

## CHAPTER 5 CERAMICS

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### INTRODUCTION

From the first day of work on the site, it was apparent that this was an unusual artifact collection for several reasons. The first and most important to an archaeologist interested in historic ceramics was the seemingly endless variety of colors and patterns represented by the sherds. Add to this the fact that most were made during a time period of approximately 20 years, ca. 1830 to 1850, and we have a collection of great help in identifying and dating not only this site but components of other sites in the San Antonio area. The comparatively tight dating achieved for this collection through the ceramics makes it possible also to date more accurately other types of artifacts found within the site for which we have not up to now had confident parameters. In other words, this is perhaps the first time that archaeologists can confidently put together a list of goods that were available to the average San Antonio household during the years of 1830 to 1850.

Another important aspect of this collection is the comparatively high number of large sherds and the fact that in many cases nearly whole vessels can be assembled within the collection. To the archaeologist accustomed to dealing with collections where the largest sherd might measure 2 cm across and where any two sherds could seldom be cross-mended, this seemed a bonanza. The opportunity thus afforded to study vessel shapes and complete patterns is essential to an understanding of the evolution of ceramic types, and will allow observations to be made on trade patterns and selective choice of ceramics in the early 19th-century village of San Antonio.

A preliminary examination was undertaken of the ceramics recovered from the site in order to determine the date of the trench fill and the manner in which it was deposited. Ceramics are particularly well suited for this sort of analysis since they can be dated through regular, known changes in style and technology. Pieces of a single vessel can also be identified through cross-mending between units and levels, giving important data on artifact distribution within the site. Since time and resources would not allow us to complete processing of the artifacts from the entire excavation, a group of five units from the center of the site was selected for primary concentration. As the artifacts from these units were labeled and catalogued, the sherds were removed to a separate table, where those from each unit were sorted into types and patterns within types and mended where possible into individual vessel fragments. A provenience chart (Table 3) was composed, using basic ceramic types and forms of decoration commonly used in Texas. The entire five-unit collection was then resorted into groups according to types established by the chart, then into subgroups according to pattern and color. Cross-mending within these subgroups was carefully recorded as it was accomplished so as to determine the pattern of deposition of sherds from individual vessels within the trench, both horizontally and vertically (Table 4, Fig. 32). The resulting sample was then ready for more detailed examination and analysis on a type-by-type basis.

TABLE 3. PROVENIENCE OF CERAMIC SHERDS IN UNITS J, C, D, M, AND U

Ceramic Types	Unit J								Unit C									Unit D									Unit M								Unit U													Total														
	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	9	Fill	1	2	3	4	5	6	7	8	9	2	3	4	5	6	7	8	Fill	Floor	2	3	4	5	6	7	8	9	10	11	12		13	Floor												
<b>SOFT PASTE EARTHENWARES</b>																																																														
Unglazed																																																														
Burnished												1	1			1					2	3																																								
Lead-glazed, red paste			3	1	3	1	1	2	3			1	2	2	1	1	4	2						3	2	3		2																																		
Lead-glazed, sandy paste																							1																																							
Tin-glazed			1			1								1		1	1				1																																									
<b>HARD PASTE REFINED EARTHENWARES</b>																																																														
Transfer-printed	8	17	5	20	32	24	6	1	2	9	6	18	17	12	25	10	2	2	2	19	6	16	16	8	4	5								14	3	26	14	16	16		1																					
Painted	3	13	13	15	19	19	8		5	12	5	25	24	21	24	8			6	5	12	15	13	15	13	9	1							6	2	17	12	15	31		1	5							6	5	2	3	5	15	8	5	5					
Edged	1	1	2		9	4	5	1				2	2	3	3	5	1		5	2	4	1	1	1	5	3	1																																			
Dipped (banded, mocha, etc.)			2	5	4	9	8	7			2	2	6	4	3	3	9		7		2	3	1	1	4	5																																				
Sponged/spattered																																																														
Undecorated	5	6	8	7	18	16	9	4	1	11	6	11	21	9	25	9	1	2	4	13	10	10	12	10	10	5						2	1	17	10	9	22	1	3								1	2	1	2	7	8	2		1		1	1	1			
Lusterwares			1	3	1	1	1			1	2	3		3		1																																														
Yellow ware				1																																																										
<b>PORCELAIN</b>																																																														
									1			3											1										1	1	3																											
<b>TOTAL</b>	17	42	36	53	89	74	38	9	10	37	25	70	77	53	87	43	6	4	28	44	40	50	49	39	36	29	2						26	14	78	67	52	109	3	23	1							11	14	6	24	22	45	23	6	7	1	4	3	2	1628	

TABLE 4. RECORD OF CROSS-MENDING OF CERAMIC SHERDS

Ceramic Vessel	Units and Levels Represented
Blue transfer saucer	U-2 to U-10, C-5, C-6, C-7, D-8
Red transfer saucer	C-6, C-7, C-8
Mulberry transfer plate	U-2 to U-10, D-4, D-5, J-2, J-3, J-4, J-5, M-6
Polychrome painted saucer	U-9, D-6
Burnished bowl	U-2, D-3, M-7
Mocha bowl	C-4, M-6, M-7
Banded bowl	U-5, U-6, J-5
Burnished bowl	M-3, M-5, C-5, C-6, D-5
Polychrome painted saucer	C-6, C-7, M-7
Blue transfer cup	M-5, M-6, U-7
Black transfer cup	D-6, M-4
Polychrome painted cup	C-6, U-2 to U-10
Polychrome painted cup	M-6, U-7
Polychrome painted pitcher	C-1, C-2
Slip-decorated bowl	M-7, D-8
Slip-decorated pitcher	M-5, D-7
Banded slip pitcher	U-12, U-13, M PARAPET FILL, U and M floor

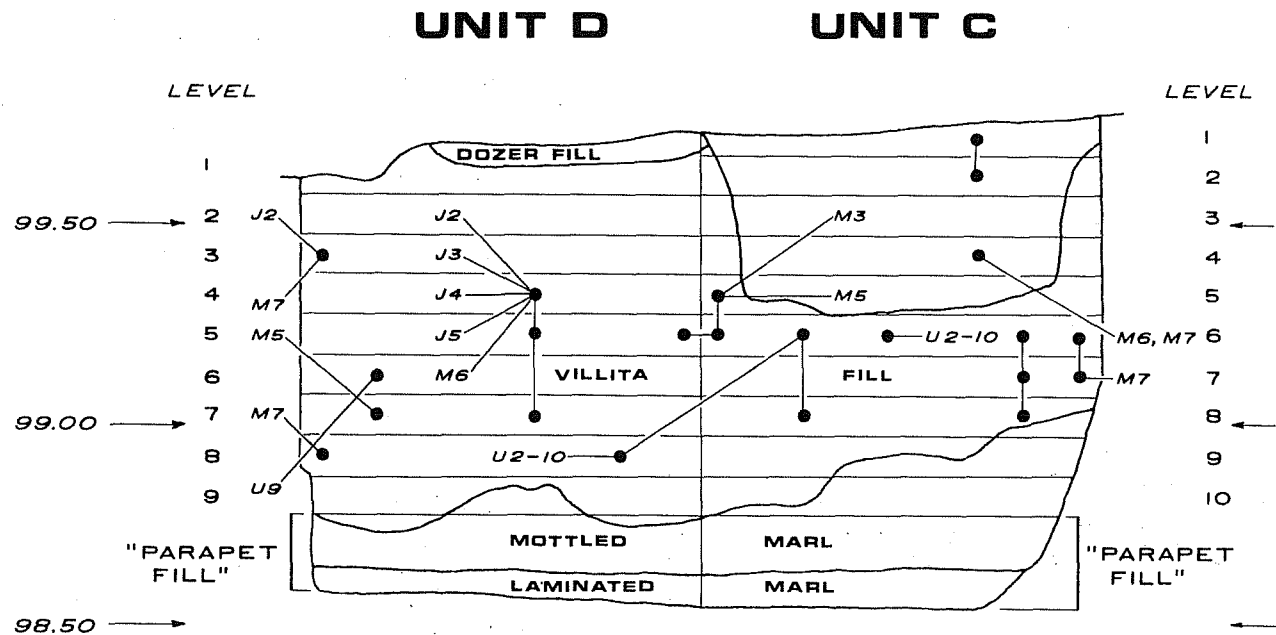
The ceramics have been divided into three main groups and a number of sub-groups (Table 3). The groupings were chosen to reflect the physical properties of the ceramics. They also, interestingly enough, reflect the cultural background from which they came, the lower-fired earthenwares from the aboriginal and Mexican traditions of San Antonio and the refined white paste wares and stonewares from the English and European traditions.

### SOFT PASTE EARTHENWARES

#### Unglazed Earthenwares (Fig. 33,b,e,f)

Two types of unglazed, undecorated earthenwares are present. There are four sherds of local, hand-built bone-tempered ware, generally called **Goliad** ware after the site where it first was identified and described (Fig. 33,b). This ceramic type appears to be a historic continuation of the ceramics made by the prehistoric peoples in south Texas (Ivey and Fox 1981:31). Another group of unglazed sherds has been wheel-turned (Fig. 33,e,f). The paste of these vessels appears identical to that of the lead-glazed red wares (described as follows). The sherds in both groups are too small to determine vessel shape.

## LEVEL CONCORDANCE, WITH CERAMIC CROSS-MENDS



KMB 1985

Figure 32. **Level Concordance, With Ceramic Cross Mends.** Dots joined by lines represent sherds successfully joined in laboratory processing. Only two excavations units, C and D, are shown with their west wall profiles superimposed. Three other units (M, U, and J) checked are represented by unit and level codes shown outside the profile. Also superimposed are the arbitrary excavation levels. Note level numbers for C and D are out of phase; also note arbitrary levels do not correspond very well to actual stratigraphy of the lowest deposits seen in the profile. Mottled marl and laminated marl were lumped together in excavation and designated Parapet Fill.

**Burnished Earthenwares** (Fig. 33,c,d and Fig. 34,a,b,e)

A small group of slip painted, burnished sherds in the collection were made in the town of Tonalá in western Mexico (Schuetz 1969:52). The designs are in various shades of red, gray, and black on a gray body (Fig. 33,a,b,e). The vessels appear to be bowls, one having a small strap handle near the rim. Similar vessels have been found in Spanish colonial sites throughout Texas.

**Lead-Glazed Earthenwares** (Fig. 33,a and Fig. 35,a-d)

Lead-glazed earthenwares can be basically divided into two groups according to paste and technology. Sherds in the red paste group represent small jars and pots which were primarily mold-made in western Mexico. They were glazed on the interior and the upper section of the exterior with a clear lead glaze, and occasionally decorated with brown paint and/or cream enamel in bands and floral designs (Fig. 35,a-d). These ceramics appear in Texas about 1750 and continue into the early 1800s. Similar wares are still made in Mexico. This ceramic type is generally called **Galera** ware by archaeologists across the southwest (Ivey and Fox 1981:34).

Recovered were four sherds with a sandy paste and an orange or green lead glaze. Vessels represented cannot be determined, but ordinarily these are large, thick-walled, wheel-made utility vessels such as bowls and ollas (Fig. 33,a).

**Tin-Glazed Earthenwares** (Fig. 34,c,d,f)

Tin-glazed earthenwares are covered with an opaque, cream-colored glaze to which tin has been added. Designs are in green and rust. Several different designs are represented in this group (Fig. 34,c,d,f). Such vessels were made in the early part of the 19th century in potteries around Guanajuato, Mexico. Sherds of this type are common on early 19th-century sites in San Antonio.

Recovered was one tin-glazed sherd with a green-glazed exterior and white interior, originally from a French rouge pot (Georgeanna Greer, personal communication). This is a heavy, cylindrical vessel about two inches tall with an everted lip and a bowl-shaped cavity three-fourths of an inch deep. Sherds of identical vessels have been found at other sites in San Antonio, as well as at sites in New Orleans and Puerto Rico.

**HARD PASTE EARTHENWARES****Refined Earthenwares** (Fig. 36,a-i and Fig. 37,d-g)

Refined earthenwares are English white wares made for exportation to the United States in the first half of the 19th century. They arrived at the coastal ports of Texas in large quantities and were carted inland to be sold in every major town. Methods of decoration were varied and colorful. Table 5 lists the large assortment of colors and designs found just in the

Figure 33. **Soft Paste Earthenwares.**

- a, sandy paste, lead-glazed bowl;
- b, tan, unglazed **Goliad** ware body sherd, vessel shape unknown;
- c, red slipped, unglazed burnished body sherd, vessel shape unknown;
- d, red slipped, burnished unglazed body sherd, vessel shape unknown;
- e, wheel-turned, unglazed basal sherd from a bowl;
- f, wheel-turned, unglazed rim sherd from a large shallow bowl.

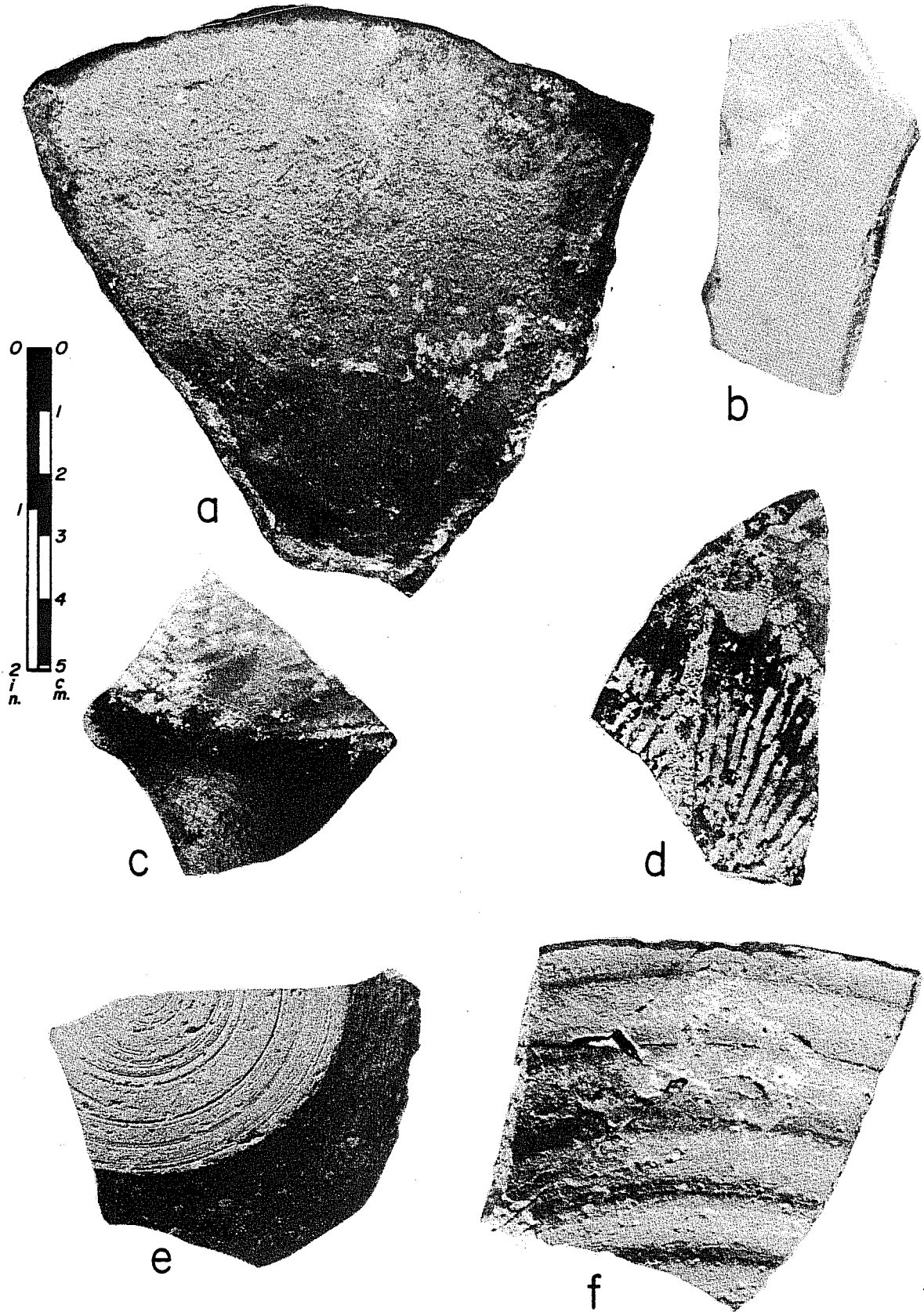
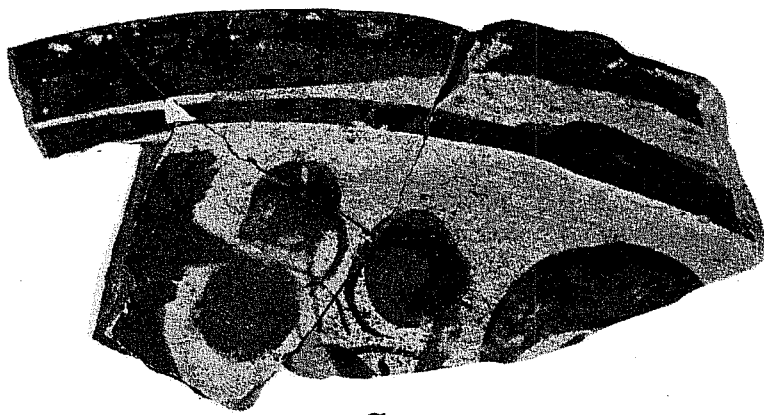


