.543
3	24292	28848	18.890	22.433
4	608	29456	0.473	22.906
5	33755	63211	26.249	49.155
6	53066	116277	41.266	90.422
7	9383	125660	7.297	97.718
8	2934	128594	2.282	100.000

Note: 11638 sherds are from other areas of the site.
128594 + 11638 = site total of 140232

Table 8. Frequency of Pottery by Provenience Group.

to note that stonewares were more frequent than earthenwares in both Small and Large Kilns (PG 1, PG 2), as well as in Structure 1 (PG 5). (Table 9).

Bisque sherds were more prevalent than glazed sherds in 5 or 8 provenience groups: PG 1, PG 3, PG 6, PG 7, PG 8. Earthenware, bisque and glazed, and stoneware, bisque and glazed, were found in the fill of both kilns, signifying that all varieties were fired in both kilns. A higher percentage of glazed stoneware was found in the Small Kiln.

It is significant to note that earthenware bisque was more frequent than earthenware glazed in a 1 provenience groups. The reverse is true for stoneware - glazed always outnumbers bisque.

Table 10 lists ceramic forms as a variable against provenience groups. Seventeen forms were found in association with the Large Kiln (PG 1). Of this amount, 2,002 items (75.29%) can be classified as kiln furniture, signifying stoneware production was carried out in the kiln. However, various earthenware forms, both glazed and bisque, were also found in the Large Kiln fill, signifying earthenware production as well.

A similar situation occurs in the Small Kiln, with one difference being a higher occurrence of mugs. Many 'experimental' mugs were found in the Small Kiln and in the vicinity of the kiln.

Of the 26 forms (includes kiln furniture) listed in Table 10, only 8 forms were found in all eight provenience groups: bottle, bowl, saggar and lid, milkpan, mug, pad, platter. Conversely, no provenience group had all 26 forms represented. PG 5 and PG 6 had 23 and 24 forms respectively.

Kiln furniture (saggar, lid, prop, pad) is especially frequent in PG 1, PG 2, and PG 5, all kiln related areas.

Provenience Groups

	1		2		3		4		5		6		7		8	
	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
Earthenware	1380	34.235	228	43.429	19112	78.676	385	63.322	11325	33.551	36357	68.513	8485	90.430	2178	74.233
	2651	65.765	297	56.571	5180	21.324	223	36.678	22430	66.449	16709	31.487	898	9.570	756	25.767
	4031	100.000	525	100.000	24292	100.000	608	100.000	33755	100.000	53066	100.000	9383	100.000	2934	100.000
Bisque	2226	55.222	225	42.857	15392	63.362	241	39.638	9500	28.144	26729	50.369	6759	72.035	1628	55.487
	1805	44.778	300	57.143	8900	36.638	367	60.362	24255	71.856	26337	49.631	2624	27.965	1306	44.513
	4031	100.000	525	100.000	24292	100.000	608	100.000	33755	100.000	53066	100.000	9383	100.000	2934	100.000
Earthenware	980	24.312	191	36.381	14970	61.625	234	38.487	8093	23.976	26388	49.727	6726	71.683	1623	55.317
	400	9.923	37	7.048	4142	17.051	151	24.836	3232	9.575	9969	18.786	1759	18.747	555	18.916
	1246	30.910	34	6.476	422	1.737	7	1.151	1407	4.168	341	0.643	33	0.352	5	0.170
Stoneware	1405	34.855	263	50.095	4758	19.587	216	5.526	21023	62.281	16368	30.845	865	9.219	751	25.596
	4031	100.000	525	100.000	24292	100.000	608	100.000	33755	100.000	53066	100.000	9383	100.000	2934	100.000

Table 9. Frequency of Wares by Provenience Group.

Provenience Groups

	1	2	3	4	5	6	7	8
	Freq	%	Freq	%	Freq	%	Freq	%
Betty Lamp	1	0.037			8	0.060	21	0.152
Bird Bottle	2		2	0.027	1	0.418		
Bottle	119	4.475	2	0.844	382	5.257	4	1.674
Bowl	33	1.241	12	5.063	616	8.477	10	4.184
Chafing Dish								
Chamber Pot			4	0.055	1	0.418	13	0.098
Churn								
Colander			5	0.069	1	0.418	3	0.022
Cream Pot	23	0.864	27	0.371			44	0.331
Floor Tile			10	0.138			6	0.045
Funnel					1	0.007	3	0.021
Jug	2	0.075	9	0.124			33	0.248
Lid, Saggar	60	2.256	23	9.705	342	4.706	1	0.418
Milk Pan	287	10.794	45	18.987	1227	16.884	77	32.217
Mug	89	3.347	67	28.270	838	11.532	41	17.155
Pad	1208	45.430	1	0.422	47	0.647	1	0.418
Pipkin	31	1.166			64	0.880	8	3.347
Porringer			55	0.756				
Plate								
Platter	14	0.526	1	0.422	1287	17.710	2	0.837
Prop	211	7.935	1	0.422	81	1.100		
Saggar	523	19.669	85	35.865	1906	26.228	74	30.962
Sauce Pan	13	0.489			16	0.220	1	0.418
Storage Jar	37	1.391			333	4.582	17	7.113
Stove Tile	6	0.225	7	0.096				
Teapot								
Total	2659	100.000	237	100.000	7267	100.000	239	100.000
					13281	100.000	13816	100.000
					1603	100.000	1096	100.000
Unidentified	1372	34.036	288	54.857	7025	70.085	369	60.690
					20474	60.655	39250	73.964
							7780	82.916
Total	4031	525	24292	608	33755	53066	9383	2934
Grand Total of Provenience Groups =	128594							

* % of total sherds within each provenience group

Table 10. Frequency of Identified Shapes by Provenience Group.

CHAPTER 13

FUNCTIONS OF VESSELS

The "Poor Potter" of Yorktown manufactured an amazing variety and number of ceramic shapes. A total of 23 shapes was discerned in our analysis (Tables 4, 11). Fifteen of these forms were made in both earthenware and stoneware, and eight were made solely in earthenware. It is probable that additional shapes were also produced. For example, two bisque earthenware waster areas yielded a variety of small bowl-like or low porringer-like vessels which may have been production items. Other vessel forms are only sparsely represented in the archaeological sample, so it is difficult to discern other shapes.

Few standard ceramic shapes - those made by local potters in general - are apparently missing from the Yorktown ceramic inventory. It appears as if the Yorktown potters were supplying the populace with most kinds of utilitarian vessels.

Table 11 classified the Yorktown vessels according to the functional categories established from 17th C. Chesapeake ceramics.¹

Food Processing

A total of 9 Yorktown forms were used, to the best of our knowledge, for processing and cooking food, as well as dairying operations. Yorktown vessels manufactured for food processing purposes include the following: pipkins or cooking pots, which could be placed in the fire to cook a variety of foods; sauce pans, a handleless cooking vessel, possibly used for cooking puddings, pastries, etc.; bowls of several sizes, for preparing foods; milk pans, used in dairying for cream collection as well as other usages; colanders, used for washing vegetables, making cheese, etc.; and churns, utilized for making butter.

Table 11

YORKTOWN VESSELS BY FUNCTION

Food Processing (Cooking or Dairying)

Pipkin
Sauce Pan
Bowl
Milk Pan
Colander
Churn

Food and Drink Storage

Storage Jar
Bottle
Cream Pot

Beverage Consumption

Mug

Beverage Serving

Jug
Teapot

Food Consumption-Serving

Porringer
Plate
Platter

Health-Hygiene

Chamber Pot

Other

Bird Bottle
Chafing Dish
Betty Lamp
Funnel
Saggar
Floor Tile
Stove Tile

Total Shapes: 23

Food and Drink Storage

Storage jars and bottles were undoubtedly used to store solid foods [jars] or liquids. Jars were made to accommodate cloth lids. Cream pots may have been used to store butter and a variety of other foods.

A total of 6 vessels (of 25) were made at Yorktown to carry out beverage or food consumption and serving.

Beverage Consumption

Mugs of various sizes were the main products for individual beverage consumption. Mugs were made in several different sizes and were undoubtedly utilized in both homes and taverns.

Beverage Serving

Handled jugs were manufactured for the purpose of serving beverages. Beautifully made teapots helped fulfill English traditions of tea drinking.

Food Consumption-Serving

A variety of porringers, plates and platters were probably utilized as food receptacles. Poringers could have held soups and other liquid foods as well as solid foods. Platters are essentially large plates used for eating or serving purposes.

Health-Hygiene

Chamber pots were the only vessels used in this category. One stove-pipe hat shaped vessel, with broad rim, may be a form of chamber pot (Figure 76). Similar pots are known by oral tradition to have been used as chamber pots on the island of St. Eustatius.