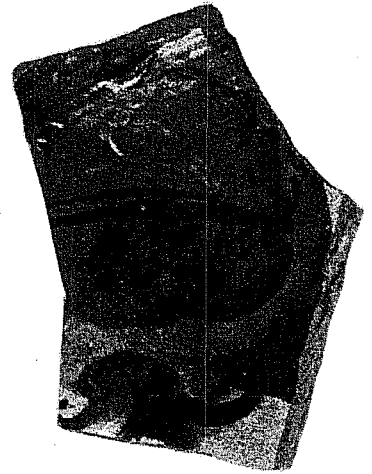
Figure 34. **Burnished and Tin-Glazed Earthenwares.**

- a, burnished rim sherd, red and black on gray decoration, gray paste, from a large shallow vessel;
- b, burnished body sherd, gray on black decoration, gray paste, vessel shape unknown;
- c, **Guanajuato** tin-glazed, red paste, red and brown decoration, vessel shape unknown;
- d, tin-glazed body sherd, light green, red paste, from a deep plate;
- e, burnished body sherds from same vessel as in a;
- f, **Guanajuato** tin-glazed, red paste, red and brown on cream background, from a plate.

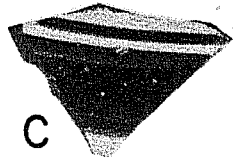




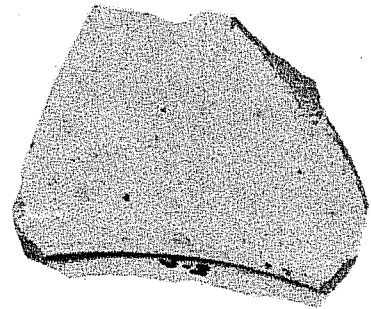
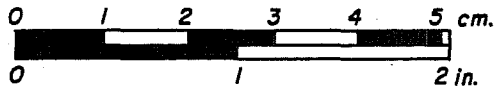
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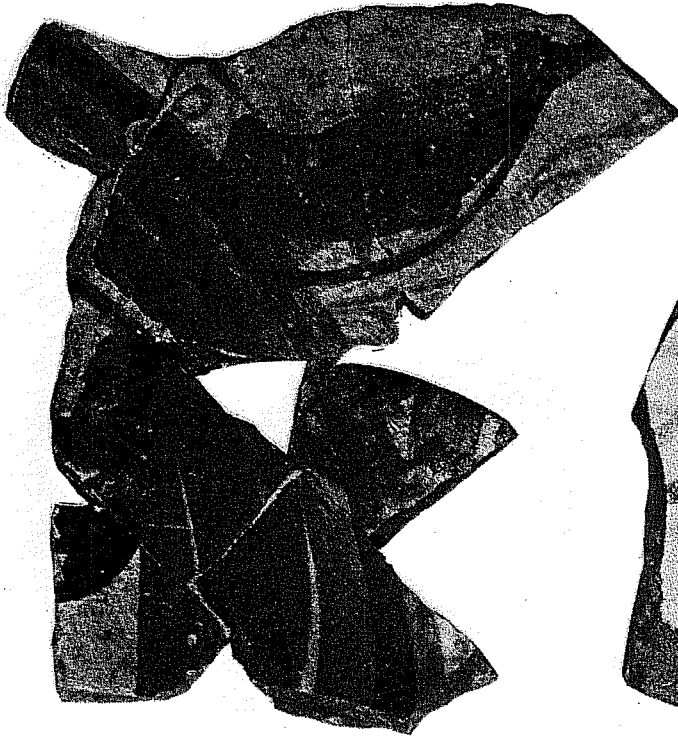
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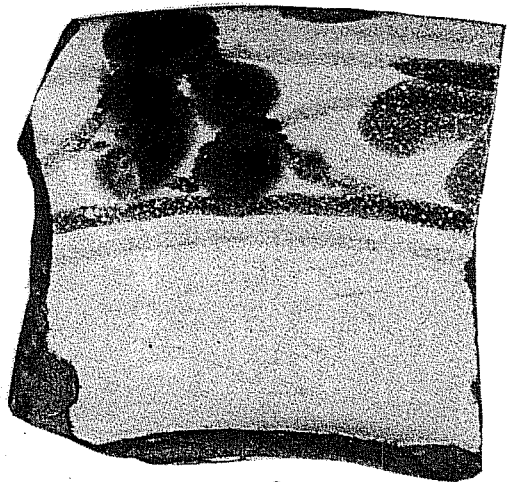
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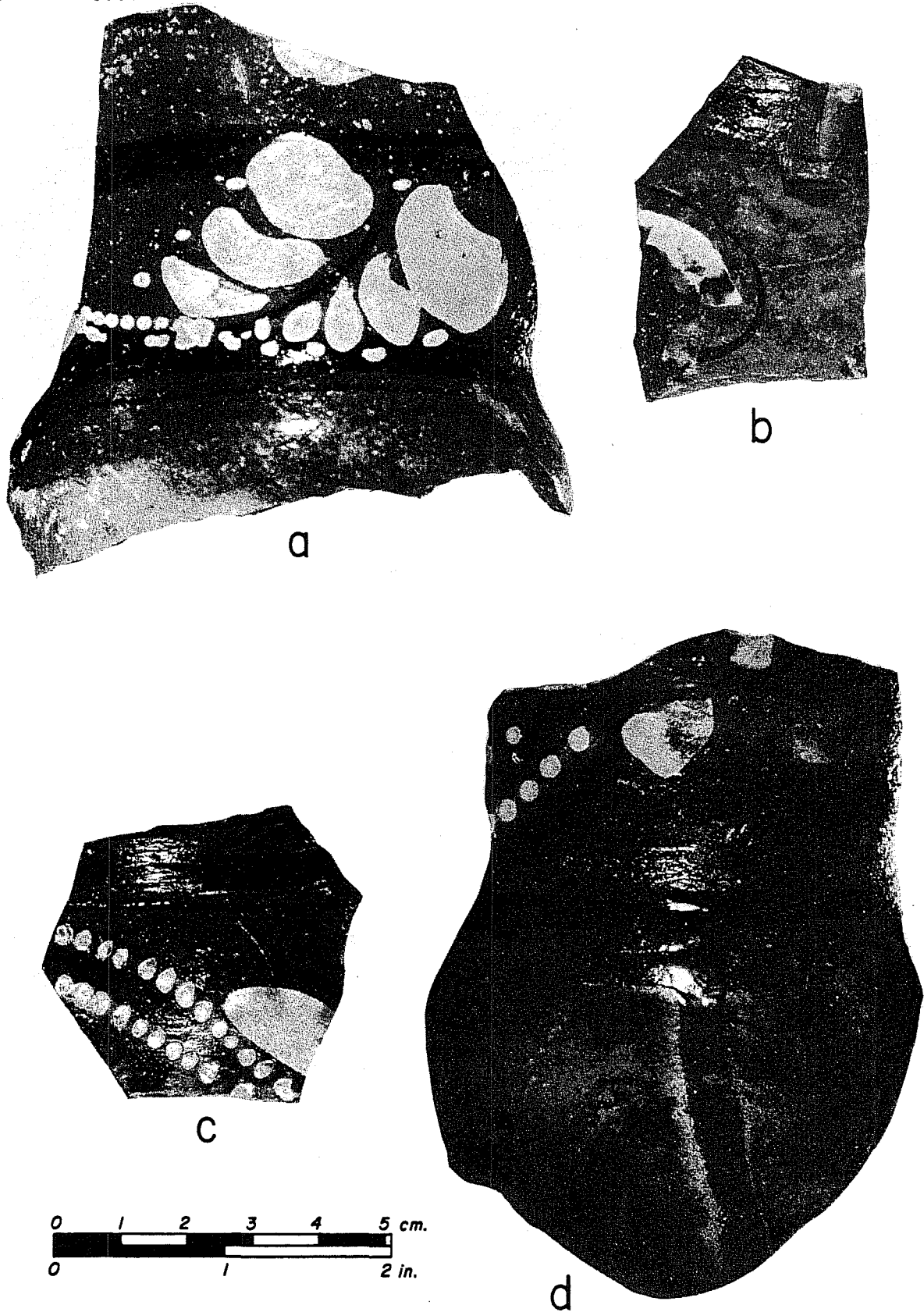


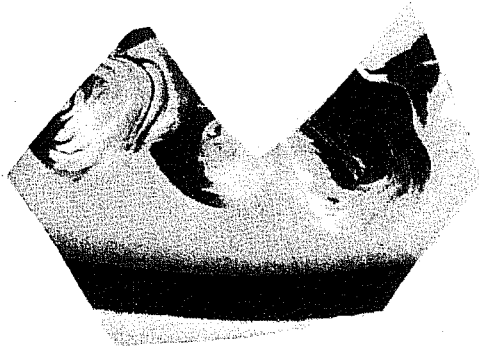
Figure 35. **Lead-Glazed Earthenware Sherds from Two Different "Chocolatera" Vessels.** a, rim sherd showing design; b, neck sherd containing handle attachment; c, neck sherd; d, neck and upper body sherd.

TABLE 5. SUMMARY OF INFORMATION ON REFINED EARTHENWARES FROM 41 BX 677

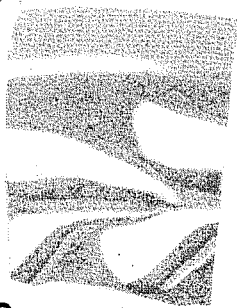
Form of Decoration	Number of Patterns	Vessels Represented	Back Stamps	Remarks
TRANSFER PRINTED				
Black	6	cups, bowls, plates	Davenport/anchor, 3&6 (impressed) Davenport (printed) Henderson & Gaines/Importers/New Orleans (printed)	The Davenport potteries in Staffordshire, England, shipped large amounts of ceramics to the North American continent during the 19th century. Apparently Davenport used this firm as an agent for distribution of their pottery from 1807 to 1841 (Wilson 1968:86).
Brown	6	bowl, plates	Henderson Walton & Co./Importers/New Orleans (printed)	The difference in the title probably has significance for dating individual patterns. More research is needed here.
Blue	10	cups, saucers, plates, bowls, pitcher	...acock/warranted (printed); Davenport (printed)	Probably "Peacock," the name of the pattern.
Dark blue	8	cups, plates, sugar bowl		
Red	5	cups, plates, saucers	Davenport (printed); 7/Davenport/anchor (impressed)	The number 7 refers to the month of manufacture.
Mulberry	5	cups, plates	EW&S (printed)	Enoch Wood & Sons, ca. 1818 to 1846 (Godden 1964:686).
Green	4	cups, plates	Henderson & Gaines/Importers/New Orleans (printed)	See above.
Brown and gold	1	plate		
Green and purple	1			
Blue and black	1			
Rust	1			
PAINTED				
Blue	4	cups, saucers, chamber pot	8/Davenport/anchor (impressed)	See above.
Polychrome	12	cups, saucers, teapot	Davenport/anchor, 3&6 (impressed)	The 3 and 6 refer to the year of manufacture, 1836 (Godden 1964:189).
EDGED				
Blue	8	plates	11/Davenport/anchor (impressed)	See above.
Green	6	plates		
DIPPED				
mocha	4	mug, bowls		
Banded	12	bowls, pitchers		
Slip decorated	14	bowls, pitchers, sugar bowl		
SPONGED				
Blue	1	cup		
UNDECORATED	1	mug, chamber pot		

Figure 36. Refined Earthenwares (Banded Slip and Mocha).

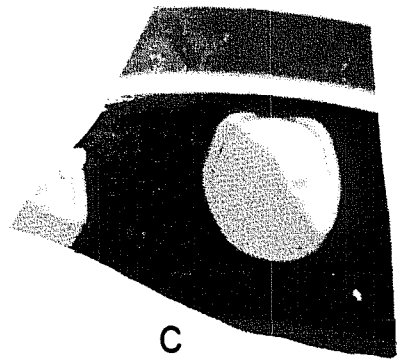
- a, worm pattern on gold background, body sherd from a serving bowl;
- b, blue, green, and brown on white rim sherd from a teacup;
- c, cat's-eye (gray and white) on black background, rim sherd from a serving bowl;
- d, black (parallel) and brown (wavy) on white banded slip decoration, rim sherd from a serving bowl;
- e, combed decorative technique, black, brown, and white, body sherd from a pitcher;
- f, worm pattern on black background, body sherd from a pitcher;
- g, mocha pattern, black on orange, rim sherd from a cylindrical drinking vessel;
- h, worm pattern on gray with green edge-decorated rim, rim sherd from a serving bowl;
- i, worm pattern on light green background, body sherd from a serving bowl.