Other

A variety of non-food pots showed the versatility and skill of the Yorktown potter(s). Bird bottles were cleverly designed as houses for birds (Figure 55). Betty lamps and funnels are two extremely useful devices. A chafing dish form was utilized to hold coals in order to heat the contents of other vessels set on top. Saggars were thick-walled vessels used to fire mugs. Stove tiles were unusual for this area. Floor tiles made a durable floor covering.

FOOTNOTE

1. Mary C. Beaudry, Janet Long, Henry M. Miller, Fraser D. Neiman, and Garry W. Stone, "A Vessel Typology for Early Chesapeake Ceramics: The Potomac Typological System," Historical Archaeology, XVII (1983), p. 18.

CHAPTER 14

AN ANALYSIS OF CERAMIC VESSELS OWNED BY DECEDENTS IN YORK COUNTY, VIRGINIA 1700-1729

It is very difficult to estimate the productive capability of the Yorktown pottery factory, or even to determine approximately when full scale operations began, since none of the factory's business records have been found. In order to learn more about these questions, the probate inventories recorded in the York County records were examined for references to Rogers-made or Virginia-made ceramic wares.

Colonial probate inventories contain a more comprehensive record of important social, economic, and material aspects of local history than almost any other type of primary source. Although they vary in quality over time and region, and must always be used with caution, these detailed lists of personal property provide the means to widen our understanding of the past. During the past twenty years historians, and more recently archaeologists, have begun to exploit these documents in increasingly imaginative ways. Historians have used inventories to study the distribution of wealth, economic developments, and social structure in the colonies. Archaeologists have attempted to correlate documentary and archaeological evidence, and have examined changes in the patterns of ownership of certain material objects (or functional assemblages of these objects) in order to extract a deeper meaning from information found in the inventories. These scholars are working to achieve a broader synthesis of the lifeways and culture of the colonial past.¹

Unfortunately, the York County probate inventories (lists of the personal property belonging to the estates of deceased persons), did not identify which ceramic items were locally made. It did

become apparent upon close study however, that some types of ceramic forms were listed more often than others at different times during the period from 1700 to 1750. It also seemed likely that these frequency changes reflected the appearance of locally made Yorktown wares that were beginning to show up in more York County households. An experimental quantitative analysis of all ceramic vessels named in these inventories of household possessions was accordingly begun to determine what, if any, impact the factory's output had on local patterns of ceramic ownership.

The theoretical basis underlying this approach is relatively straightforward. Since ceramic vessels made at Yorktown would have been more readily available (and probably cheaper) than similar ones imported from England or elsewhere, it was assumed that local York County residents would begin to purchase and own a greater number and variety of these wares after the factory at Yorktown began production. Increases in the frequency of occurrence in the inventories of certain diagnostic ceramic vessel forms (when compared with data recovered during excavations at the factory site) should therefore indicate when the factory began full scale production and perhaps which vessel forms were made and sold in large quantities. In other words, there should be two quantitatively measurable effects resulting from the output of the factory: (1) the percentage of households owing earthenware (and especially stoneware) should increase, and (2) vessel forms that were made in large numbers at Yorktown (regardless of whether they had been previously imported from abroad) should appear more frequently in local households, especially compared with forms not produced locally. Since archaeological evidence suggests that the factory was producing wares as early as 1720, if not before, all of the inventories recorded from 1700 to 1729 were selected as an adequate segment to analyze to determine patterns of ceramic ownership both before and after the factory began operations.

The men who drew up these lists in the early years of the eighteenth century described the objects they saw by using words and names that were familiar to them, but which are sometimes unclear today. These names, especially those used to describe ceramics,

reflected cultural and functional meanings that are frequently difficult to interpret with precision. Sometimes there was even a degree of uncertainty in their own minds over what to call relatively common ceramic vessels. In 1720, for example, the three men who inventoried Mary Baker's estate listed four "large stone bottles or jugs."² This problem is compounded by the confusing array of terms and classification schemes used by archaeologists and others to describe ceramics that are excavated from seventeenth and eighteenth century sites in North America. A recent study has noted that the categories and terminology employed to describe ceramics frequently lack consistency and standardized definitions, do not adequately reflect functional variation, and are not based on the documentary record. Suggesting that the variety of schemes being used "makes comparisons between assemblages excavated by different archaeologists impossible," the authors proposed a tentative system or typology for classifying vessel shapes commonly found at sites in Tidewater Virginia and Maryland.³ This typology attempts to set up categories based on functional variations and used standardized form names that are based on terms found in early documentary sources.

In order to compare the ceramic forms owned by York County residents with those excavated at the factory site, it was important to avoid problems caused by ambiguous terminology and inconsistent classification. A standardized vessel form name list or typology was therefore drawn up adapted from the recently published "Potomac Typological System" and using, when possible, terms found in the York County inventories (see Table 12).⁴ This list, partly descriptive and partly analytical (i.e. based on both shape and function), helped standardize the confusing variety of names sometimes used to describe basically similar vessels. To insure that the documentary and archaeological data were conformable, a similar list was then made to link the types of vessels mentioned in William Rogers' inventory with those actually found at the factory site (see Table 13). This list was based on a critical comparison of all the various names that have been used to describe the wares made at the Yorktown site.⁵

TABLE 12

STANDARDIZED TERMINOLOGY FOR CERAMIC VESSELS LISTED IN

YORK COUNTY, VIRGINIA INVENTORIES 1700-1729

<u>Form Name [variants]</u>	<u>Use/Capacity, Size</u>
A. Hollow Vessels for Liquids and Beverages	
CUP [tea, coffee, custard]	consumption, processing/ less than 1 pint
POT-DRINKING [can]	consumption/ 1 pint-2 quarts or more
MUG	consumption/ 1 gill-2 quarts or more
JUG [ewer ?]	consumption/ small, serving or storage/ large
PITCHER [flagon ?]	serving, processing in kitchen or dairy
BOTTLE	storage and serving/ ½ pint-3 gallons
FLASK [costrel, pocket bottle]	consumption/ 1 pint or more
POT-SILLABUB [posset, wassail]	serving
B. Hollow Vessels for Liquids and Semi-Solid Foods	
POT-CAUDLE [caudle cup]	processing, serving, and consumption of gruel
PORRINGER	consumption
BOWL-PUNCH	processing, serving, consumption/ up to 3 gallons
BOWL	kitchen processing/ large, consumption/ small
BASIN [bason]	processing, consumption, hygiene/ 6"-12" dia.
C. Flat Vessels for Food	
PLATTER [large dish or plate ?]	serving and consumption/ large, oval?, over 10"
DISH	serving and consumption/ 10"-28"
PLATE	consumption (mostly)/ 7"-10"
SAUCER	serving and consumption/ less than 7"
D. Miscellaneous Dining Forms	
SALT	serving
DISH-CHAFING	warming and serving
POT-TEA [coffee, etc.]	serving
CRUIT	serving
E. Cooking Vessels	
PIPKIN [cooking pot, sauce pan ?]	processing and cooking of stews, etc.
PAN-PUDDING [pastry, patty]	processing, baking, cooking
F. Dairy and Kitchen Vessels	
PAN-MILK [cream]	processing/ 10" or more
COLANDER	processing
POT-BUTTER [cream, fat]	processing and storage
JAR [similar to butter pot ?]	storage for liquids
CHURN	processing
FUNNEL	processing

Table 12 (Cont'd.)

G. Health and Hygiene related Forms

POT-GALLEY [ointment, mustard, jam] storage of drugs, sometimes condiments
POT-CHAMBER

H. Other Non-Food Forms

CANDLESTICK
LAMP [betty lamp]
BOTTLE-BIRD used for bird houses
POT-GARDEN [flower pot]
TILE-FLOOR
TILE-STOVE

TABLE 13

CERAMIC FORMS IN WILLIAM ROGER'S 1739 INVENTORY

COMPARED TO VESSELS FOUND AT THE KILN SITE

<u>Form Name</u> <u>Standardized</u>	<u>Name From</u> <u>Inventory</u>	<u>Vessel Name</u> <u>From Site</u>	<u>Earthen-</u> <u>ware</u>	<u>Stone-</u> <u>ware</u>
* BOTTLE	"small stone bottles"	bottle	X	X
BOTTLE-BIRD	"bird bottles"	bird house bottles	X	
* BOWL	not listed	bowl	X	X
CHURN	not listed	butter churn	X	X
COLANDER	not listed	colander	X	X
DISH	"small dishes"	not found[small plate?]		
DISH-CHAFING	not listed	chafing dish	X	
FLASK	"pocket bottles"	not found		
FUNNEL	not listed	funnel	X	
* JAR	["Cream potts"?]	storage jar	X	X
JUG	not listed	jug	X	X
LAMP	"Lamps"	betty lamp	X	
* MUG	"Mugs"	mug	X	X
* PAN-MILK	"Milk pans"	milk pan	X	
PAN-PUDDING	"puding pans"	sauce/cooking pan	X	X
* PIPKIN	["red Sauce pans"?]	pipkin/cooking pot	X	X
PLATE	not listed["small dishes"?]	plate	X	X
* PLATTER	not listed	platter	X	
PORRINGER	"porringers"	porringer	X	
POT-BUTTER	"Cream potts"	cream pot	X	
POT-CHAMBER	"Chamber potts"	chamber pot	X	X
POT-TEA	not listed	tea pot		X
TILE-FLOOR	not listed	floor tile		X
TILE-STOVE	not listed	stove tile	X	
TOTAL	12	22	20	13

Forms listed in inventory and found at kiln site 10 [11?]