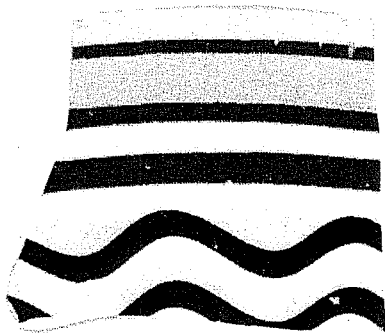
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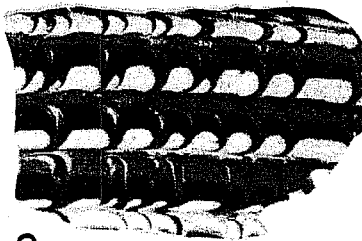
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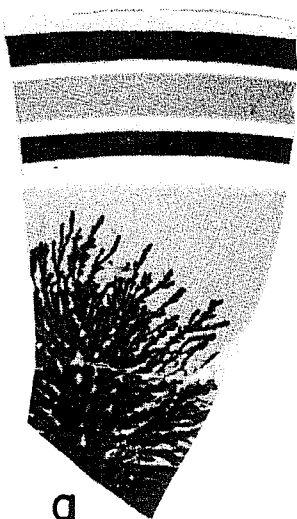
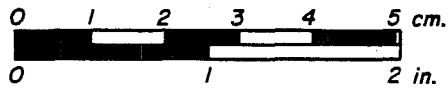
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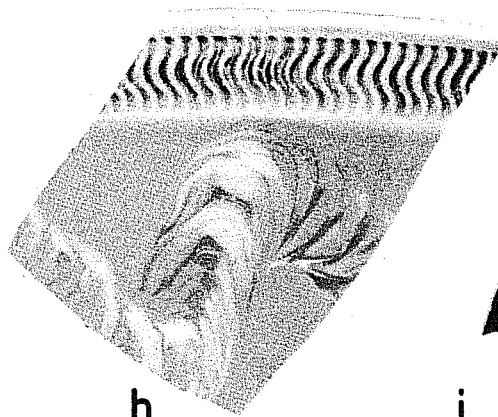
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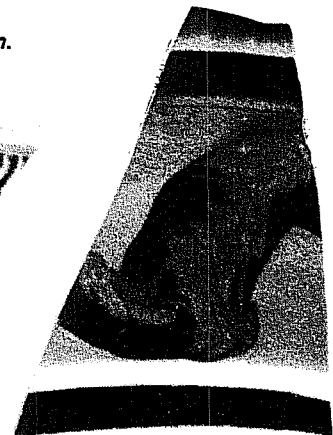
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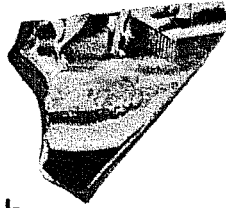
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**Figure 37. Lusterwares and Refined Earthenwares (Transfer-Printed Pearlwares).**

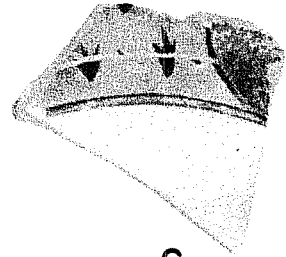
- a, copper luster on white background, body sherd from a cup or small pitcher;
- b, copper luster and red transfer-printed sherd from a vessel of unknown shape;
- c, pink luster on porcelain, basal sherd from a saucer;
- d, purple transfer-printed pearlware rim sherd from a plate;
- e, red transfer-printed pearlware rim sherd from a plate;
- f, black transfer-printed pearlware rim sherd from a plate;
- g, brown transfer-printed pearlware rim sherd from a plate.



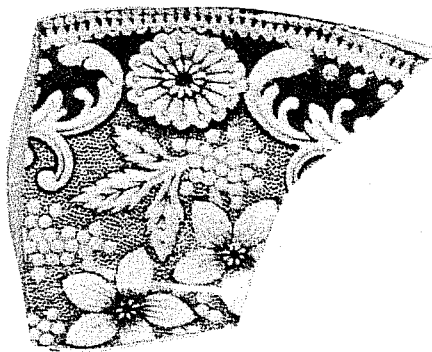
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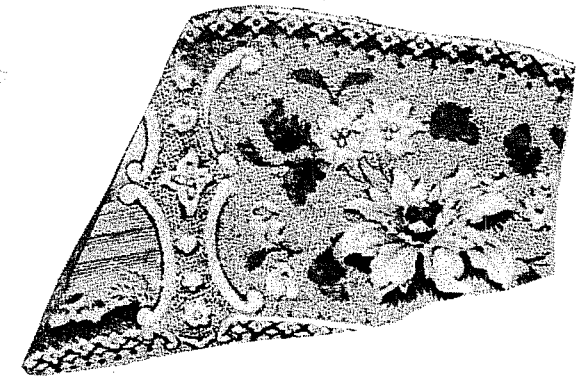
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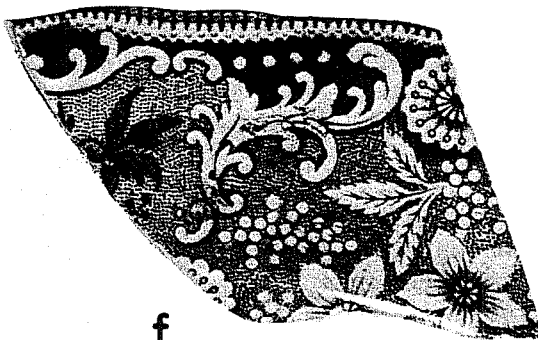
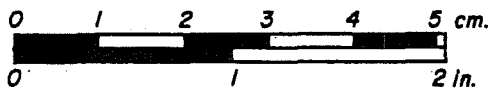
c



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g

five excavation units examined for this report. Numerous additional patterns and types have been noted in a cursory examination of the remainder of the collection. Descriptions of the different decorative processes used can be found in most books on antique china and are not included here. A general impression of the various patterns can be seen in Figures 36 and 37,d-g. Undecorated sherds include both totally plain vessels and undecorated fragments of decorated vessels. Many of these sherds, for example, are from edged ware plates (Fig. 38) which bear decoration only around the rim.

#### **LUSTERWARES (Fig. 37,a-c)**

Lusterware is separated from the refined earthenware sherd group because of its unique glaze treatment, in which various metals are added to the glaze to create a lustrous effect. This is used on a variety of fabrics, including refined earthenware, porcelain, and a well-fired, red body. Four different patterns of pink luster in this group are found on earthenware cups and saucers. Silver luster on earthenware is represented by two patterns. Copper luster is found on as many as five patterns of red bodied pitchers (Fig. 37,a,b). Several patterns of pink luster appear on porcelain sherds (Fig. 37,c).

#### **YELLOW WARE (not pictured)**

Yellow ware has a creamy yellow paste and a clear or mottled brown glaze. Sherds recovered of this type are too few and small to identify as to shape.

#### **PORCELAIN (not pictured)**

Comparatively few porcelain sherds are present in this collection, other than those described under lusterware. A few porcelain sherds have hand-painted designs over the glaze. All appear to be from a cup and saucer.

#### **OBSERVATIONS**

The sherd totals in Table 3 demonstrate the dominance in the collection of imported English ceramics. The number of back stamps which can be confidently dated to the period from 1830 to 1850 would seem to securely position this collection during that time period (Fig. 39,a-i). We know that the popularity of brightly decorated wares waned rapidly starting in 1850 (Miller 1980:18) with the introduction of plain white ironstone and granite wares. The fact that no sherds of these wares were present suggests that the collection is not later than that date. The presence of a small percentage of local and Mexican wares could either represent an earlier occupation in the general area, or the survival of some of these wares in the households involved. The lead-glazed wares were available as early as 1750, but continued in use locally into the 19th century.

One explanation for the presence of earlier wares in the site deposits hinges on the method of deposition of the trench fill. Table 4 and Figure 32



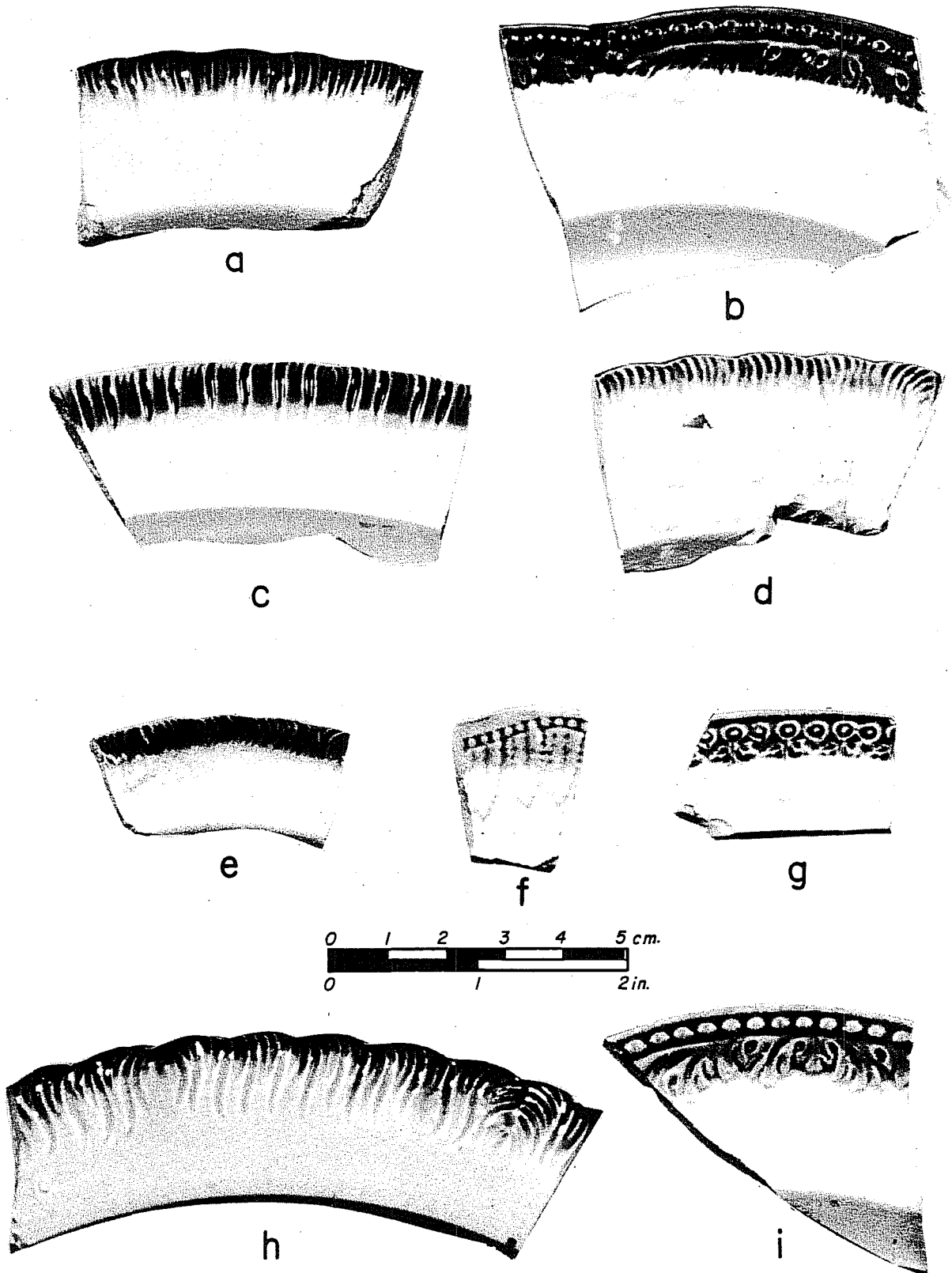
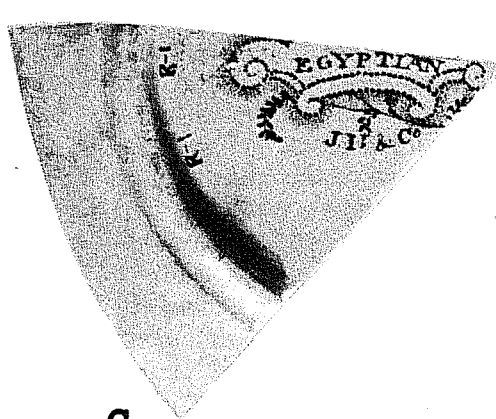


Figure 38. Range and Variation in Edge-Decorated Davenport Plates. a-e, g, i, blue feather edged decorated rim sherd from a plate; f, blue feather edged decorated rim sherd from a saucer; h, blue feather edged decorated rim sherd from a platter.

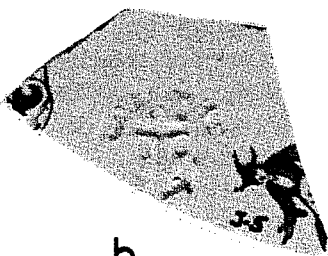
**Figure 39. Back Stamps and Importers' Marks Which Date from 1830 to 1850.**

- a, basal sherd from a saucer with "EGYPTIAN, J.H. & CO" stamped in brown print;
- b, basal sherd from a dinner plate with "DAVENPORT" impressed;
- c, basal sherd from a dinner plate with "JACKSON, WARRANTED" impressed;
- d, basal sherd from a dinner plate with "HENDERSON . . . NEW ORLEANS" stamped in black print;
- e, basal sherd from a dinner plate with "DAVENPORT" impressed and stamped in black print;
- f, basal sherd from a dinner plate with "HENDERSON & GAINES, IMPORTERS, NEW ORLEANS" stamped in green print;
- g, basal sherd from a dinner plate with "FRENCH GROUPS, DAVENPORT" stamped in blue print;
- h, basal sherd from a teacup with "RUINS, DAVENPORT" stamped in black print;
- i, basal sherd from a dinner plate with "HENDERSON WALTON, & CO., IMPORTERS, . . . ORLEANS" stamped in brown print.

All back stamps are on refined earthenware sherds.



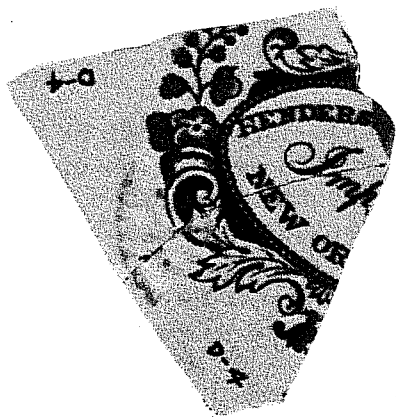
a



b



c



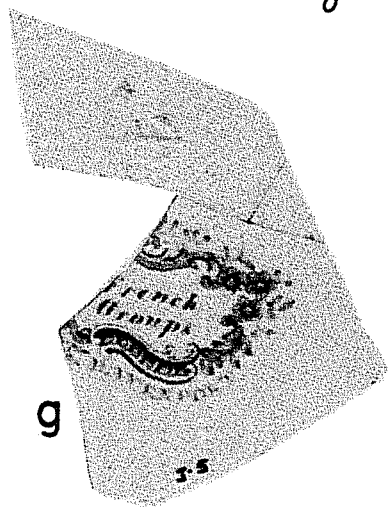
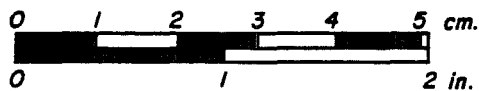
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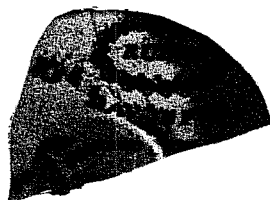
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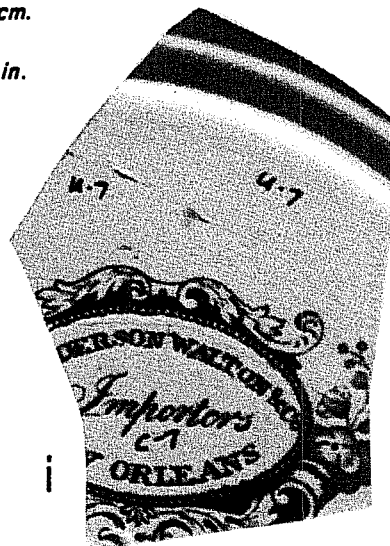
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demonstrate the totally random distribution of sherds from the same vessel, as firmly established by cross-mending. Pieces of the same object were found to be widely separated both horizontally and vertically within the deposits. This would not have been the case if discrete deposits of household trash had been thrown into the trench on an intermittent basis. The most logical explanation for such distribution would seem to be that the trench fill was secondary deposition of trash from another dumping spot nearby. On the basis of this reasoning, it seems probable that the trench was filled by scraping up the accumulated back yard trash from neighboring areas and filling the unwanted cavity in preparation for construction of a building on the site. This could also account for the large variety of patterns and vessel shapes present in the collection, which one would hardly expect to come from a single household. A collection of sherds from 19th-century occupation at Mission San Juan Capistrano, representing the trash from more than 10 families, contains much the same volume and variety (Schuetz 1969:8-22).

### **CONCLUSIONS**

Preliminary examination and analysis of a ceramics sample from site 41 BX 677 have yielded important information regarding the origin and deposition of the fill in the trench. The analysis has demonstrated that the site has a great deal of potential for obtaining a valuable body of information on the life of the citizens of La Villita and San Antonio during the 1830 to 1850 period. In addition, the unusually large and varied collection of ceramics presents possibilities for detailed analysis of forms and patterns of early 19th-century ceramics seldom encountered in Texas archaeological sites. Research generated from this important collection will influence ceramic analysis in Texas in numerous ways for some time to come.

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## CHAPTER 6 PRELIMINARY ANALYSIS OF FAUNAL REMAINS

Alisa J. Winkler

### INTRODUCTION

Among the many artifacts recovered from La Villita Earthworks is a tremendous quantity of animal bones. Recovered from Units C and D (Fig. 40) were 1398 bones identifiable to taxon and element and 3986 bone fragments. Most of the bones are broken; breakage occurred during butchering, deposition, and excavation. Many of the remains show evidence of butchering, including knife cuts, chop marks, and saw marks. Some bones have been chewed and punctured by humans or other animals, or gnawed by rodents.

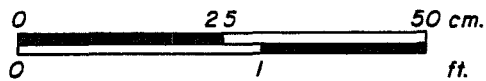
Almost all the bones recovered are the remains of domestic animals, with cow (*Bos taurus*) comprising the bulk of the sample (Table 6). Other domestic animals from the site include horse (*Equus caballus*), pig (*Sus scrofa*), cat (*Felis domesticus*), goat or sheep (*Capra* sp. or *Ovis* sp.), and possibly donkey (*Equus asinus*), dog (*Canis familiaris*), and chicken (*Gallus gallus*). The remains of wild animals include white-tailed deer (*Odocoileus virginianus*), striped skunk (*Mephitis mephitis*), possibly cottontail rabbit (*Sylvilagus* sp.), an unidentified small rodent, a small bird (possibly the meadowlark, *Sturnella* sp.), turtle or tortoise, frog or toad, and gar (*Lepisosteus* sp.).

As mentioned in Chapter 3, the Parapet Fill and the Villita Fill form distinct stratigraphic units. The taxa in these two fills are similar (i.e., cow, horse, pig) and may represent the remains of the same individuals. The small sample size from the Parapet Fill prevents the use of statistical tests to look for differences between the two fills. These two units will be considered as one deposit in this chapter.

### METHODS

For this preliminary report, only materials from Units C and D were examined. These units were chosen because excavation extended down through the basal Parapet Fill. Bones were given to the author after they had been washed and separated by unit, level, and bag number. Bone cross-matches were found between different levels and different bags within one level, an indication that these divisions were arbitrary. Since the unit divisions were set up as an arbitrary grid system, cross-matches between units are expected. Dry screening was performed in the field with a 1/4-inch mesh. This large mesh size probably accounts for the paucity of small mammal remains (i.e., shrews, mice) which could easily pass through the screen.

Bones and bone fragments were sorted by skeletal element and by the body side. Postcranial elements of juvenile mammals were distinguished from adults by the degree of epiphyseal fusion. The maxillae, mandibles, and isolated teeth of juveniles were distinguished from those of adults by the amount of tooth wear, presence or absence of deciduous dentition, and eruption of adult dentition. A detailed description of the age structure of



**Figure 40. Partially Excavated Bone Bed in Excavation Units C and D at La Villita Earthworks.**

the fauna and any indications of seasonality will be included in the final report.

Evidence of human modification, including butchering, tool making, and burning, was recorded, in addition to the type of modification and where on the bone it occurred. Spiral fractures, chewed bone, gnawing striations, and tooth punctures were recorded as observed.

Specimens were identified to the lowest taxonomic level possible using comparative collections of recent osteological remains housed at The University of Texas at Austin, Texas Memorial Museum, Laboratory of Vertebrate Paleontology, and Texas Natural History Laboratory. Fish (except the gar scale), amphibian, and reptile materials have not yet been identified

TABLE 6. FAUNAL LIST AND SPECIMEN INFORMATION

Taxon	Number of Specimens	Minimum Number of Individuals (MNI)	Age
Class Osteichthyes			
<b>Lepisosteus</b> sp. (gar)	1	1	-
Class Amphibia			
Order Anura			
frog or toad	1	1	-
Class Reptilia			
Order Testudines			
Specimen A large (turtle or tortoise)	1	1	-
Specimen B small (turtle or tortoise)	-	-	-
Class Aves			
Order Galliformes			
cf. <b>Gallus gallus</b> (domestic chicken)	-	-	-
Order Passeriformes			
Family Icteridae			
cf. <b>Sturnella</b> sp. (meadowlark)	-	-	-
Class Mammalia			
Order Lagomorpha			
cf. <b>Sylvilagus</b> sp. (cottontail rabbit)	2	1	-
Order Rodentia			
small rodent	1	1	-
Order Carnivora			
<b>Canis</b> cf. <b>C. familiaris</b> (domestic dog)	1	1	adult
Unid. canid	3	1	juvenile
<b>Mephitis mephitis</b> (striped skunk)	2	1	adult
<b>Felis domesticus</b> (domestic cat)	1	1	adult
Order Perissodactyla			
<b>Equus caballus</b> (domestic horse)	6	1	adult
<b>Equus</b> cf. <b>E. asinus</b> (donkey)	1	1	adult
Order Artiodactyla			
<b>Sus scrofa</b> (domestic pig)	9	1	juvenile
<b>Odocoileus virginianus</b> (white-tailed deer)	6	1	adult
<b>Ovis</b> sp. (sheep) or <b>Capra</b> sp. (goat)	2	1	adult
<b>Bos taurus</b> (domestic cow)	230 (1052)*	11	juvenile/adult

\*Probably referable to **Bos** (see text)



to species, and identification of the bird remains is not complete. Faunal remains from La Villita Earthworks will be permanently housed at the Center for Archaeological Research, The University of Texas at San Antonio.

## DESCRIPTION OF TAXA

Eleven taxa of mammals, at least two of birds and turtles (or tortoises), and at least one fish and frog or toad are identified in this preliminary study. Table 6 indicates the number of specimens of each taxon, the minimum number of individuals (MNI), and the approximate age of those individuals. Computation of MNI for each taxon was based on the maximum number of unique skeletal elements (i.e., **Bos taurus**, left astragalus) in the sample.

Bovid remains from this site are probably those of the domestic cow (**Bos taurus**) and not bison (**Bison bison**) because of their relatively small size and the lack of any osteological characters definitely indicating **Bison**, such as very long neural spines on the thoracic vertebrae. **Bos** remains are the most common remains from this site, both in number of specimens (minimum of 230) and in MNI (11). While many bone fragments could be assigned either to **Bos** or **Equus** based on similar morphology, the much greater number of identifiable elements attributable to **Bos** suggests that they belong to this taxon (Tables 6 and 7). Many of the bones are from juvenile animals. The majority of butchered specimens from this site are assignable to this taxon.

So far, little material referable to sheep (**Ovis** sp.) or goat (**Capra** sp.) has been identified (Fig. 41,d). The bones of these animals are very similar, and it is often difficult to distinguish between them. It is also difficult to distinguish the bones of these taxa from some of the bones of a small white-tailed deer. Since both sheep and goat may be present in this sample, and since the sample size is so small, specific identification will not be made until all the material has been examined.

There are a few bones of the domestic pig (**Sus scrofa**). Several of these are from juveniles, and one shows evidence of butchering (Fig. 41,a).

Horse (**Equus caballus**) and possibly donkey (**Equus asinus**) remains are rare from this site. No material definitely assignable to **Equus** is butchered. Separation of the osteological remains of a small horse from those of a donkey is essentially impossible except for the lower molars. In the lower molars of a donkey the ectoflexid does not extend into the isthmus while in the lower molars of a horse it does. It should be noted that the degree of penetration of the ectoflexid may be modified by tooth wear. This is a difficult character to use for isolated cheek teeth because it is difficult to distinguish between p3 (p=lower premolar), p4, m1 (m=lower molar), and m2. This character applies only to the lower molars. Most of the horse remains from this fauna are referable to **Equus caballus** because of their large size. One heavily worn, isolated lower cheek tooth (either p3, p4, m1, or m2) may be referable to **Equus asinus** because of its small size.

Several antler fragments are from the white-tailed deer, **Odocoileus virginianus**. Antlers of this species lack the repeated dichotomous branching found in antler of the mule deer, **Odocoileus hemionus** (Kurten and Anderson

TABLE 7. SKELETAL COMPOSITION OF **BOS**, INCLUDING PROBABLE **BOS (BOS/EQUUS)** REMAINS, WITH PERCENTAGE BURNED AND BUTCHERED

Element	Number of Specimens	Number Burned	Percentage Burned	Number Butchered	Percentage Butchered
Vertebra fragments					
<b>Bos</b>	33	-	-	14	42.4
<b>Bos/Equus</b>	332	5	1.5	111	33.4
Sacra	4	-	-	3	75.0
Limb fragments					
<b>Bos</b>	59	7	11.9	15	25.4
<b>Bos/Equus</b>	164	19	11.6	25	15.2
Rib fragments					
<b>Bos/Equus</b> shafts	294	15	5.1	152	51.7
<b>Bos/Equus</b> heads	32	-	-	20	62.5
Pelvic fragments					
<b>Bos</b>	39	2	5.1	33	84.6
<b>Bos/Equus</b>	19	2	10.5	7	36.8
Mandibles	2	-	-	2	100.0
Maxilla fragments	1	1	100.0	1	100.0
Isolated teeth and maxilla/mandible fragments	8	-	-	-	-
Phalanges	28	-	-	-	-
Calcanei	4	-	-	1	25.0
Astragali	12	-	-	1	8.3
Patellae	4	-	-	-	-
Styloid process of fibulae	3	-	-	-	-
Carpals/Tarsals	8	3	37.5	1	12.5
Sesmooids	4	-	-	-	-
Horn Cores	2(?)	1(?)	50.0	1	50.0

1980:310-311). Mule deer also tend to be slightly larger and more robust than white-tailed deer, but the two overlap in size and are osteologically inseparable except for the antlers. At present, the white-tailed deer is known from Bexar County, but the mule deer is not. In Texas, the mule deer is currently restricted to the Trans-Pecos area and some parts of the High Plains (Davis 1974:254-259).

The remains of three carnivores are represented in this faunal collection. These are the domestic cat (*Felis domesticus*, Fig. 41,c), the striped skunk (*Mephitis mephitis*, Fig. 41,e), and possibly the domestic dog (*Canis familiaris*, Fig. 41,b). The only cat material is a fragment of a maxilla, including P3 (P=upper premolar). A canid incisor is larger than a coyote and is comparable in size to that of a large dog. Several juvenile canid vertebrae could be referred to as either domestic dog or coyote based on size. The large incisor and small vertebrae belonged to different individuals. The osteological remains of domestic dogs and coyotes are difficult to separate, especially since the two may interbreed. Gilbert (1980:66) lists skull characters as useful in the separation of these two taxa. He suggests using a suite of characters for identification.

A butchered and punctured innominate and fragment of a scapula are referable to the striped skunk (*Mephitis mephitis*; Fig. 41,e). The striped skunk is common in this area today (Davis 1974).

Small mammal remains consist of a fragment of a scapula and a metapodial that probably belonged to a cottontail rabbit (*Sylvilagus* sp.). This animal may have been used for food. The small rodent incisor is not identifiable further.

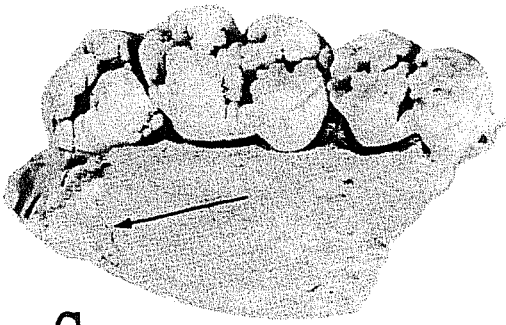
#### BUTCHERING PATTERNS

Many bones from La Villita Earthworks show evidence of butchering; 25.4% of the taxonomically identified bones and 10.0% of the unidentified bones are butchered. Butcher marks consist of knife cuts visible as shallow scratches (Fig. 41,e) and axe or hatchet chops visible as deep cuts, sometimes wedge-shaped and/or causing local crushing of the bone (Fig. 42,b, c, and d). Saw marks are often visible as an extensive smooth or striated surface. Saw nicks may be observed, and sometimes the cut appears polished (Fig. 42,a).

Beef was apparently the meat of choice as shown by the large MNI of cows compared to other taxa (Table 6). Many of the *Bos* remains are butchered, 31.3% specifically identified as *Bos* and 36.8% identified as *Bos/Equus*. Most of the butchered bones are vertebrae (often juveniles), sacra (often juveniles), ribs, limbs, and pelvic bones (Table 7). The centra of many vertebrae are cut (sawed?) partly through, and often the zygapophyses and neural spines have chop marks. Knife cuts occur on neural spines, and sometimes the spines have been sawed off or chopped and then broken through. Thoracic and lumbar vertebrae are common and usually butchered. Cervical and caudal vertebrae are rare, even considering that there are proportionally fewer of them in the whole animal. Few of the cervical and caudal vertebrae are butchered. These bones would produce little meat. Sacra are usually partly cut (sawed?) through the centra, and sometimes the zygapophyses are

Figure 41. **Selected Faunal Remains.**

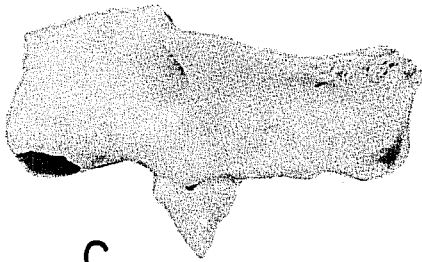
- a, **Sus scrofa** (juvenile), rt. (=right) mandible with m1, m2, anterior end m3, anterior is the right, arrow indicates cut/chop mark (C-5-1);
- b, **Canis cf. C. familiaris**, Lt. (=left) upper third incisor (D-3-1);
- c, **Felis domesticus**, Lt. maxilla with P3, anterior is to the left (D-1-1);
- d, **Ovis sp. or Capra sp.**, atlas in dorsal view, anterior is toward the scale (C-8-1);
- e, **Mephitis mephitis**, Lt. innominate in ventral view, anterior is to the left, arrows indicate knife cuts (to left) and a puncture (to right) (C-5-2);
- f, burned bone awl (C-8-2).