Forms found at the site, but not in the inventory 12

Forms in the inventory, but not found at the site 2 [1?]

* denotes the seven vessel forms that are most frequently found at the kiln site

Any attempt to create a systematic classification scheme involves making simplifications that result in the loss of some detail as well as making arbitrary decisions. It seems obvious that a teapot is not the same as a chamber pot, but what is the difference between a sauce pan and a pudding pan? Is there always a significant difference between a storage jar and a butter pot? For the purposes of this study it was more important to create a consistent, if arbitrary, set of definitions than it was to retain little understood and possibly insignificant name variations.

The quantitative analysis of all ceramic vessels listed in the York County inventories over a period of thirty years entailed the classification and statistical manipulation of a large body of data. To insure efficient and accurate handling of this information, it was decided to employ computer assistance. A coding system (Table 14) and a data entry form (see Table 15 for an example) were designed to facilitate the systematic abstracting of information from the documents. This was necessary since the data had to be in a form that could be keypunched, put onto a tape file, and then processed electronically. A readily available packaged program (SASS) was used to process the data. The procedure involved abstracting all useful information from each inventory, coding when necessary, and completing the data card. At this stage decisions were made concerning vessel composition and form names were standardized according to the list in Table 12. Altogether over 3,000 pages of documents were surveyed from seven York County record books, and information from nearly 400 probate documents was abstracted and coded.

After taking into account duplicates, re-evaluations, and additional inventories (for items not included in the initial list) evidence concerning the ceramic holdings of 375 different individuals who died in the county from 1700 to 1729 was included in this study.⁶ The vast majority of these 375 people (almost 90 percent) were heads of a household (defined as someone owing a bed and a cooking pot), but their personal estates ranged in value from less than £10 to over £2,000 current Virginia money.

TABLE 14

CODE SYSTEM USED TO ANALYZE YORK COUNTY, VIRGINIA POTTERY OWNERSHIP

<u>Field No.</u>	<u>Data</u>	<u>Coding</u>	<u>Example</u>
SOURCE ENTRIES			
1.	Type of entry:	S=source	S
2.	Reference:	Y.Co. record book number and first pg. no.	14.253
3.	Date:	T=taken R=recorded U=unknown, month and last two digits of year	T 5.09
4.	Name:	first initial and surname	T. Nelson
5.	Household status and sex	Y=yes N=no U=uncertain M=male F=female	Y M
6.	Parish:	Y=Ykhampton C=Charles B=Bruton etc.	B
*7.	Did inventory list any ceramics?:	Y=yes N=no P=probably U=uncertain	Y
8.	Did inventory list any earthenware?:	same as above	Y
9.	Did inventory list any stoneware?:	same as above	N
10.	Value of all ceramics if known:	pounds. shillings.pence	1.05.11
11.	Total value of estate:	to nearest whole figure in pounds	213
12.	Other:	misc. info. and comments, not coded	

FORM ENTRIES

1.	Type of entry:	F=form	F
2.	Form:	see Table 4 for standardized name list	JUG DRINKING
3.	Quantity:	number or parcel, defined as three	2
*4.	Material:	E=earthenware S=stoneware P=probably ceramic U=uncertain or unknown	E
5.	Function:	if given, not coded	BEER
6.	Size:	not coded	PINT
7.	Condition:	not coded	OLD
8.	Value per single vessel:	in pence	5

* If a vessel was not specifically identified as made of earthenware or stoneware, but was judged to be ceramic because of value, association with other vessels, form, or other contextual clues it was classified as probably ceramic. If there was no suggestion about composition it was classified as unknown. Vessels that were obviously porcelain were not included in this analysis. See Table 7 for a typical completed data card.

TABLE 15

SAMPLE DATA CARD USED FOR THE YORK COUNTY, VIRGINIA POTTERY ANALYSIS

ENTRY S REF 16,226 DATE R8,23 NAME W. WISE Jr. HSEHLD YM PSH C CERAMICS YEARTH? Y STONE? Y CER VAL + 1,0,0 TEV 425 OTHER milk trays, tin pans

ENTRY	FORM	QTY	MAT	FUNCTION	SIZE	CON	VAL	OTHER
F	JUG	5	S				30	
F	POT	4	S					
F	POT	1	E					
F	BASIN	1	P	SHAVING				
F	JUG	1	S					
F	POT-CHAMBER	1	P					

Collectively these individuals owned almost 3,000 vessels that either were identified as ceramic or that were probably ceramic.

Table 16 shows the percentage of these estates (by five year intervals) that included: (1) any ceramic vessels at all, (2) earthenware, and (3) stoneware items. The most interesting observation to be made from this table is the different pattern stoneware ownership exhibits when compared to the ownership of earthenware or of ceramics in general. The percent of estates owning ceramics or earthenware increased significantly during the period from 1710-1714 and then decreased slightly during the next fifteen years (although it remained higher than the pre-1710 level.). Stoneware ownership however, while also increasing sharply during the period from 1710-1714, continued to increase throughout the entire study period up to 1729. A comparison with data that included only heads of households produces the same trend.

The increase in ceramic ownership from 1710-1714 is unlikely to have resulted from more exports from Great Britain since this period came at the end of a long economic recession in the tobacco trade that had severely curtailed Virginians' purchasing power abroad. On the other hand, this increase seems to occur too soon to reflect the output of the pottery factory, especially if there was a four or five year lag between the time wares were purchased and when they would show up in probate inventories.

There is another possible explanation for this early increase in ceramic ownership. During the seventeenth and well into the eighteenth century, pewter was a popular and relatively common material for eating and drinking vessels, with wooden eating vessels acting as a substitute in poorer households.⁷ Pewter was expensive however, and it is likely that the hard times caused by the depression in the tobacco trade caused many Virginians to turn to cheaper ceramic wares as substitutes for pewter. It is also possible that as dairying became more important, partly in response to the growth of Williamsburg and Yorktown, more farmers replaced their wooden dairy wares with ceramic milk pans

TABLE 16

FREQUENCY OF OWNERSHIP OF CERAMIC VESSELS

IN YORK COUNTY, VIRGINIA 1700-1729

Percentage of inventories listing:

<u>Year</u>	<u>No. of Inventories</u>	<u>Any Ceramics</u>	<u>Earthenware</u>	<u>Stoneware</u>
1700-1704	41	71	68	7
1705-1709	41	68	59	12
1710-1714	45	82	78	20
1715-1719	92	79	77	21
1720-1724	87	77	72	23
1725-1729	<u>69</u>	77	74	30
total	375			

Note: An inventory was counted as listing ceramic, earthenware, or stoneware vessels if (1) they were identified specifically as such, or (2) it seemed likely from value or context that they were ceramic, even though they were not identified as earthen or stoneware. Vessels of uncertain composition were not counted.

and butter pots. The rising popularity of ceramic wares (up to 78 percent of all estates) after 1710 is therefore best explained by economic factors, not the onset of production at the Yorktown pottery works.

It should not be forgotten that there were other sources of locally made coarse utilitarian earthenwares available to York County residents before William Rogers came to Yorktown. Although both earthenware and stoneware vessels were made at Rogers' pot houses, it was the latter that was scarcer, probably more in demand, and more expensive. Other potters, in Virginia and in other colonies, had been making utilitarian earthenwares for many years. The stonewares made at Yorktown were however, something new, and were among the first such non-European wares to become locally available.⁸ In other words, the increased availability of earthenware forms from the Yorktown factory may not have had as much impact on local ownership patterns as did the more sophisticated stonewares.

Table 16 indicates that after peaking at around 78 percent, the proportion of estates listing earthenware remained roughly stable, and actually dropped after 1720. On the other hand, the second increase in the percentage of estates owning stoneware which took place after 1725 (the first occurring from 1705-1714) may well reflect the beginning of large scale production of stoneware vessels at the Yorktown kilns some years earlier. The steady growth in the popularity of stoneware from seven to thirty percent of all estates in only thirty years suggests that the vessels made at Rogers' factory enjoyed a strong local market.