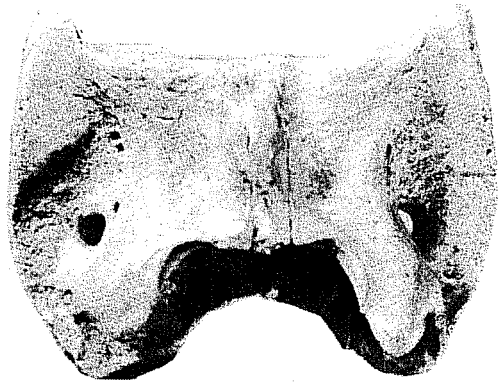
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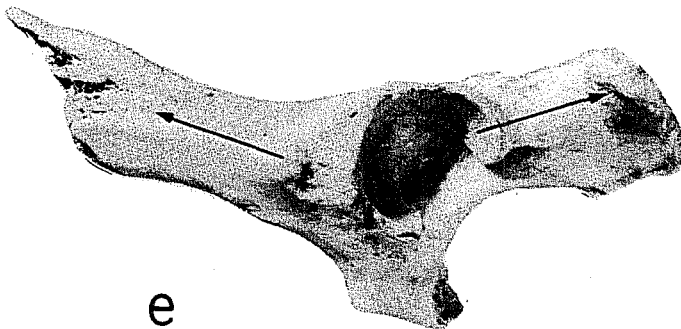
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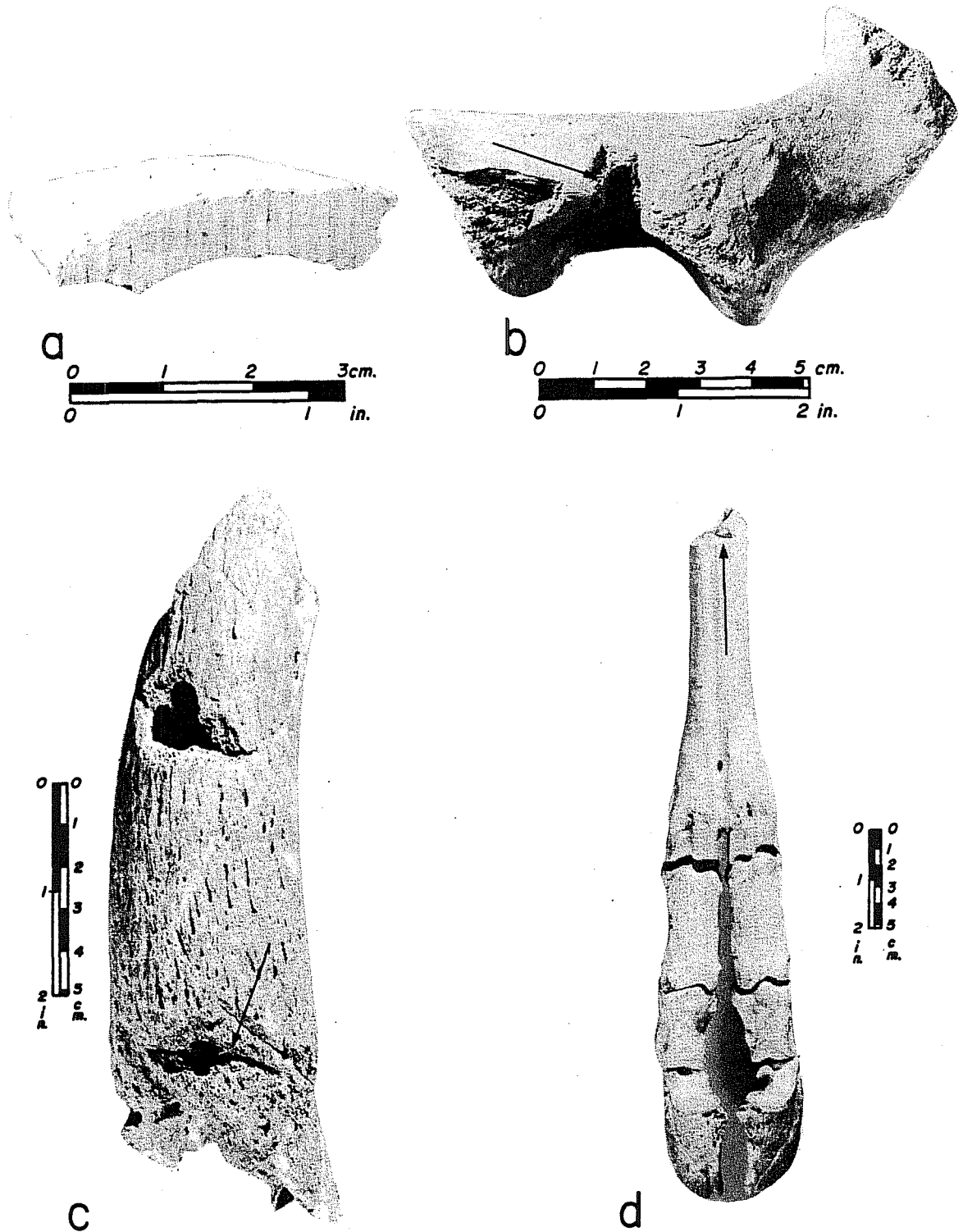


Figure 42. Examples of Butchered *Bos taurus* Bones. a, sawed femur(?) fragment in cross section (D-2-1); b, juvenile, Rt. pubis and part of the acetabulum in anteroventral view, arrow indicates a chop mark (D-4-1); c, horn core, arrow indicates chop mark (D-Parapet-1); d, articulated Rt. hindleg in anterior view, arrow indicates chop mark (S-3-1).

partly cut or chopped. According to Schulz (1979), several of the better cuts of meat (ranked according to late 19th-/early 20th-century values) would be represented by butchered thoracic, lumbar and sacral vertebrae.

There are many large butchered rib fragments from this site. Most of these butchered ribs are chopped through or are chopped partly through and then broken the rest of the way. Short rib fragments, approximately 8 to 10 cm in length, are common. Knife cuts possibly resulted from removing meat or from cutting tendons during butchering.

The most frequently butchered bones are pelvic fragments. Thirty-three of thirty-nine *Bos* pelvic bones were sawed and/or chopped, mostly near the acetabulum. Butcher marks near the acetabulum may represent separation of the hind leg from the body by severing the joining between the proximal end of the femur and the acetabulum. Butchered ilia also represent choice cuts of meat (Schulz 1979).

Several limb bones are also butchered. Cuts, chops, and saw marks are often seen at the ends and/or along the shafts of limb bones. Butchering at the ends may represent separation of the limb bones. A femur (or possibly humerus) is sawed into short segments (Fig. 42,a). Modern-day round steak "O-bones" are cut from the femur. While the butchering technique differs, the inhabitants of La Villita apparently enjoyed basically the same cuts of meat as people do today.

Figure 42,d shows an articulated hindleg of *Bos*. The proximal end of the metatarsal has been chopped and then broken through. This portion of the leg is usually discarded during the butchering process (Schulz 1979). The break in the metatarsal was probably to separate the unwanted foot from the rest of the carcass. It is noteworthy that there are many foot bones (i.e., phalanges, tarsals/carpals, metapodials) in the total sample, but few of them are butchered. This is consistent with the idea that foot bones were discarded during butchering.

A couple of unusual butchered *Bos* bones deserve special mention. The first, a horn core (Fig. 42,c), has chop marks near the base of the horn on one side. These may represent removal of the horn sheath. The second, part of the posterior end of the skull, is burned, and sawed through the basioccipital, and has saw and chop marks on the occipital condyle. These butcher marks may reflect removal of the brain for consumption.

The remains of several other taxa are butchered. As mentioned earlier, a fragment of a juvenile *Sus scrofa* (Fig. 41,a) has a cut or chop mark, and an acetabulum of *Odocoileus virginianus* is butchered, probably representing separation of the leg from the body. An unusual butchered bone is the left innominate of *Mephitis mephitis* (Fig. 41,e). This bone has knife cuts on the ilium and possibly on the acetabulum which may indicate removal of the leg. Clopper (1909) describes skunks being used for food. Punctures on the bone look too small for human teeth and were probably made by a carnivore after the bone was discarded. The ends of the bone may be chewed; whether this was done by humans or carnivores is unknown.

It is noteworthy that no bones positively identified as *Equus* are butchered. The only bone referred to *Ovis/Capra* is too small to make any conclusions about whether or not these animals were butchered.

### BONE TOOLS

Several bone tools, mostly of unknown purpose, were found. One of these is a burned bone awl (Fig. 41,f) made from a large mammal rib fragment. Another, the proximal end of a *Bos* metatarsal, was shaped and polished possibly from use, into a roughly spatulate shape.

Two types of bone tools made from *Odocoileus* remains were found. These are the smoothed and polished, spirally fractured distal end of a tibia, and the sharp tips of several antler fragments that are polished to varying degrees. These tools, and possibly the bone awl, may have a prehistoric origin, as well as several other artifacts mentioned in Chapter 3.

### DISCUSSION AND CONCLUSIONS

Preliminary analysis of Units C and D at La Villita Earthworks has yielded a large number of bones, primarily of domestic animals, especially cow. Burned bone is fairly common from the site, including 7.2% of the taxonomically identified bone and 13.8% of the unidentified bone. There is no distinctive pattern reflected in the burned bones, except that most are fragments. Concentrations of burned bone were noted in Units C and D near the top of the section (Levels C-1 to C-3 and D-2 to D-4), and especially in Levels 8 and 9 of both units. The diverse nature of the burned material suggests that bone trash was burned in mass.

Many of the bones from this site show evidence of butchering in the form of knife cuts and chop marks. *Bos* bones from the site indicate that many different cuts of meat were used, including the choicest cuts. Waste products of the butchering process (e.g., cow feet) are also present. This suggests that the fill was a trash area for both table remains and refuse from the butchering process.

A detailed analysis of ethnicity has been postponed until the entire sample has been studied. So far, however, the butchered remains suggest a butchering process with many differences from what would be observed in a modern Anglo-American butcher shop.



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## CHAPTER 7 GLASS ARTIFACTS

David D. Turner

### INTRODUCTION

The primary goal in analyzing the glass materials recovered from site 41 BX 677 was to verify recognized technological procedures with chronology. The recognizable signs of manufacturing technology were assessed against the available literature on 19th-century glassmaking techniques. The materials found support dating the site from the 1830s to the 1850s.

Glass production in the early 19th century was undergoing a period of innovation and development, and numerous techniques were available to producers of manufactured items. Invention was rapid, and competition was fierce. In the early industrial period, production was seasonal. Most factories were closed at least three months out of the year. Glassmakers shut down for the summer, usually July through September, as late as 1903 (Illinois Glass Co. 1903-1904:4).

The glass materials were washed, catalogued, and bagged by color. Color can provide some insight into the chemical content of the glass, but little else in the way of identifying production technique. In the laboratory, further categorization was carried out based on identifiable vessel elements, such as bottle bases and necks; these were called diagnostics. The language used to define the articles and to describe their attributes was derived from reputable principal dating sources such as Kendrick (1967), Jones (1971), Newman (1970), Lorrain (1968), and Miller and Sullivan (1981).

### BACKGROUND

The most common type of vessel in the early 19th century was the free-blown vessel. These vessels often show flaws which are internal, such as bubbles, striations, and varying thicknesses. Bases of vessels, especially bottles, will show a pontil scar, a circular raw area of broken glass. Bare iron pontils were popular until the 1840s. The improved varieties of empontilling techniques were developed in the early 1840s and became very popular. In this collection, the improved process was recognized on only one basal fragment (discussed later).

In 1810, a two-piece hinge mold process was introduced. The two-piece mold shaped the base and neck, but the mouth and lip had to be hand-finished. This required removing the bottle from the mold by the use of a pontil rod. Mold seams and pontil scars will be visible on two-piece, blown-in-mold items. The three-piece mold process, popularized from 1820 to 1821, left mold seams laterally around the shoulder and vertically up the neck of glass vessels. The seams disappear at the collar due to the reheating and finishing of the lip and mouth. Three-piece mold processes also were hand-finished.

The pressing device was developed in 1827. This allowed for less skilled laborers to produce vessels which looked like expensive craft wares. The purpose of the pressing machine was to reduce the expense of "fancy" tablewares (Putnam 1968:69-80; Lorrain 1968:38). Colored wares, especially blue patterned dishes called "lacy wares," were produced up to 1850. Several fragments of this type of ware, representing at least two vessels, were recognized in the collection. The peak of popularity of this ware was 1845. After 1850, the popularity of this ware rapidly diminished (Chambers 1847:118-119; Drew 1950; Lorrain 1968:39-40).

The turn or paste mold process of bottle-making was essentially a variation of the blown-in-mold (BIM) method. The object was hand-blown in the mold and then turned while still inside. The rotation of the vessel inside the mold eliminated the mold seams and the pebbly or hammered surface texture of molded items (Kendrick 1966:43; Lorrain 1968:38). Some turn/paste items will show pontil scars on the bases, but the method characteristics are usually obscured. The "paste" in the term "turn/paste mold" refers to a lubricating agent used to prevent distortion while turning the object. The literature examined so far refers to this process interchangeably as "turn," "turn/paste," or "paste" molded. Further, the literature does not reveal what type of lubricant was used. The turn-mold process reached its peak of popularity during the 1860s, but items made by this process were available throughout the 19th century (Kendrick 1966:30).

Bottles and other vessels created by semiautomated and fully automated methods were developed during the 1880s. The Arbogast and Ashley processes were two semiautomated methods designed in the United States in 1881 and in England in 1886, respectively (Miller and Sullivan 1981:2-3). Both were involved in large-scale production by 1896 (Lorrain 1968:43). The base of a bottle made by these two processes will show a valve mark that is circular on the base. This mark indicates the valve used to eject the finished vessel from the mold. Kendrick (1966:78-87) reports that valve marks will be found on vessels made in molding devices. Only one valve-marked basal fragment was recognized in this collection. By 1903, the Owens fully automated process was in production. This process, along with semiautomated processes, made glass containers inexpensive.

Four decorative techniques were recognized in the collection, but these are of minimum value in determining date of manufacture. Nevertheless, they should be noted:

1. Coloring in the chemical mix of the glass.
2. Molding--the BIM methods.
3. Pressing--in terms of decoration, this is a variation of molding.
4. Etching (represented by only two fragments).

## METHODOLOGY

The principal literary sources used for this study were Kendrick (1960), Lorrain (1968), Newman (1970), Jones (1971), and Miller and Sullivan (1981). Site reports were used to corroborate the artifact identifications. The reports consulted were by Brose and Rupp (1967), J. W. Clark (1984), J. E. Ehrenhard (1973), and B. L. Fontana (1968). A couple of collector's journal publications were also used (Maust 1967; Stephens 1979). The artifacts were compared to the literature to assess a chronology of recognizable techniques. In most cases, a general type of technology was recognizable, but fine differences between techniques were not. When working with fragments, this is to be expected. For example, basal fragments which appeared to be blown in a mold were identifiable, but whether a one-, two-, or three-piece mold was used is not always identifiable. Even with the difficulties of recognizing fine differences between different technologies, the general observable characteristics give a reasonable idea of chronology via telltale signs of manufacturing techniques.

When dating artifacts by comparing literature with visible technological evidence certain problems will be encountered. It must be remembered that various nonmechanical techniques of bottle and glassware manufacture persist. As well, the reuse of a vessel would prevent its entry into the archaeological record for a number of years after the literature assigns an end to the use of a specific technique. The continued usage of return for deposit soda bottles is a contemporary example of bottle reuse.

The dates given in this chapter focus on peaks of popularity. If an early date is given for a specific technique, it must be kept in mind that this is an introduction date for the widespread acceptance of that technique. This dating is based on historical evidence such as patent dates, factory day books, shipping orders, etc. At any given time in the early 19th century, many different processes would be in contemporaneous use. An end date for a process is the suggested date for the acceptance of a new technique within the industry.

The property on which the site was found has a complex history as discussed in Chapter 2. The uppermost portions of the deposits within the former military trench had been totally removed by bulldozing. An unknown amount of material was removed initially. On the last day of excavation, the unexcavated portion of the site, approximately 29 cubic yards, was removed by bulldozers and taken to the laboratory for screening. A number of artifacts, including glass items, were recovered; the majority of artifacts from this site, however, were recovered from excavated contexts. Additional materials were obtained from screening the dirt taken to the laboratory. All materials not found in a primary context were catalogued with a provenience of "Backdirt" (BD). Items discussed in this chapter which were not from an excavated context are the basal fragment shown in Figure 44,a; the basal fragment shown in Figure 45,c; the basal fragment shown in Figure 46,d; and the neck/lip fragment shown in Figure 45,b. The primary goal of this study was to establish a chronological base for the glass items recovered using visible manufacturing techniques.

Four production technologies were recognized among the artifacts:

1. Free blown, with pontil. Possible subvarieties are sand-tipped, or bare iron. The pontil is an iron rod used to hold the vessel, particularly bottles, while the mouth and lip are shaped. When the bottle is sufficiently cooled to retain its shape, the rod is tapped with a mallet which breaks it free from the base of the bottle. This leaves a distinctive circular scar. Bare iron rods often leave a reddish discoloration and distort the shape of the kickup or basal indentation. T. S. Newman (1970:70) reports that an improved iron pontil rod was developed in the early 1840s. Just what the improved pontil process is, according to Newman, is unclear. Jones (1971:68-69) suggests that the improvement in the bare iron technique was the tipping of the rod with a gob of sand or glass. Both of these techniques minimized the distortion caused by breaking the rod free of the vessel. Sand-tipping increases the amount of foreign (nonglass) inclusions, but reduces distortion and the roughness of a break. Glass-tipping was not positively identified in this collection.

2. Blown-in-mold (BIM). Several subvarieties exist, but only a two-piece and a three-piece technique were recognized in this collection.

3. Pressed glass.

4. Semiautomated or fully automated manufacture.

A fifth technology is hinted at, but not definitely discernible, the turn or paste mold technique. This is essentially a variation of mold-blown bottles, but seams and other characteristic marks are removed.

The glass assemblage was divided into six major descriptive categories with three or more subdivisions within each:

A. Basal fragments

1. Black basal fragments with kickups and/or pontil scars.

- a. Bare iron pontil (to 1840).

- b. Sand-tipped or glass-tipped variety of improved empontilling technique (after 1840).

- c. BIM (blown-in-mold), with the year 1810 marking the beginning of widespread popularity of the two-piece hinged mold, and 1821 as the beginning of the three-piece hinged mold as a popular manufacturing process.

2. Green basal fragments with kickups and/or pontil scars.

- a. Bare iron pontil (to 1840).

- b. Sand-tipped or glass-tipped variety of improved empontilling technique (after 1840).

- c. BIM, (as described in A.1,c).
  3. Clear basal fragments with kickups and/or pontil scars. Since several shapes were represented in this collection, the clear glass basal fragments are subdivided into four categories: base with square facets, base with round facets, base with impressed decorations, and plain base. These represent several types of vessels, with the faceted shapes believed to be decorative decanters or drinking glasses (Anne Fox, CAR, personal communication).
    - a. Bare iron pontil combined with BIM (1810-1840).
    - b. BIM combined with improved empontilling techniques.
    - c. Other processes such as flint glass and paste mold.
  4. Aqua basal fragments with kickups and/or pontil scars.
    - a. Bare iron pontil (to 1840).
    - b. Sand-tipped or glass-tipped variety of improved pontil (after 1840).
    - c. BIM, (as described in A.3,b).
- B. Neck/lip fragments.
  1. Black neck/lip fragments.
    - a. Sheared lip (to 1840).
    - b. Applied lip--laid on bead (popular through 1850s).
    - c. Applied lip--laid on ring (popular through 1850s).
    - d. "Prescription finish" indicates a toiletry or medicine bottle. The finish treatments shown in Figure 43,a-j are some of the known available styles in the 19th and early 20th centuries (Illinois Glass Co. 1903-1904). Wine and liquor bottle treatments are very similar and were the diagnostic lip fragments that dominated the collection.
  2. Green neck/lip fragments.
    - a. Sheared lip (to 1840).
    - b. Applied lip--laid on bead (popular through 1850s).
    - c. Applied lip--laid on ring (popular through 1850s).
    - d. Other processes, such as lipping tools. The neck treatment or style of the finish shape is diagnostic of the maker's

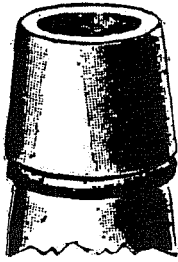
original intended use. "Prescription finish" indicates a toiletry or medicine bottle. Wine and liquor bottle treatments are very similar and were the diagnostic lip fragments that dominated the collection.

3. Aqua neck/lip fragments.
  - a. Sheared lip (to 1840).
  - b. Applied lip--laid on bead (popular through 1850s).
  - c. Applied lip--laid on ring (popular through 1850s).
  - d. Other processes, such as lipping tools. The neck treatment or style of the finish shape is diagnostic of the maker's original intended use. "Prescription finish" indicates a toiletry or medicine bottle. Wine and liquor bottle treatments are very similar and were the diagnostic lip fragments that dominated the collection.
4. Clear neck lip fragments.
  - a. Sheared lip (to 1840).
  - b. Applied lip--laid on bead (popular through 1850s).
  - c. Applied lip--laid on ring (popular through 1850s).
  - d. Other processes, such as lipping tools. The neck treatment or style of the finish shape is diagnostic of the maker's original intended use. "Prescription finish" indicates a toiletry or medicine bottle. Wine and liquor bottle treatments are very similar and were the diagnostic lip fragments that dominated the collection.
- C. Tablewares, represented by decanter and serving dish fragments.
  1. Decanter stoppers.
  2. BIM candlestick base.
  3. Pressed or BIM serving dish base.
  4. Pressed wares.
    - a. clear.
    - b. blue.
- D. Lettered fragments (only four artifacts of this type were in the collection).
  1. Clear body with embossed lettering.

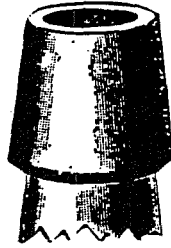
Figure 43. **Common Neck/Lip Treatments.** a-h, 19th-century vessels adapted from the Illinois Glass Co. (1903-1904) catalog; i, semi-automated or fully automated process for basal valve mark; j, neck treatment. The items shown in i and j are apparently pieces of the same vessel. Both were found in Unit H.

- a, brandy corker;
- b, oil finish;
- c, flare mouth;
- d, prescription lip;
- e, bead corker;
- f, packing lip;
- g, double ring corker;
- h, extract lip;
- i, semiautomated or fully automated manufacturing process bottle, 1880s (Category A.3,c; Unit H, Level 2);
- j, screw top from semiautomated or fully automated manufacturing process bottle, 1880s (Category B.2,d; Unit H, Level 2).

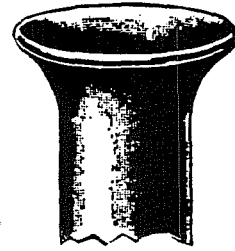




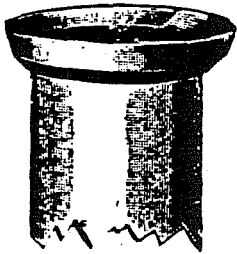
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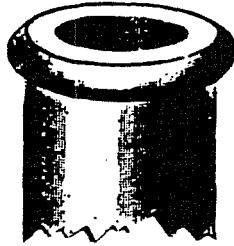
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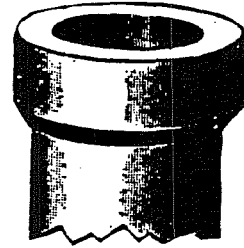
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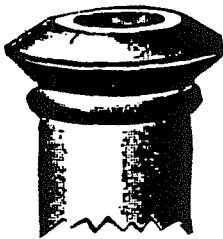
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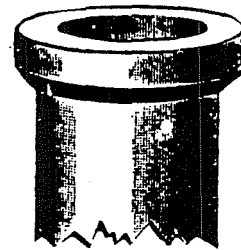
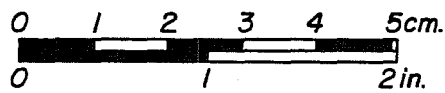
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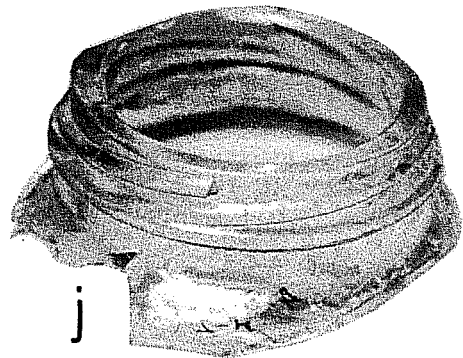
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i



j

2. Green lettered plate or tag, thought to be a slug plate molding process dating from 1850 (Newman 1970:72). At this writing, the slug plate is thought to be a molding or stamping method that produced embossed lettering.
  3. Lettered basal fragment, clear and BIM or pressed.
- E. Miscellaneous and unidentified glass artifacts.
1. Decorated vessel fragments which are cut and etched, etc.
  2. Window glass fragments, tentatively identified.
  3. Drawer pull.
- F. Fragments, listed by color and production technique (when identified).
1. Black, bottle glass.
  2. Black, unidentified.
  3. Green, bottle glass.
  4. Green, unidentified.
  5. Clear, thin glass thought to be window pane.
  6. Clear, heavy glass thought to be flint glass.
  7. Brown glass.
  8. White glass.

#### DESCRIPTION AND DISCUSSION OF GLASS ARTIFACTS

The recovery from the excavations and laboratory-sifted backdirt produced 868 glass fragments. Seventy-two of these were separated for study based on observable characteristics of glassmaking technology. These "diagnostics" were mostly basal and neck/lip fragments. Some body fragments showed identifiable signs of various technologies, and these also were selected as diagnostics, although no positive assessment of the original vessel form could be inferred. Most of the basal, neck, and tableware fragments were from vessels produced in quantity in American and British glasshouses throughout the 1830s, 1840s, and 1850s.

Some of the glass items found at the site appear to be flint glass, clear and fairly heavy, as well as inexpensive, and a substitute for crystal. The process for making flint glass was in use in England by 1753 (Chambers 1847:118-119; Benjamin 1880:46-48; Putnam 1968:67-69). In the mid-19th century, flint glass was widely available in the United States. Like pressed wares, flint wares were enjoying plenty of popularity during the 1830s and

1840s. England was the primary source for flint wares consumed in the Americas prior to 1850. Flint glass objects with the BIM process often were annealed to remove obvious mold marks. Pontil scars would have been ground and polished away. Thus, the actual technology of shaping the vessel is unidentifiable in most of the flint glass pieces.

For many of the bottles in the collection, the finish of the mouth, neck, and lip sections was carried out by hand until the semiautomated and fully automated processes were in production. A lipping tool was used to finish the bottle lip and shape the collar. Dating on the lipping tool is uncertain. The marks left by these tools appear as striations spiralling up the neck to the top part of the bottle.

The sheared lip, popular to the 1840s, is exactly what it sounds like. The lip is roughly cut, and an applied bead or ring of glass is added to create the collar below the mouth of the vessel. This "collar" feature is designed for corking or sealing the bottle. Therefore, finish treatments are often referred to in the literature as corksers.

Category A.1 consists of black basal fragments with kickups and pontil scars. Black glass, which is actually a dark olive green, indicates a high iron content in the chemical mix. The heavy black glass was used for wine and liquor bottles, since dark glass was believed to protect wines and liquors from harmful sunlight. Many modern wine bottlers have continued this tradition (Seldon 1983:234-237). Seven artifacts fit this category. The distortion of the kickups, along with the reddish discolorations and foreign inclusions in the glass, is indicative of the use of a bare iron pontil, which was popular up to the 1840s. Figure 44,d shows a cross section of a shallow kickup that is 35-40 mm. This fragment was broken right through the center, making recognition of the empontilling technique uncertain. It is thought to be a bare iron pontil technique. The basal diameter of Category A.1 bases ranges from 80 to 90 mm. Average thickness varies from 9 to 13 mm. Such variation can be expected with free-blown objects.

One black basal fragment is part of a vessel made with a three-piece BIM process. A sand-tipped, improved variety, pontil was used. This piece is thought to date to within a few years of 1840. While the mold process gives an early date of 1821, the improved pontil technique dates the object to 1840 and after, and the black glass suggests an early 19th-century date (see Fig. 45,g).

Category A.2 consists of green basal fragments with kickups and/or pontil scars (Fig. 44,a,c). One distorted kickup (not illustrated) of varying thickness has large pieces of jagged glass adhering to its insides. This piece is clearly made with a bare iron pontil and is dated to 1840 or earlier. Figure 44,a shows a high kickup. This kickup is very smooth and rounded. A very thin, circular scar is present inside the crown of the pontil. Along the scar marks, discolorations and inclusions indicate the use of a bare iron pontil. On the outer rim of the base, where the vessel would stand on a flat surface, there is an abrasive or smoothing wear discernible. Most of the basal fragments in the collection show this type of wear, indicating extensive use before discard. Figure 44,c shows a high, distorted kickup, but the pontil mark is surprisingly smooth. It is suggested that

this piece was made with an improved, possibly a sand or glass-tipped pontil, technique, dated 1840-1870 (Newman 1970:72; Jones 1971:67-68).

Category A.3 is represented by clear basal fragments. The category is subdivided into four different basal shapes, the first of which is a square-faceted base. These bases are very thick, 15 mm and more. The basal indentations are very shallow (3-5 mm) and are not rough or distorted but are off-center. The slightly uneven surface texture indicates the use of a mold. The mold appears to be a three-piece mold, which would leave recognizable seams only on the upper shoulders and neck of the bottle. The two-piece mold, popular and available from 1810, would show a seam cutting through the base (as in Fig. 45,c). Although the three-piece mold developed at roughly the same time as the two-piece, the Ricketts model proved most popular after 1821. The three-piece process often was combined with an improved variety of pontil. The Ricketts Company used the improved sand-tipped variety of pontil (Jones 1971:67-68). Square-faceted, clear basal fragments (Category A.3) suggest the use of a BIM technique. No mold seams are visible, but the surface texture is definitely that of a BIM item. The suggested date for these square-faceted, clear basal fragments is 1821-1870.

The collection also contains a small basal fragment (not illustrated) that has 10 facets; the basal diameter is 30 mm. On one of the 10 panels the embossed letters "DE MIDY" appear. The piece has a very shallow indentation in the base and is of exceptionally clear, heavy glass. However, numerous small internal bubbles and striations are visible. It is suggested that this is a kind of flint glass that dates throughout the 19th century. Flint glass enjoyed a peak of popularity in the 1830s and 1840s. In all, seven bases with squared facets were recovered and can be dated to this period.

Clear basal fragments with rounded facets (Category A.3) consist of two recognizable specimens. The only complete sample, shown in Figure 45,e, is 65 mm in diameter. The pontil scar is suggestive of the bare iron technique, and the facets and surface texture suggest a BIM item. These specimens are dated 1821-1840.

The category of clear, round bases, with impressed designs (Category A.3,c) is also represented by two specimens; one is shown in Figure 45,d. Both fragments are bases from BIM vessels. No pontil scars are present, but the rough surface texture of the molded item does exist. The complete fragment shows 12 regular facets in an elongated diamond shape that radiate from a central bead forming a stylized star or sunburst. Note the similarity to the pressed glass decanter top shown in Figure 46,b. These bases consist of a very heavy, clear glass with few noticeable flaws, such as bubbles and varied thickness. The basal fragment shown in Figure 45,f has a pontil scar and the familiar molded surface texture. The crushing along the breaks of this piece obscures positive identification of the empontilling technique used. The clear, heavy glass suggests flint glass. It is interesting to note that flint glass, as a relatively inexpensive replacement for fine crystal, was still costly. The worn areas surrounding the base suggest extensive use. Flint glass was widely produced in the United States during the 1840s. Before that time, England had been the leading producer of the flint glass consumed in the Americas.