The men who drew up the inventories used names to describe ceramic vessels that generally conformed to the standardized list of terms set up at the beginning of the project (Table 12). Five of the 37 vessel forms in the standardized list did not occur even once in the documents (bird bottle, funnel, lamp, floor tile, and stove tile) and another (chafing dish) was only mentioned twice. This was not altogether unexpected since these forms had been included primarily because they had been found at the factory site. In all some 36 different types of ceramic forms were iden-

tified in the probate inventories. Four of these forms had not been included in the initial standardized name list. Two of these forms (sugar box and warming pan) were only mentioned once as possibly ceramic, and the others (pan and pot) had been considered too general to be useful. The final list of vessel types found in the documents from 1700-1729 included 33 types that occurred often enough to warrant consideration (see Table 17).

One serious limitation to the usefulness of the inventory data was that the lists frequently failed to indicate what a vessel was made of. A total of 4,151 vessels were named that were either identified as ceramic, or that could have been ceramic. All vessels that were described as made of earthenware or stoneware were assigned to their respective categories, while the others of unspecified composition were either categorized as "probably ceramic" or "unknown" according to several criteria, including value, context, form etc. Even after assigning many items to the "probably" ceramic category from internal evidence, the percentage of vessels remaining in the "unknown" group was often as high as 50 to 80 percent for some forms (e.g. dishes and bottles) that could have been made of pewter or glass. In all 1,270 (approximately 30 percent of the total of 4,151) vessels were assigned to the "unknown" category and were therefore not included in the analysis. A smaller number of vessels (103) were identified as ceramic but were poorly described as only "pieces" of earthenware, whiteware, etc. and were also necessarily excluded.

Table 17 summarizes the basic characteristics of the core group of 2,775 vessels that remained after excluding entries with insufficient data. This group represented 33 different vessel forms. Nearly half (48 percent) of these 2,775 vessels were identified as earthenware, almost 10 percent as stoneware, and the rest could only be judged to be probably ceramic. It was noted above that five vessel forms made at the pottery factory did not show up in the probate inventories before 1730. Two of these (stove and floor tiles) would probably not be listed even if they were present, since they would be part of another object. The other three (bird bottles, lamps, and funnels) did subsequently

TABLE 17

CERAMIC VESSELS IN THE YORK COUNTY, VIRGINIA INVENTORIES, 1700-1729:

FREQUENCY BY FORM AND BY COMPOSITION

Form Name	Number of Vessels(Total)	Number of Vessels(By Composition)		
		<u>Probably Ceramic</u>	<u>Earthenware</u>	<u>Stoneware</u>
BASIN	114	18	96	0
BOTTLE	40	8	6	26
BOWL	73	12	61	0
BOWL-PUNCH	53	37	16	0
CANDLESTICK	5	4	1	0
CHURN	3	2	1	0
COLANDER	3	2	1	0
CRUIT	4	3	1	0
CUP	266	154	112	0
DISH	94	64	30	0
FLASK	3	3	0	0
JAR	52	36	13	3
JUG	209	68	25	116
MUG	337	118	184	35
PAN	70	4	66	0
PAN-PUDDING	29	29	0	0
PAN-MILK	182	128	54	0
PIPKIN	6	5	1	0
PITCHER	5	1	1	3
PLATE	299	57	242	0
PLATTER	3	0	3	0
PORRINGER	63	11	49	3
POT	247	18	209	20
POT-BUTTER	413	267	106	40
POT-CAUDLE	2	2	0	0
POT-CHAMBER	41	17	21	3
POT-DRINKING	4	0	4	0
POT-GALLEY	62	42	20	0
POT-GARDEN	14	11	3	0
POT-SILLABUB	3	2	1	0
POT-TEA	19	17	2	1
SALT	11	9	2	0
SAUCER	<u>46</u>	<u>46</u>	<u>0</u>	<u>0</u>
	2,775	1,195	1,330 →	250

NOTE: This table only includes ceramic forms that occurred two or more times.

appear in the probate inventories after 1730, but only rarely (and sometimes only in William Rogers' own estate), suggesting that none of these forms were very commonly owned.⁹ In addition to those forms that were not mentioned at all, a number were represented by so few references that it is apparent that either they were rarely made of ceramic materials (churn, colander, candle pot) or that they were referred to by other names.

When archaeological evidence indicates that a form was produced locally in large quantities, but it is not listed very often in the inventories, it is even more likely that these vessels were present but that they were called by another name. During the entire 30 year period, for example, only six references were found to pipkins (see Table 17) which suggests that what ceramic analysts have been classifying as pipkins were probably simply called pans or pots in the York County inventories. Several other infrequently mentioned terms (see Table 17) are also probably minor variants of other more common names (e.g. flask for bottle, pitcher for jug, and platter for large plate or dish).

The quality of the inventory data was frequently so poor that the generalizations and conclusions resulting from this study are at times disappointing and the interpretation of the evidence obscure. The greatest difficulty occurred when the inventories did not include the detailed descriptions needed to adequately classify the form and composition of vessels with reasonable certainty. An earlier investigation of ceramics in York County households from 1730 to 1750 also encountered similar problems and concluded that the descriptive data in the probate records were inconsistent, often not precise, and that groups of dissimilar vessels were sometimes lumped together and merely referred to as parcels.¹⁰ The present analysis was therefore begun with the expectation that data quality would be a problem. It was, nevertheless, undertaken on the chance that the earlier inventories would be more detailed, that a standardized list of vessel form names would compensate for inconsistent naming, and that an event such as the establishment of the pottery factory would have an effect that could be discovered in the documentary record.

Unfortunately inadequate evidence resulted in equivocal or obscure conclusions. Almost 300 vessels were described in very general terms (such as pots and pans, see Table 17) without the modifiers needed to classify them. In other cases the data had to be adjusted by eliminating single entries of unusually large numbers of vessels. Any single entry of more than 20 identical vessels was not included in the frequency distributions since such entries would have distorted the results. Often not enough references were found for some vessel forms (after eliminating poorly described examples) to provide statistically valid samples. Nor was enough information consistently recorded to allow for reliable generalizations to be made about the relationship between size or composition and the values assigned to ceramic vessels by the inventory takers. Although the details remained elusive, some interesting patterns did emerge that may shed some light on the factory's operations.

Over twenty identifiable vessel forms have been excavated at the factory site in Yorktown (see Table 13). The vast majority (about 95 percent) of all identified sherds however, are of only six different forms. It is difficult to determine whether these figures really reflect the relative levels of production at the factory, or whether they represent the beginning, middle, or final state of the twenty some years of the industry's operation. Although sherd distribution does not necessarily correlate with vessel distribution, it does suggest that the most commonly made forms were milk pans, platters (plates?), mugs, bowls, jars (butter pots?), bottles (jugs?), and in lesser numbers, pipkins.¹¹

The frequency of occurrence of these forms, as well as several others, is outlined below. The reader should refer to Figures 146-148 for drawings of the shapes of these vessels, and to Tables 12, 13 and 17-23 for the data upon which the discussion is based.

Milk Pans

Earthenware milk pans are among the most common vessel shapes found at the factory site, and apparently they were almost never

made of stoneware. Milk pans or trays are also frequently mentioned in the inventories, although they were just as likely to be made of wood (especially before 1720) or tin. A total of 182 ceramic milk pans were counted, including 54 identified as earthenware and an additional 128 that were probably ceramic; none were described as made of stoneware. As Table 18 shows, there was very little change in the frequency of earthenware milk pan ownership over the thirty years under consideration. The mean number of pans owned actually dropped after 1705 (possibly due to the small numbers involved) and only regained its beginning level after 1725. The percentage of inventories listing earthenware pans also dropped after 1709 and then increased slightly after 1720. If the larger number of milk pans that were probably ceramic are considered, there was however a sharp increase in both the mean number and percentage from 1725-1729.

It is difficult to interpret these trends. Non-ceramic milk pans were frequently listed in inventories throughout the period under consideration. Wooden "milk trays" were especially numerous during the early years and tin milk pans were also popular after 1720. It is likely that ceramic dairy vessels were preferred over wooden ones, but it is also likely that tin was preferred over the heavier, more fragile earthenware pans. The slight decrease in frequency that occurred before 1724 may reflect the growing popularity of tin pans over ceramic wares, and the increase after 1725 may indicate that the more readily available, and possible cheaper ceramic milk pans from Rogers' factory were beginning to show up in local households. A number of milk pans were included among the unsold ceramic wares in Rogers' own inventory in 1739. As noted before, the factory's stonewares would have generated the greatest local demand, since other potters had been making utilitarian earthenwares in the region long before 1710. Milk pans and other common earthenware vessels would therefore not necessarily have represented a new local product for York County residents.