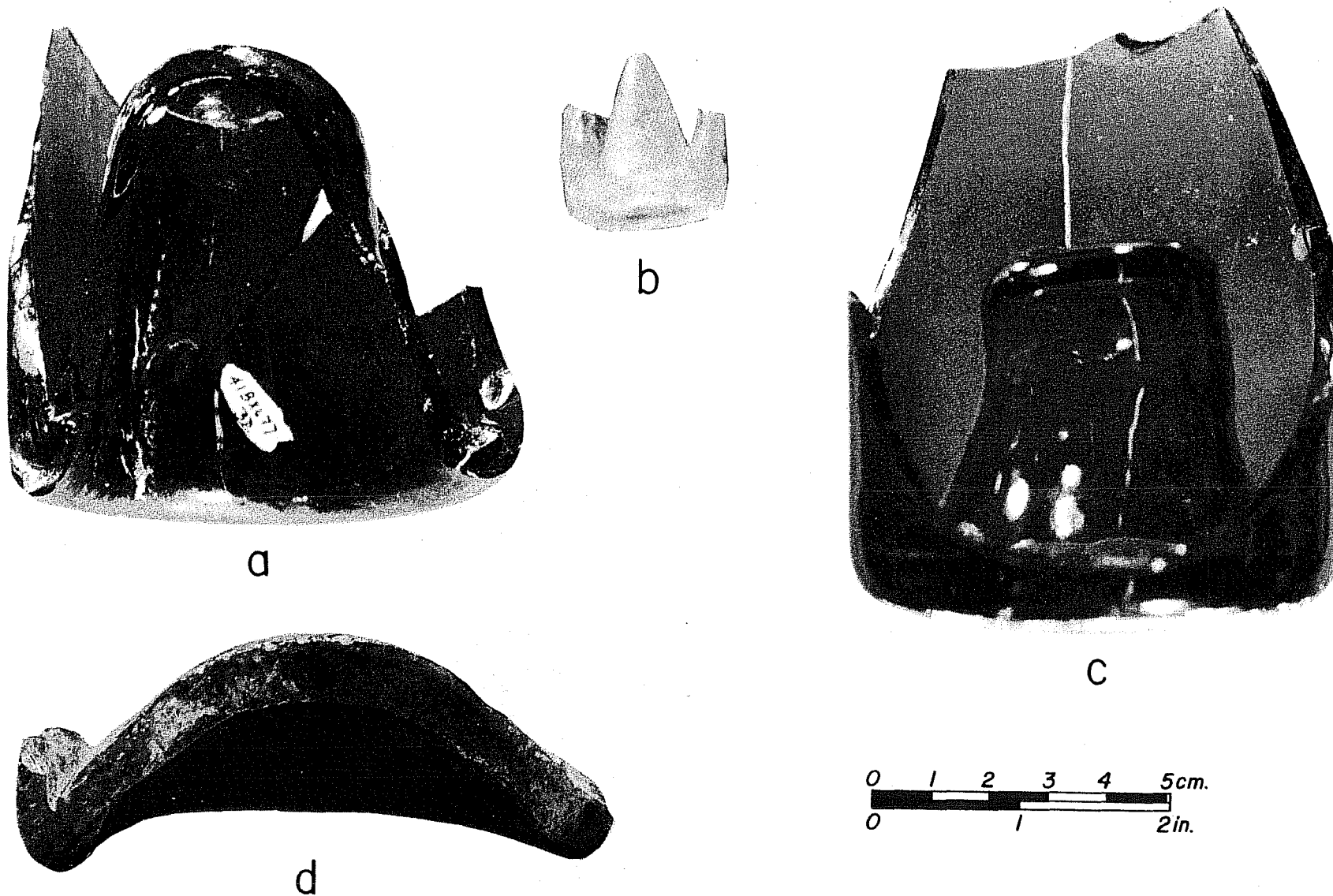
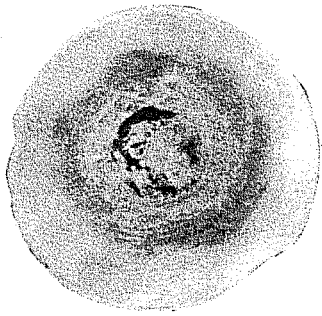


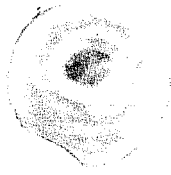
Figure 44. Basal Fragments. a, green basal fragment, 70 mm in diameter, with a kickup of 38 mm. Bare iron pontil process, free-blown. Dated to 1840, possibly before 1821 (Category A.2,a; BD); b, clear basal fragment, 25 mm in diameter, with a high *molette* kickup of 25 mm; dated to 1840s (Category A.3, Unit M, Level 5); c, green basal fragment, 75 mm in diameter, with a 35 mm kickup; free-blown. Uncertain empontilling process; dated to 1840 (Category A.2,a; BD); d, black basal fragment, 85 mm in diameter; bare iron pontil process; dated to 1840 (Category A.1,a; Unit NW, Level 1).

Figure 45. **Clear and Black Basal Fragments.**

- a, clear basal fragment, round, free-blown rough pontil, dated 1840, but possibly before 1821 (Category A.3,c; Unit L-1-6);
- b, aqua basal fragment, free-blown with rough pontil (Category A.4,a; Unit NW, Level 1);
- c, aqua basal fragment, BIM, two-piece with bare iron pontil, diameter is 40 mm, dated 1818-1840 (Category A.4,c; BD);
- d, clear basal fragment, flint glass with impressed design, dated to 1840 (Category A.3,c; Unit C, Level 1);
- e, clear basal fragment, BIM with rough pontil. Possibly flint glass, dated to 1840 or earlier (Category A.3,a; Unit B, Level 6);
- f, clear basal fragment, rough pontil, dated to 1840 or earlier (Category A.3,a; Unit M, Parapet Fill);
- g, black basal fragment, 100 mm in diameter, BIM in three-piece mold with improved, possibly sand-tipped pontil, 1821-1840s (Category A.1,c; Unit D, Level 4).



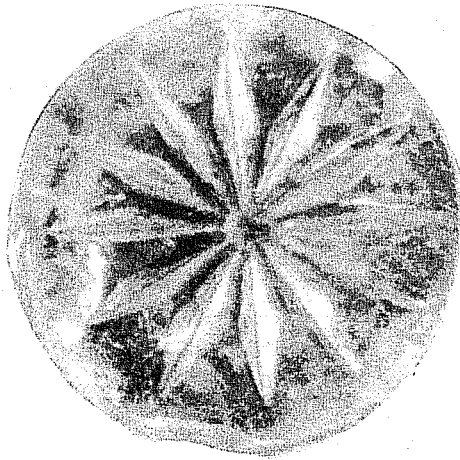
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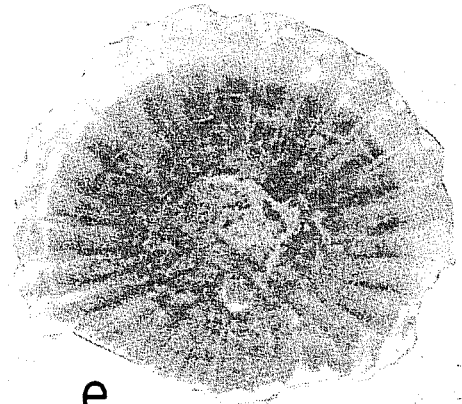
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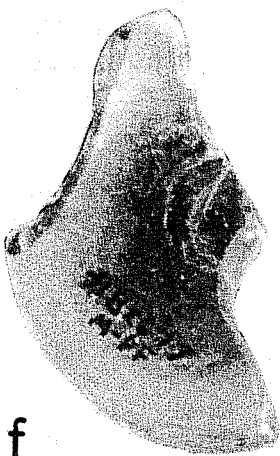
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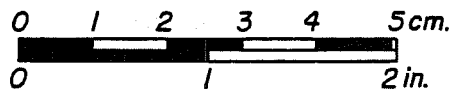
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Five specimens are clear, undecorated, round basal fragments which show various manufacturing technologies. One specimen is a clear, heavy fragment (65 mm in diameter) that has a varying thickness. A pontil scar is present, tentatively identified as an improved variety, dated after 1840. The rim of the base shows extensive use wear. Figure 45,a is a 45-mm diameter base which shows wear on the rim and a ragged pontil scar that exhibits internal discoloration and inclusions. This is the product of the bare iron pontil technique, which dates to 1840 or earlier. Both of these specimens appear to be free-blown, as no mold seams or surface textures are visible. This suggests a date before the popularity of mold-blown items, 1820-1821 (Lorrain 1968:43; Newman 1970:72; Jones 1971:66).

An extremely small basal fragment (25 mm in diameter), with a very high kickup of 25 mm, does not show the characteristic discoloration or distortion of the bare iron pontil technique (Fig. 44,b). The high, smooth conical indentation and lack of any seams or surface texture suggest that a technique not discussed in this study was used. It is suggested that a device such as a *molette*--a punchlike instrument popular in France to the 1840s--was used to shape this base (Gillespie 1959:231; Jones 1971:63). The small size suggests a perfume or toiletry bottle.

The basal fragment shown in Figure 43,i is 65 mm in diameter and is only 5 mm thick. The thickness shows a slight degree of variation. A large valve mark indicates that this specimen was made by a semiautomated or fully automated process. The internal bubbles and flaws, as well as the off-center mark with its surrounding rings, date this as a late 19th-century process. The earliest possible date is the 1880s. The Arbogast and Ashley processes were developed in the 1880s. Kendrick (1966:81) states that such valve marks could be found on bottles which were made in devices similar to pressing machines in the 1880s. More research needs to be carried out regarding this transitional process which apparently incorporated elements of pressing devices and semiautomated manufacturing processes. This artifact was found near the surface of a highly disturbed area which included excavation Unit H. This portion of the site was badly disturbed by the construction of the post-1927 gas station (see Features 4, 5, and 6 in Chapter 3). The presence of this specimen in association with Feature 5 would tend to support the tentative dating of the feature.

A basal fragment (not illustrated), which is 70 mm in diameter, has numerous internal bubbles and striations. The striae are very faint, but visible on the surface of the artifact. It is suggested that this is an example of a turn/paste mold process, a variation of the BIM process.

Any treatment of the vessel surface after completion represents an extra step in the manufacturing process. An extra step would mean, of course, a rise in cost. Annealing, such a step, required skilled laborers to control the temperature precisely. Turn-molded vessels had to be handled carefully as well; too much stress would tear the bottle open. Grinding, polishing, or cutting required the proper equipment and skills. Only two items were tentatively identified as made by the turn-paste process. Turn-paste items are less common in a pre-1860 site (Newman 1970:73).



Aqua basal fragments are represented by three examples; two of which are shown in Figures 45,c and 46,d. The large base illustrated in Figure 46,d is a BIM bottle in a flask shape. This shape was popular in the 1860s and 1870s. The raised seams, pebbled surface, and smooth, off-center basal indentation suggest a BIM or pressed item. These items are dated to the 1860s or 1870s, with an early date of the 1840s possible (Newman 1970:72). Both specimens were recovered from disturbed contexts.

A 40-mm diameter fragment, with a mold seam bisecting the base and pontil scar (Fig. 45,c), was made in a two-piece mold. The rough pontil mark has discolorations and jagged glass flecks in it. It is suggested that this item dates between 1810 and 1840. The small size and color suggest a medicine or toiletry bottle (Lorrain 1968:38; Putnam 1968:69-80). One other aqua base has a diameter of 20 mm and a rough pontil scar with discolorations (Fig. 45,b). This item has no mold marks and is thought to be free-blown. The vessel size suggests a perfume container. These aqua basal fragments are dated before 1840. Extensive reuse, as shown by wear on the periphery of the base, is not evident. Kendrick (1966:22) suggests that aqua glass was an inexpensive, low-grade material used for utilitarian wares, such as patent medicines, condiments, soaps, etc.

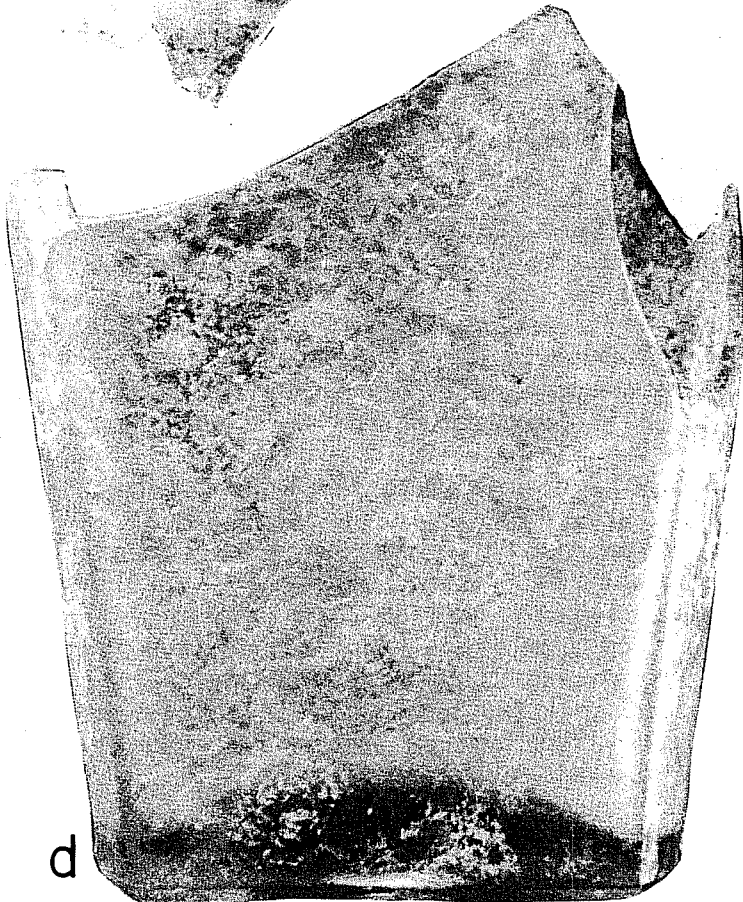
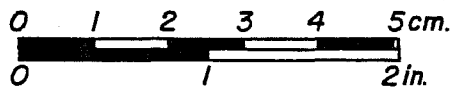
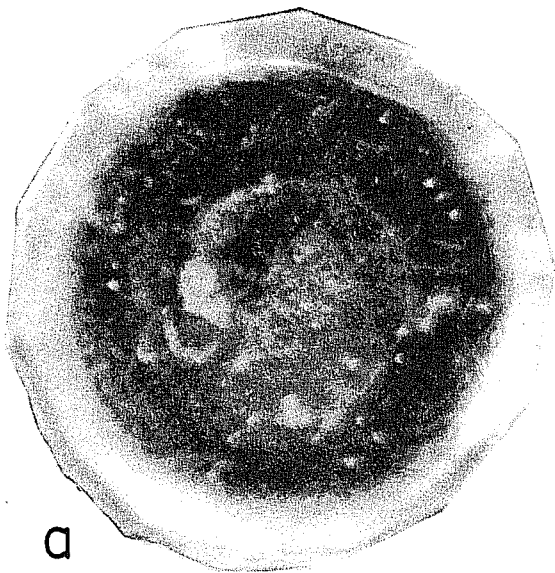
Category B is neck/lip fragments, discussed in terms of "finish treatments." This is an assessment based on the maker's original intended use. The shape of the neck, lip, and finish is thus indicative of function. Since bottles were commonly kept and reused, the presence of a vessel intended for one purpose might not necessarily indicate the actual usage of the bottle when it was finally broken and discarded. For example, the items shown in Figure 47,e-i are hand-finished with sheared lips and applied finishes. This typically represents a wine bottle treatment. The ring collar or finish was designed to help seal or cork the bottle. Thus, the term "treatment" will also show up in the literature as "corker." One of the necks has a laid-on bead treatment, which is a late 18th-century/early 19th-century wine bottle finish (Fig. 47,h). The specimen shown in Figure 47,c is a whisky or liquor bottle treatment. The lip is a hand-applied feature, possibly shaped with a lipping tool. The green wine bottle necks are of flawed green glass, apparently free-blown. Rough striations are observable in the glass. No hint of mold seams is present. It is suggested that these are indeed free-blown and date before 1821 (Lorrain 1968:36; Newman 1970:73). The sheared lip treatment was in common use from 1820 to 1840. For cheaper manufactures, sheared lip bottles continued to the 1870s (Newman 1970:73).