TABLE 18

FREQUENCY OF OCCURRENCE OF MILK PANS

YORK COUNTY, VIRGINIA 1700-1729

Year	Earthenware				Probably Ceramic			
	<u>NI</u>	<u>NV</u>	<u>M</u>	<u>%</u>	<u>NV</u>	<u>M</u>	<u>%</u>	
1700-1704	41	16	.4	2	10	.24	2	
1705-1709	41	4	.2	2	0	0	0	
1710-1714	45	0	0	0	11	.24	2	
1715-1719	92	6	.06	1	17	.18	4	
1720-1724	87	7	.08	2	17	.2	3	
1725-1729	69	21	.3	3	73	1.1	12	
total	375	54	.14		128	.34		

Note: In Tables 10-16 the following abbreviations are used:

NI = total number of inventories used

NV = total number of vessels listed

M = mean number of vessels per inventory

% = percentage of inventories listing this vessel form

Plates

Fragments of earthenware platters or large plates were the second most common shape excavated in the area of kiln 2 at the factory site. These dishes measure from about 14-15 inches in diameter and were often slip decorated. Since only three platters (all earthenware) were listed in the inventories from 1700-1729 as contrasted with the 299 plates counted (242 earthenware and 57 probably ceramic), it is obvious that the term platter was not very common and may have referred to very large or oval plates. No stoneware plates or platters were mentioned. Since plates were also commonly made of pewter, Table 19 only includes data on plates identified as earthenware. Of the 242 earthenware plates, 98 (from two inventories) were excluded since they appeared to be store merchandise and also might skew the distribution.

As Table 19 demonstrates, the mean number of plates per inventory remained relatively stable until 1710. While the percentage of people owning plates continued to remain the same, the mean increased from 1710-1714. There was little change over the next five years, but both the percentage and the mean increased significantly from 1720-1724. Slip decorated plates would have been an attractive and cheaper alternative to similarly shaped pewter dishes, and their increase in popularity after 1720 may have resulted from their availability from the Yorktown factory at approximately this time.

Mugs

A variety of sizes and types of this form were produced at the Yorktown kilns. Most of the mugs found at the factory site are made of salt-glazed stoneware (and are considered to be the finest products made at the factory), but some lead-glazed and slip decorated earthenware examples have also been found. When William Rogers died in 1739 a quantity of mugs were listed among the ceramic wares enumerated in his estate inventory. Mugs were

TABLE 19
FREQUENCY OF OCCURRENCE OF EARTHENWARE PLATES
YORK COUNTY, VIRGINIA 1700-1729

<u>Year</u>	<u>Nl</u>	<u>NV</u>	<u>M</u>	<u>%</u>
1700-1704	40	8	.2	7
1705-1709	41	6	.15	7
1710-1714	45	20	.44	7
1715-1719	92	35	.38	8
1720-1724	86	48	.56	15
1725-1729	69	27	.39	10
total	<u>373</u>	<u>*144</u>	<u>.35</u>	

* data adjusted, see text

the second most commonly listed ceramic shape named in the York County inventories from 1700-1729. Of the 337 mugs counted, 184 were described as earthenware, only 35 as stoneware, and the remaining 118 were probably ceramic. A single listing of 134 earthenware mugs in a store inventory of 1720 was excluded to avoid distorting the distribution pattern. Unfortunately after making this adjustment so few observations of identified earthenware vessels remained that the sample may not be statistically significant.

Both the mean number of earthenware mugs per inventory as well as the percentage of inventories listing such mugs remained relatively stable until 1720-1724, when a significant increase occurred. The mean number of stoneware mugs also reached its highest value during this period, but the percentage of inventories peaked at 11 percent ten years earlier from 1710-1714 and then dropped. Mugs of unidentified composition but that were probably ceramic reached their highest mean number from 1715-1719, but a higher percentage of inventories listed these mugs from 1705-1709 than during any other five year period (see Table 20). There is no obvious pattern in these observations, except that the period from 1720-1724 seems to have seen an increase in the popularity of these drinking vessels. Looking only at those mugs that were probably ceramic, some households possessed significant numbers of these vessels as early as 1709 and the percentage of people who owned any at all also peaked at that time. Since it is relatively certain that the Yorktown factory was not producing wares this early, it is likely that imported mugs were already in steady demand, perhaps from tavern and ordinary keepers. When locally made mugs became available some years later, they would have helped meet this demand as well as make it possible for more households to own these vessels.

Bowls

There is archaeological evidence that several sizes of bowls (mostly earthenware) were made at Yorktown. A total of 73 bowls

TABLE 20
FREQUENCY OF OCCURRENCE OF MUGS
YORK COUNTY, VIRGINIA 1700-1729

Year	Earthenware				Stoneware			Probably Ceramic		
	<u>NI</u>	<u>NV</u>	<u>M</u>	<u>%</u>	<u>NV</u>	<u>M</u>	<u>%</u>	<u>NV</u>	<u>M</u>	<u>%</u>
1700-1704	41	5	.12	7	0	0	0	9	.22	12
1705-1709	41	3	.07	7	1	.02	2	15	.37	24
1710-1714	45	5	.11	6	6	.13	11	17	.38	20
1715-1719	92	10	.11	7	8	.09	4	39	.42	12
1720-1724	86	17	.2	9	16	.18	2	26	.3	16
1725-1729	69	10	.15	4	4	.06	3	12	.17	9
total	374	*50	.13		35	.09		118	.32	

* data adjusted, see text

were listed in the inventories, not including 53 punch bowls that were also named. These were not counted since the relatively small size of those excavated makes it unlikely that they were punch bowls. Of these 73 bowls, 61 were identified as earthenware, 12 were probably ceramic, and none were made of stoneware. Of the 61 earthenware bowls, 53 were from a single entry of an inventory of store merchandise. If these vessels are excluded, too few observations remain to do a valid distribution table. What is interesting however, is that (with a single exception) no bowls are mentioned before 1715, but they continue to appear at roughly the same frequency thereafter. The large number of bowls in the 1720 store inventory may represent a wholesale purchase of wares from the Yorktown factory that did not get resold locally.

Jars and Butter Pots [Cream Pots]

A considerable number of earthenware and stoneware storage jars or pots have been recovered by archaeologists from the factory site. Ceramic analysts have divided these vessels into two distinct subgroups: (1) storage jars - tall, heavy earthenware and stoneware containers with outsloping wall and a wide mouth, and (2) smaller, vertical-sided containers classified as cream pots or butter pots.¹² This differentiation based solely on shape may however obscure similarities in function. A recently proposed scheme to classify ceramic vessels by function and shape suggests that both groups should be called butter pots, and defines jar as a storage container for liquids with pronounced shoulders and a more constricted neck (a form not usually found at the factory site).¹³

The evidence from the York County documents seems to support this view. Only 52 vessels were identified as jars throughout the entire 30 year period (13 earthenware, 36 probably ceramic, and only 3 stoneware), whereas 413 butter pots were enumerated (106 earthenware, 267 probably ceramic, and 40 stoneware). Too few jars were listed to discern reliable trends, but their frequency seems to have slowly declined until 1725 when there was a significant rise. The frequency distribution of butter pots however (Table 21), shows a different pattern.

TABLE 21
FREQUENCY OF OCCURRENCE OF BUTTER POTS
YORK COUNTY, VIRGINIA 1700-1729

Year	Earthenware				Stoneware			Probably Ceramic		
	<u>NI</u>	<u>NV</u>	<u>M</u>	<u>%</u>	<u>NV</u>	<u>M</u>	<u>%</u>	<u>NV</u>	<u>M</u>	<u>%</u>
1700-1704	41	13	.32	5	7	.17	2	14	.34	7
1705-1709	41	13	.32	12	0	0	0	23	.56	20
1710-1714	45	22	.49	7	0	0	0	27	.6	22
1715-1719	92	33	.36	5	6	.07	2	61	.66	20
1720-1724	87	20	.23	5	12	.14	2	69	.8	25
1725-1729	69	5	.07	3	15	.22	6	73	1.1	23
total	375	106	.28		40	.11		267	.7	

Earthenware butter pots were commonly mentioned during the years from 1700-1719, but although the mean number of vessels per inventory reached a high value of about 0.5 from 1710-1714, the greatest percentage of inventories that listed at least one was 12 percent which occurred during the previous five years. Both the mean number and percentage declined after 1715. Stoneware butter pots on the other hand were relatively rare both in number and percentage of ownership before 1724, but increased significantly during the five years from 1725 to 1729. The frequency of butter pots which were probably ceramic increased steadily (both the mean number and the percentage of inventories) throughout the 30 year period with the two greatest rises occurring after 1705 and again after 1720.

Butter pots [cream pots] were used in dairying for the processing and storage of milk products. The relatively high mean number of earthenware vessels (compared with the lower proportion of owners to total inventories) during the period 1705-1714 may be evidence of the growing importance of butter production by a small number of area farmers who were producing for a local or export market. It is unlikely that these vessels were produced by Rogers' factory at this early date. The sharp increase in the occurrence of stoneware (and probably ceramic) vessels after 1720 however, could reflect the appearance of good quality wares from the Yorktown factory. A number of "cream pots" were in stock as late as 1739 when Rogers died. The decrease in frequency of earthenware vessels after 1715 may merely be a consequence of lack of detailed description on the part of inventory takers, but if this is the case then the increase in the number of stoneware butter pots after 1720 is even more striking. The documentary evidence would seem to suggest that the term butter or cream pot, when used in the inventories, encompassed both the curved sided "jars" as well as the straight sided "cream pots" found at the kiln sites.

Bottles

Both stoneware and earthenware bottles were made at the Yorktown kilns, and as late as 1739 a group of small stoneware bottles were mentioned in William Rogers' estate inventory. Only 40 vessels however, were identified as ceramic bottles in the inventories from 1700 to 1729. There are two possible explanations for so few observations: (1) the men who made these lists may have been confusing ceramic bottles with jugs, a similar form with a wider mouth, or (2) a large number of bottles (over 250) had to be categorized as of "uncertain composition" because of the possibility that they were made of glass.

Of the 40 examples included only six were identified as earthenware, 26 as stoneware, and eight were probably ceramic. Although this is too small a group to use for valid comparisons, two observations may be made concerning the stoneware vessels. First, no stoneware bottles were mentioned before 1710, and second, there is a sharp increase in the mean number of bottles per inventory from 1720 to 1724. This increase may be an indication that stoneware bottles made at Yorktown were showing up in local households in greater numbers.

Pipkins

Several variants of this small cooking vessel have been found at the Yorktown kiln sites, including types with and without feet. Ceramic analysts have consistently classified these cooking pots as pipkins, but the term is only rarely used in the probate inventories. The name pipkin was only found six times throughout the thirty years from 1700 to 1729. Since the terms cooking pot or sauce pan were equally rare, it is likely that the men who drew up these lists included pipkins under the ubiquitous name of pot or possibly pan. Both terms are too general and include too many possible shapes to be useful, and if indeed the Yorktown pottery was producing large quantities of pipkins it will be difficult to detect them in the probate inventories.

Other Vessel Forms Found at the Factory Site

Although relatively few examples have been found at the factory site, there is some evidence that stoneware jugs were made there. As noted above, jugs were similar to and may have been confused with ceramic bottles in the inventories. Over 200 jugs were counted in the probate lists, 116 identified as stoneware, 25 as earthenware, and 68 that were probably ceramic. Jugs were one of only two forms (bottles being the other) that occurred most often in stoneware. The frequency with which stoneware jugs appeared in the inventories remained relatively stable until 1714, then increased from 1715-1719, and increased again from 1725-1729. During the last five year period over 20 percent of all inventories listed at least one stoneware jug. There were too few earthenware jugs listed for a valid comparison, but the frequency of jugs that were judged to be probably ceramic also increased significantly from 1715-1719, but decreased during the years from 1725-1729. The drop after 1725 may indicate that stoneware jugs were becoming so popular that they were replacing the earthenware ones.

At least one type of earthenware porringer was also produced by the Yorktown potters. A number of porringers were listed in Rogers' inventory taken after his death, but only modest numbers of sherds have been found at the kiln sites. Only 63 porringers were named in the inventories, possibly because they were occasionally called dishes or bowls. Most of these porringers (49) were made of earthenware, but three were stoneware and the others were probably ceramic. The majority (41) of the earthenware porringers were listed in two inventories, both of which may represent store merchandise, and all of the earthenware observations came from documents dating from 1710-1724. The evidence seems to suggest that ceramic porringers were not very common in York County before 1730, or that they were being called by another name.

Small quantities of sherds of ceramic chamber pots and pudding pans have been excavated at the factory site, and both forms are

TABLE 22
FREQUENCY OF OCCURRENCE OF JUGS
YORK COUNTY, VIRGINIA 1700-1729

<u>Year</u>	<u>Earthenware</u>				<u>Stoneware</u>				<u>Probably ceramic</u>		
	<u>NI</u>	<u>NV</u>	<u>M</u>	<u>%</u>	<u>NV</u>	<u>M</u>	<u>%</u>	<u>NV</u>	<u>M</u>	<u>%</u>	
1700-1704	41	0	0	0	6	.15	7	2	.05	5	
1705-1709	41	0	0	0	6	.15	10	5	.12	7	
1710-1714	45	5	.11	4	5	.11	7	5	.11	9	
1715-1719	92	2	.02	2	40	.43	14	26	.28	14	
1720-1724	87	13	.15	3	21	.24	9	19	.22	13	
1725-1729	<u>69</u>	<u>5</u>	<u>.07</u>	4	<u>38</u>	<u>.55</u>	22	<u>11</u>	<u>.15</u>	10	
total	375	25	.07		116	.3		68	.18		

mentioned in 1739 when the remaining stock of ceramic wares was inventoried. The probate evidence however indicates that surprisingly few of these vessels were owned by York County residents. Only 41 chamber pots were counted in the inventories (21 earthenware, 3 stoneware, and 17 that were probably ceramic), and even fewer (29) pudding pans, none of which were specifically described as either earthenware or stoneware. No clear pattern is evident in the frequency of occurrence of either of these vessel forms, and there is no evidence of any change that could be accounted for by the influence of locally made wares.

Fragments of several other vessel forms have been recovered from the site of the Yorktown pot houses (see Table 13), but they were mentioned so infrequently in the inventories (see Table 17) that we can only assume that they were made in small quantities or were not very popular locally.

Forms Not Produced at the Yorktown Factory

One question this study tried to answer was, did Yorktown-made vessel forms exhibit different frequency patterns in the probate documents than those that were not produced locally (and therefore presumably imported)? In other words, do the frequency changes described above reflect the impact of the Yorktown establishment's wares, or were they the result of other, non-related factors? In order to answer this question the frequency distributions of two other vessel forms or shapes (cups and basins) were compared with those of the vessels found during excavations at the factory. These two forms were selected because they occurred in comparatively large numbers, were vessel shapes not likely to be confused with other forms, and (most importantly) they were not apparently made at Rogers' factory.

Cups were the third most often named form to be listed in the inventories from 1700 to 1729. Of the 266 cups counted, 112 were earthenware, 154 were probably ceramic, and none were identified as stoneware. Two large entries, one of 60 earthenware and another of 21 probably ceramic cups were not included in the distribution

shown in Table 23 to avoid distorting the results. The mean number of earthenware cups displays no apparent pattern throughout the thirty years analyzed. The mean was at its highest value during the first five year period from 1700-1704, then decreased, increased after 1710, dropped after 1720 and was on the rise again after 1725. The percentage of inventories listing earthenware cups was 12 percent from 1700-1704, then decreased and remained low through 1729. Cups that were probably ceramic followed a different progression. Both the mean and percentage increased sharply from 1710-1719, dropped slightly, then increased but never regained their previously high values.

A total of 114 basins were found in the inventories that were ceramic or probably ceramic. The majority of these were earthenware and none were described as made of stoneware. Table 24 shows the temporal distribution of the 54 earthenware basins that remained after a single listing of 42 vessels was excluded. Both the mean number of basins and the proportion of inventories listing any basins remained stable until 1709. From 1710-1714 both values increased significantly, fell during the following five years, increased again from 1720-1724 and were dropping during the years before 1730. Both values reached their highest level from 1710-1714.

None of the cups or basins identified in the inventories were described as made of stoneware. It was not possible to select a test form that was commonly made of stoneware, since all of the most frequently occurring stoneware forms were also made at the Yorktown factory.

Conclusion

This experimental analysis of ceramics in the York County probate records was only a qualified success. It did produce evidence that the wares made at Yorktown were affecting local ceramic assemblages. More importantly, observed changes in the frequency of occurrence of certain diagnostic vessel forms provide the best documentary evidence found so far concerning the factory's operation.

TABLE 23
FREQUENCY OF OCCURRENCE OF CUPS
YORK COUNTY, VIRGINIA 1700-1729

<u>Year</u>	<u>Earthenware</u>			<u>Probably Ceramic</u>		
	<u>NI</u>	<u>NV</u>	<u>M</u> %	<u>NV</u>	<u>M</u> %	<u>%</u>
1700-1704	40	8	.2 12	0	0	0
1705-1709	41	0	0 0	10	.24	5
1710-1714	45	8	.18 4	21	.46	7
1715-1719	92	15	.16 4	43	.47	11
1720-1724	86	8	.09 6	28	.32	6
1725-1729	<u>69</u>	<u>13</u>	<u>.19</u> 4	<u>31</u>	<u>.45</u>	9
total	373	52*	.14	133	.36	

* data adjusted, see text

TABLE 24

FREQUENCY OF OCCURRENCE OF EARTHENWARE BASINS

YORK COUNTY, VIRGINIA 1700-1729

<u>Year</u>	<u>NI</u>	<u>NV</u>	<u>M</u>	<u>%</u>
1700-1704	41	2	.05	2
1705-1709	41	2	.05	2
1710-1714	45	12	.27	11
1715-1719	92	16	.17	4
1720-1724	86	16	.19	9
1725-1729	<u>69</u>	<u>6</u>	<u>.09</u>	3
total	374	54*	.14	

* data adjusted, see text

Unfortunately the chronic omission in the documents of important details concerning vessel composition and form may have obscured some of the contrast between locally made and imported wares. Despite problems caused by inconsistent data, some general patterns did emerge that reflected the factory's influence.

The popularity of both earthenware and stoneware vessels among York County residents was on the rise during the three decades following 1700. The percentage of estates listing earthenware increased moderately after 1710 and then remained more or less the same. Stoneware vessels were also listed more often after 1710, but in contrast their popularity continued to rise and took a second significant jump from 1725-1729. The greater increase in stoneware ownership must have resulted from the readily available, good quality, inexpensive wares being fired at the Yorktown kilns.

Some coarse, locally made utilitarian earthenwares were undoubtedly available before Rogers opened his factory, but stoneware had to be imported from England or Europe. The wares made at Yorktown must have been very competitive with those imported from Europe or elsewhere because of their quality, greater selection, and lower cost (from lower transportation charges). The stoneware vessels however, would have been especially attractive and have had a greater impact because they were relatively new. The increase in the percentage of estates owning any ceramics at all from 1700 to 1714 is difficult to interpret, but it may indicate that the Yorktown factory was operating earlier than previously believed, possibly as early as 1712. This is however unlikely, and the possibility exists that William Rogers had been involved in pottery manufacture in England and may have brought with him (or had sent) several shipments of wares which were sold during the first two or three years after his arrival.

A more detailed and complex picture emerges if the rates of occurrence of individual vessel forms are examined. A few vessel types begin to appear more frequently and in fact reach their maximum observed values before 1715. Three of these (earthenware milk pans and cream [butter] pots, and mugs which were probably

ceramic) were forms that were made at Yorktown, while two others (cups and basins) were not. Most vessel forms however experienced their greatest increases (either in terms of the mean number per inventory or the percentage of estates) during the period after 1720. Included in this group were milk pans which were probably ceramic, earthenware plates, earthenware and stoneware mugs, stoneware (as well as those that were probably ceramic) butter pots, and earthenware and stoneware jugs. All of these forms have been found by archaeologists at the factory site.

One important question that has to be considered is how long it took for Rogers' wares to begin showing up in the estate inventories. Although no way was found to estimate this delay factor, it is probably safe to assume that it was no longer than five years. Since Rogers only arrived in Yorktown around 1710, the increase in occurrence of earthenware milk pans, cream pots, and ceramic mugs before 1715 probably cannot be attributed to his factory. The second group of vessel forms however which attained their greatest popularity after 1720 were most likely increasing in frequency because of the factory's output. The data in the tables may indicate that some earthenware forms (mugs, jugs, and plates) were being made locally shortly after 1715 while the stoneware forms do not become widespread until after 1720 or 1725. Although the frequency trends for Yorktown-made forms are not all the same and are sometimes confusing, a contrast does appear to exist when they are compared with the observed values for cups and basins. These two forms were selected as controls because they were not produced at the Yorktown factory, and as Tables 23 and 24 show these values exhibit no clear trend, but increase and decrease irregularly.

Some vessel shapes were of course, more popular than others. Cream pots, mugs, and jugs were mentioned in a greater percentage of inventories (20-25 percent) than were any other forms. Milk pans, cream pots, plates, and jugs on the other hand were listed in greater numbers (i.e. mean number per inventory) than other vessels. It is not coincidence that all of these vessel shapes were produced at Rogers' factory.

The high frequency values found for some forms before 1715 remain a puzzle. It is possible that the factory was producing some earthenware forms by this date, but the data suggest that stoneware forms were not being made until later, around 1720.

FOOTNOTES

1. Gloria L. Main, "Probate Records as a Source for Early American History," William and Mary Quarterly, 3d Ser., XXXII (1975), 88-99. For some examples of the use of probate records, see Alice H. Jones, American Colonial Wealth (New York, 1977); Joanne Bowen, "Probate Inventories: An Evaluation from the Perspective of Zooarchaeology and Agricultural History at Mott Farm" Historical Archaeology, IX (1975), 11-25; Lois G. Carr and Lorena S. Walsh, "The Planter's Wife: The Experience of White Women in Seventeenth-Century Maryland," William and Mary Quarterly, XXXIV (1977), 542-571; Mary C. Beaudry, "Folk Semantic Domains in Early Virginia Probate Inventories" (Ph.D. diss., Brown University, 1980).
2. Inventory of Mary Baker, Orders and Wills No. 15 (1716-1720), 663-664.
3. Mary C. Beaudry, Janet Long, Henry M. Miller, Fraser D. Neiman, Garry W. Stone, "A Versal Typology for Early Chesapeake Ceramics: The Potomac Typological System," Historical Archaeology, XVII (1983), 18.
4. Ibid., 29-37.
5. Watkins and Noel Hume, "Poor Potter" of Yorktown, 91-111; Barka "The Kiln and Ceramics of the 'Poor Potter' of Yorktown," in Quinby, ed., Ceramics in America, 291-318; Mary C. Beaudry, "A Study of York County, Virginia Inventories, 1730-1750" (M.A. thesis, Brown University, 1975), 18-28; Barka and Sheridan, "The Yorktown Pottery Industry, Yorktown, Virginia," Northeast Historical Archaeology, VI (1977), 21-32; Barka, "Archaeology of Kiln 2".
6. The conclusions discussed in this appendix and the data in Tables 10-16 are based on an analysis of the inventories recorded in the York County records from 1700 to 1729. With the exception of a few documents that were too mutilated to read, all of the surviving inventories were examined and abstracted. These documents are recorded in the following books: Deeds, Orders, and Wills No. 11 (1698-1702), Deeds, Orders, and Wills No. 12 (1702-1706), Deeds, Orders, and Wills No. 13 (1706-1710), Orders and Wills No. 14 (1709-1716), Orders and Wills No. 15 (1716-1720), Orders and Wills No. 16 (1720-1729), and Orders and Wills No. 17 (1729-1732).
7. Beaudry, et. al, "A Vessel Typology for Early Chesapeake Ceramics," Hist. Archaeology, XVII (1983), 23-25.

8. Thompson, Historic Structure Report, 3-16, 53-54. See also Myers, "A Survey of Traditional Pottery Manufacture," North-east Hist. Arch., VI (1977), 1-13.
9. Beaudry, "A Study of York County, Virginia Inventories, 1730-1750," 21-22.
10. Ibid., 12.
11. Barka, "Archaeology of Kiln 2," 67-68.
12. Ibid., 60.
13. Beaudry, et. al., "A Vessel Typology for Early Chesapeake Ceramics," Hist. Archaeology, XVII (1983), 36.

CHAPTER 15

MARKETING THE WARES

Because they were bulky and fragile, the imported ceramics available in Virginia during the early years of the 18th C. would have been expensive and the selection must have been limited. There would have been a heavy demand and a ready market for the utilitarian kitchen wares and general purpose containers that were the most frequently made products at the Yorktown factory. Although other local potters had been making common red earthenware in Virginia for decades, the stoneware made at Yorktown was the first local product that could compete with imported wares.

The initial marketing of Rogers ware must have been carried out in the vicinity around Yorktown and Williamsburg. Both towns were regional centers of trade and attracted a great number of wholesale and retail stores that served many buyers. The large number of tavern keepers in both towns also provided a ready-made market for the chamber pots and stoneware mugs produced at the factory. Itinerant peddlers were probably employed to cart wares to nearby counties and to the numerous fairs that were held in the colony.

Rogers may not have had to face the problem and expense of transporting his wares over long distances for some years, since Yorktown was centrally located in an area of high population density. There are indications, however, that by 1725 Rogers was selling his wares in more distant markets. Several entries in account books suggest that Rogers was wholesaling his wares as far away as the Potomac River. The wares made at Yorktown were probably transported up the colony's rivers and creeks on small boats or flats all over the tidewater area.

Rogers also consigned his ceramic wares to individuals for sale. In one such arrangement in 1725 Alexander Wordie undertook to convey a cargo of ceramics worth £33 to Maryland. Less than half of the cargo was sold and of the £15 realized from sales Rogers received an £5 profit after deducting charges for freight, breakage, and Wordie's commission. This must have been typical of the problems Rogers encountered trying to get his wares to more distant markets. As the need to reach these markets increased, Rogers became more dependent on others for transportation. Considerations such as this may have prompted him to acquire his own vessels.

Scattered references in account books and estate inventories suggest that wares from Yorktown were being widely sold throughout tidewater Virginia during the period from 1720 to 1750. Of greater significance is evidence that by 1725 William Rogers was exporting his wares to markets as far away as New England and the West Indies. An analysis of York River shipping lists shows that from 1725 to 1735 ten vessels left Yorktown with cargoes of what seem to have been locally made ceramics. These vessels were destined for Maryland, North Carolina, New England, and the West Indies. The frequency of ships exporting ceramics dropped between 1735 and 1745 and apparently ceased after that year. In several instances Rogers owned the vessels used to export his wares.

Although a similar analysis is needed of other colonies shipping lists, there seems to be no doubt that some of the wares produced at Yorktown were being sold practically throughout the English colonies of North America.

In order to learn more about the distribution of Yorktown products in the middle Atlantic area, accessible archaeological collections were studied. It is unfortunate that the collections of Yorktown ceramics discovered in Williamsburg were not available for study.

As Tables 25 and 26 show, Yorktown ceramics were examined from 41 sites, located in 17 counties in Virginia and Maryland.¹ The majority of sites fall within the time range of the pottery factory

period. A few sites are slightly later in date, but not late enough to change the supposed terminal date of operation of the pottery factory - c.1745.

Some sherds could be identified as Yorktown products without much difficulty. Many were also readily identifiable as to shape. Smaller fragments presented problems in terms of shape and provenience. Some identifications are therefore labeled as 'probable' on Table 25. The wide spectrum of variation in Yorktown pottery, in terms of glaze, color, firing, quality, etc., make smaller, rimless fragments sometimes difficult, if not impossible, to distinguish from other locally made wares.

An accurate quantitative study of surviving forms was impossible for a variety of reasons. Much of the material studied came from eclectic study collections which certainly did not amass the entire collection of earthenware and stoneware collected from sites represented. There is no reason to believe that what was available in the study collections was even proportionally representative of Yorktown material collected from the sites. Thus, even though certain sites were studied, not all of the Yorktown material was identified.

A few general observations can be offered. Earthenware forms were more frequently noted than stoneware forms. Of the 23 consumer shapes manufactured in Yorktown, a total of 11 were identified in the collections examined. The milkpan was the most frequently noted form, followed by bowls, mugs, storage jars, and the other shapes noted on Table 26.

From the evidence studied, it seems probable that Yorktown products were sold throughout eastern Virginia and Maryland. It is interesting that milkpans and bowls were also sold in Shenandoah and Spotsylvania counties, which reveals the existence of an early trading network to these more remote areas.

Table 25. Distribution of Yorktown Forms.

S = stoneware.

UF = unidentified form.

State & County	Site	Date	Yorktown Forms	
			Definite	Probable
VIRGINIA				
Gloucester	Gaines Point	1720-1780	Mug (S) Bowl	UF (S)
	Gloucestertown	early 18th C.	Bowl Milkpan	Mug (S) UF (S)
	Old House	1720-1780	Bird Bottle	
	Seawells Ordinary	18th C.	Milkpan	
	Rosewell	18th C.	Milkpan Storage Jar (S)	
Isle of Wight	Aberdeen Farm	18th C.	UF	
James City	Bray Plantation	1720-1760	Mug (S) Milkpan Bowls	Storage Jar (S) Storage Jar
	Burwell's Landing	1750-1770	Mug (S) Storage Jar (S) Bowl Milkpan Bird Bottle	UF (S)
	Governors Land	early 18th C.	Milkpan Bowl Pipkin	Storage Jar (S)
	Harrop Well	disturbed	Milkpan	
	JC20	18th C.		Mug (S)
	Kingsmill Quarter	1750-1775	Storage Jar (S) Pipkin (S) Mug (S) Milkpan Bowl	Creampot (S) Bottle (S) UF (S)

<u>State & County</u>	<u>Site</u>	<u>Date</u>	Yorktown Forms	
			<u>Definite</u>	<u>Probable</u>
James City	Kingsmill Plantation	post 1740	Milkpan	Bottle (S)
			Bowl	UF (S)
			Storage Jar	Mug (S)
			(S)	UF
				Platter
				Porringer
				Bird Bottle
	Littletown Quarter	1750-1800	Milkpan	
	Skimino Creek	18th C.	Bowl	Mug (S)
				UF
	Whitakers Mill	18th C.	Milkpan	
Mathews	Gwynn Island	surface find	Milkpan	
New Kent	Poplar Grove	17th-19th C.	Bowl or Milkpan	
	Foster's Castle	18th-19th C.		UF (S)
	Cumberland Town	18th C.		UF
	Whitehouse Creek	18th C.		UF
	Sunnyside	18th C.		UF (S)
	Eltham	18th C.	Milkpan	UF (S)
	Cherry Grove	18th C.		Bird Bottle
Prince George	Maycock	18th C.	UF	Storage Jar (S)
				UF
Shenandoah	Edgehill	18th C.		Bowl
				Milkpan
				UF (S)
Spotsylvania	Fredericksville Furnace	1728	Milkpan	
Westmoreland	Burnt House Field	1700-1730		UF
	James Monroe Birthplace	18th C.		UF (S)

<u>State & County-City</u>	<u>Site</u>	<u>Date</u>	Yorktown Forms	
			<u>Definite</u>	<u>Probable</u>
Westmoreland (con't)	Nomini Plantation	1730-1760	Milkpan	UF (S) UF
	Stratford Hall	1725		Bowl
York	Bennet Farm	18th C.	Bowl	UF (S) UF Storage Jar
	Dr. Penny	1775-1825		Storage Jar (S)
	Queens Lake	18th C.		Storage Jar (S)
Hampton	Chesterville	1725	Mug (S) Milkpan	Bowl or Milkpan UF
Newport News	Harwoods Mill	18th C.	Mug (S)	UF
			Milkpan	UF (S)
			Storage Jar	
			Storage Jar (S)	
			Bottle Bowl Cream Pot	
Norfolk	Newtown	18th C.		Mug (S)
Richmond	Warwick Town	1740-1861		UF (S)
Williamsburg	College Landing	18th C.	Milkpan	UF (S)
			Bowl	UF Mug (S) Bird Bottle Bottle
	William & Mary	174-1760	Bowl Mug (S)	Jug Pipkin (S) Milkpan UF (S)
MARYLAND				
St. Marys	John Hicks	1723-1743	Milkpan	

Table 26. Summary of Table 25

Counties-Cities:

in Virginia = 16
in Maryland = 1

Number of Sites Studied: 41

Pottery Forms (Definite and Probable):

unidentifiable form	=	30
milkpan	=	21
bowl	=	15
mug	=	12
storage jar	=	10
bird bottle	=	4
bottle	=	4
pipkin	=	4
cream pot	=	2
platter	=	1
porringer	=	1
jug	=	1

Frequency of stoneware = 43

Frequency of earthenware = 67

FOOTNOTE

1. The majority of research on trade was carried out by J. Cooper Wamsley in 1980-1981.

CONCLUSIONS

The discovery of the Yorktown Pottery Factory should serve as a warning to students of America's past. Only 20 years ago no one would have believed that such an extensive and successful manufacturing operation could have existed in Virginia or the South as early as 1720. Our ideas concerning the colonial industrial past must be re-examined.

The Yorktown factory, as revealed through archaeological research, represents the largest and best preserved colonial pottery enterprise discovered to date in the United States. The potters who toiled in Yorktown produced an amazing amount of ceramics in the c.1720-c.1745 period, supplying not only the Chesapeake area but also evidently the West Indies and New England as well.

The pottery factory was built and operated by experienced potters with both professional skills and business know-how, as is attested by the quality of kiln construction, factory design, the large size of the factory, and the planning and expertise that must have been required to keep the factory in operation for a generation. The latter involved the constant inflow of raw materials required for pottery manufacture as well as the creation and supply of markets for the sale of ceramic items. The politics of running a successful business in 18th C. Virginia must also have required considerable expertise. In this regard, home industry was clearly encouraged by government authorities.

It is unfortunate that we know so little about the people associated with this enterprise. William Rogers was most certainly the owner. The fact that he was born in the London area, possibly Southwark or Vauxhall, lends credence to the fact that he had knowledge of the ceramic industry in this area. This reference is all the most fascinating because of the similarity in present day

archaeological evidence between Yorktown with Vauxhall. Although the early 18th C. kilns from both areas are not identical, one can be fairly certain that the potter who built the Yorktown kilns was familiar with the tin glazing kilns of the Vauxhall area.

The Yorktown enterprise was one of the earliest, if not the earliest, potteries to manufacture stoneware, which makes it especially significant in the history of American ceramics. The large numbers of shapes produced in both stoneware and earthenware, is equally remarkable, as is the quality of the products.

It will be interesting to note in future years of research whether or not the complexity of the Yorktown operation was unique in the annals of the 18th C. pottery industry.

As the nation's principal conservation agency, the Department of the Interior has basic responsibilities to protect and conserve our land and water, energy and minerals, fish and wildlife, parks and recreation areas, and to ensure the wise use of all these resources. The department also has major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.

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