A neck fragment, with an applied lip (not illustrated), is hand-finished. The surface texture of the body and shoulder indicates a mold-blown item. The square shape and squat neck, with a laid-on bead finish, are of a style popular in the later part of the 18th century (Smith 1981:136). During the first 20-30 years of the 19th century, these bottles were used primarily for snuff.

Aqua neck fragments are represented by five specimens. The specimen shown in Figure 46,b is a flask-shaped shoulder and neck piece with a whisky finish and a hand-finished lip, probably done with a lipping tool. The surface texture indicates a BIM or pressed method of manufacture. The flask shape was popular in the 1860s. However, the mold seams which run up the sides of

Figure 46. BIM Fragments and Slug Plate Tag.

- a, clear basal fragment, BIM, faceted; possible flint glass, dated to 1840 (Category A.3,b; BD);
- b, aqua neck/lip fragment, BIM, hand finished with lipping tool; whisky finish, 1870s (Category B.3,d; BD);
- c, lettered plate or tag; slug plate process dated to 1850 (Category D.2; Unit M, Level 7);
- d, aqua basal fragment, flask shape popular in the 1860s; BIM (Category A.4,c; BD).



the neck indicate the usage of a two-piece mold. This specimen was recovered from dirt removed and returned to the laboratory when the excavation was closed. Many diagnostics, such as these aqua fragments (Fig. 46,b,d), were recovered from bulldozed fill.

The aqua neck fragment shown in Figure 47,b, is definitely a hand-finished piece with an applied laid-on bead corker. There are 18 rounded facets in a spiral, and the lip is sheared. This specimen is very similar to an "Ohio Swirl" pattern identified by Putnam (1968:94-95). This pattern was popular to 1850. If the idea or the vessel was "imported" from Ohio, then trade contacts which were not exclusively controlled by the Mexican government are indicated. This fragment represents a decorative decanter. If aqua glass is considered to be cheap glass, even in the 19th century, then this piece also represents the attempt to have a formal or decorative table setting which was affordable. Since this item is a sheared lip, it is dated 1820-1840 (Newman 1970:73).

Clear neck/lip fragments (Category B.4) are represented in the collection by two prescription lip treatments (Fig. 47,a). One is a pressed ware piece which is hand-finished (Fig. 47,d). The use of a lipping tool is not certain; the finish is an applied prescription lip treatment. The glass is very thin and has numerous internal bubbles and striae. Dating on this piece is suggested to range from 1827 to 1850. The other prescription lip fragment (Fig. 47,a) also is of clear glass with numerous internal flaws. The fugitive seam which encircles the lip suggests use of a lipping tool. The piece is suggested to be free-blown with a hand-applied lip shaped by a lipping tool. It is dated ca. 1850. The presence of only two recognizable prescription/toiletry bottles indicates that the materials dumped in the site preceded 1860. The period of marked interest in patent medicines and "bitters" was late 19th century and early 20th century. Lorrain (1968) refers to this period as the "patent medicine craze." In sites dating from the 1860s, we expect to find dozens of prescription lipped bottles. This site does not fit this expectation. The piece of pressed ware (Fig. 47,d), which is a prescription lip piece, suggests a date not before 1827.

The collection contains only one screw top mouth/lip fragment (Fig. 43,j). This specimen was definitely produced by semiautomated or fully automated manufacture; it is suggested that an early date for this item is 1880. This fragment came from the highly disturbed Unit H (see Fig. 11). Some of the glass materials from this area are of a later date than the items from the rest of the site. The area which includes Unit H was disturbed by the excavations for the gas station pilings (Features 5 and 6; Fig. 11). This disturbance (Feature 6) is thus dated by the glass artifacts to the 1880s or later. Archival research has, however, demonstrated Feature 6 can be dated to no earlier than 1927.

Category C is a somewhat arbitrary category of tablewares. This category includes artifacts that are considered to represent nonutilitarian items or luxuries. These are represented in the collection by the decanter tops, a basal fragment which appears to be a candlestick or bud vase, blue pressed wares, and a pressed ware serving dish base.

The decanter stopper tops are represented by four specimens. Three of the pieces are fragments, and one is complete. The complete stopper is of heavy glass that is roughly hand-cut or ground and roughly used. The clarity of the glass and the few internal flaws suggest flint glass, popular during the 1830s and 1840s. However, the roughness of the piece suggests a less expensive method of manufacture. At present, dating is tentative. A round disclike decanter top is of clear pressed glass with a stylized star or sunburst design with eight points (Fig. 48,b). The facets are raised and radiate from a central button. The surface of the disc is studded with small raised knobs which are associated with pressed wares of the 1830s and 1840s (Lorrain 1968:38-39; Putnam 1968:62-63). Another decanter top fragment is a pressed glass "ball" which is hollow. The surface design is small rounded diamonds. The other two decanter top specimens are pressed glass, and date from 1827.

The specimen tentatively identified as a candlestick base has a rough pontil scar on the base. This scar has foreign (nonglass) inclusions and small flecks of raw glass adhering to this area. The combination of pressing and rough empontilling techniques dates this item 1827-1840 (Fig. 48,f).

Twenty-two fragments in the collection are of pressed wares from clear and blue colored vessels. A blue rim fragment exhibits a stylized cornucopia of flowers and stylized lyres (Fig. 48,g). The background surface consists of numerous small knobs typically found on pressed "lacy ware" patterns (Lorrain 1968:38-39). This sherd is dated 1827-1850. Another fragment of the blue pressed ware is representative of 11 pieces in the collection. While no idea of vessel shape can be gained from the fragments, at least two vessels are thought to be represented. Of the clear pressed ware fragments recovered, one is a basal fragment, shown in Figure 48,h, from a small bowl. The item is of pressed glass, with a rough pontil scar on the base. It is suggested that the date for this piece is 1827-1840. The original shape of the vessel cannot be determined with certainty, but it appears that this is a small serving or condiment bowl.

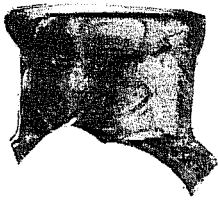
Four lettered pieces (Category D) were recovered from the site. Two are body fragments of clear vessels. One shows the embossed letters "NTAL," probably from the word "dental." Another clear body fragment has the embossed letters "OSSALE BOTTL." The first group of letters possibly is a proper name of a company or an individual. The second group of letters is from the word "bottle" or "bottler." These pieces are too fragmentary to identify the method of manufacture with any certainty.

A clear basal fragment in the collection has the embossed letters "DE MIDY" on one of 10 flat panels. This item is thought to be pressed or BIM flint glass. The small size suggests an expensive perfume or toiletry item was the intended content for the vessel.

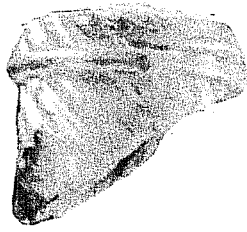
A green tag or plate is embossed with the legend "HUILE D'OLIVE SURPINE CLA/FILE" (Superior class olive oil) and "L. CHASTANT A BORDEAUX" (Fig. 46,c). A fugitive border of raised dots runs along the upper and lower margins of the plate. Rough glass adheres to the back of the plate and a definite seam exists along this contact. Newman (1970:74) suggests that such

Figure 47. Neck/Mouth Fragments (Category B).

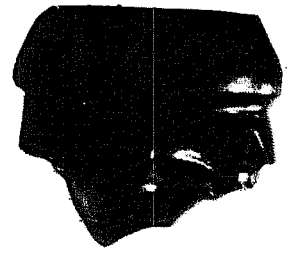
- a, prescription lip finish, clear (Category B.4,d; Unit H, Level 5);
- b, aqua Ohio Swirl-like finish, dated to the 1850s (Category B.3,a; X-1-4-B);
- c, black neck/lip fragment, hand-applied finish with lipping tool (Category B.1,a; Unit Y, vertical provenience unknown).
- d, prescription finish, clear; pressed with hand-finished mouth (Category B.4,d; Unit B, Level 6);
- e, green neck/lip fragment with sheared lip and applied laid on ring wine bottle finish; dated to 1840 or earlier (Category B.2,c; EM2);
- f, green neck/lip fragment with sheared lip and applied laid on ring wine bottle finish; dated to 1840 or earlier (Category B.2,c; west end of site, stratigraphic provenience unknown);
- g, green neck/lip fragment with sheared lip and applied laid on ring wine bottle finish; dated to 1840 (Category B.2,c; BD);
- h, dark green neck/lip fragment with sheared lip and applied laid on bead wine bottle finish (Category B.2,c; Unit U, Level 6);
- i, green neck/lip fragment with sheared lip and applied on ring wine bottle finish, dated to 1840 (Category B.2,c; Unit C, Level 7).



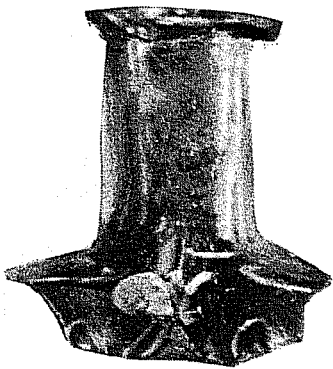
a



b



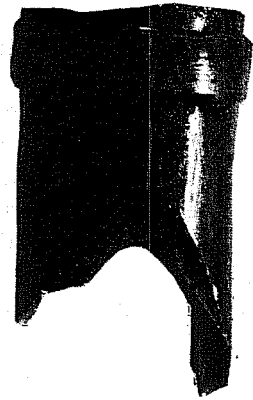
c



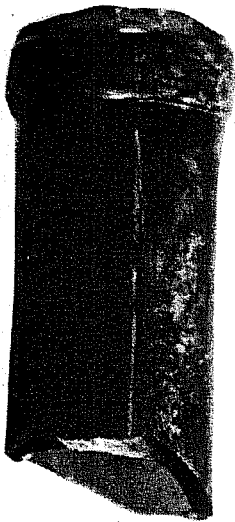
d



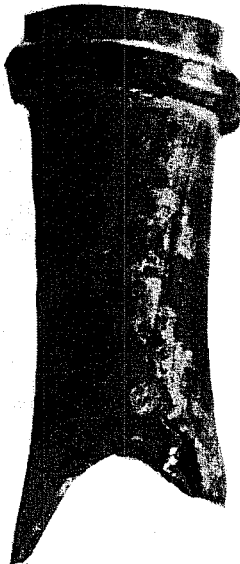
e



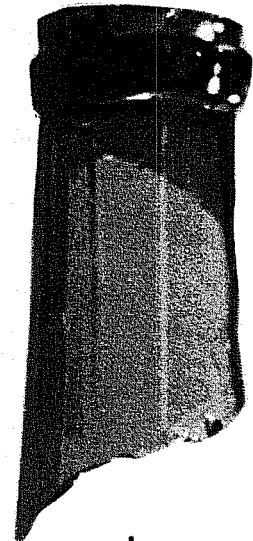
f



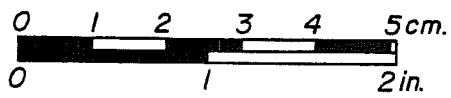
g



h



i



raised insets are a slug plate process dated from 1850 in the United States and 1840 in France.

Category E represents miscellaneous and unidentified artifacts. Only one piece of etched and one piece of cut clear glass were recovered from the site. Decorative techniques such as etching, cutting, or enamelling are poor time markers. Particular, quite distinct designs might be recognizable time markers on vessels. However, the fragmentary remains in this collection made positive identification of any specific pattern recorded in the literature impossible. Many of the pieces were so damaged by breakage that nothing but color and decorative techniques was recognizable. A basal fragment of what was possibly a vase is of pressed opaque white glass. A fugitive gold paint or enamel is present on parts of the surface. No positive dating is assigned (Fig. 48,d). A glass drawer pull with rounded facets is also in the collection. The piece is apparently pressed or BIM, but no positive dating is assigned here, either.

Category F represents nondiagnostic fragments. These are sorted according to color. A quick assessment of texture and quality of glass was made. This was done to make tentative judgements regarding the technology of manufacture represented by the fragments. The "bottle glass" in this category refers to the highly flawed, dark green glass found in 19th-century wine and liquor bottles. Most of the fragmentary remains are thought to be from free-blown or BIM items. Roughly half of the total collection is of clear glass pieces. At the time of this writing, the clear glass fragments are still under examination. Flint glass fragments are very difficult to separate from heavy basal fragments. At present, however, most of the clear glass is not thought to be flint glass.

## **SUMMARY**

The entire assemblage of glass artifacts suggests a utilitarian grouping and a luxury grouping. Two major classes of bottles, liquor/wine and medicine/toiletry, are represented. The reuse of bottles is demonstrated in this collection by the worn bases. This reuse is especially noticeable on the black and green basal fragments. The clear, square-faceted bases are thought to be tumbler bases; these also show extensive wear (Anne Fox, personal communication).

This assemblage appears to represent a relatively expensive and, consequently, valued set of glasswares, which supports the fact that only 868 glass fragments were recovered from the site (Tables 8 and 9) compared to more than 5000 ceramic fragments recovered. It appears that the ceramic wares were more available, perhaps because they were less expensive or because they were easier to find.

Given this reuse of glasswares, any given cut-off date for a manufacturing process is a plus or minus figure. A bottle or other vessel may survive intact until one, 10, or 100 years after historical documentation assigns an end to the use of the particular process (Newman 1970:70-71; Switzer 1974:5).



TABLE 8. GLASS ARTIFACTS RECOVERED FROM 41 BX 677

Color	Methods of Manufacture				Vessel Diagnostics	Total
	Pressed	Free-Blown or BIM*	Unidentified	Flint Glass		
Blue	11	0	9	0	5	25
Green	0	138	99	0	8	245
Black	0	27	0	0	9	36
Aqua	0	59	9	0	8	76
Clear	11	0	382	21	39	453
White	0	0	14	0	0	14
Brown	0	0	6	0	0	6
Pink	0	0	1	0	0	1
Other/misc.	0	0	8	0	4	12
						868

\*BIM - Blown-in-mold method.

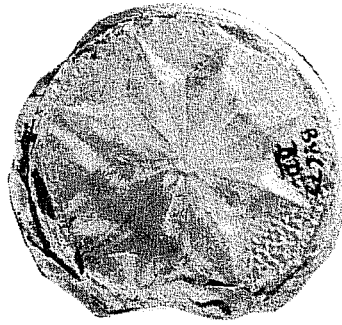
Note: Seventy-two glass artifacts were selected for study.

Figure 48. **Tablewares and Miscellaneous Items.**

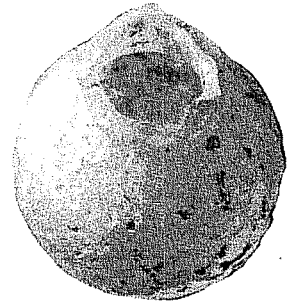
- a, decanter stopper top, flint glass (Category C.1; U-2-10);
- b, decanter stopper top, pressed glass with stylized sunburst design (Category C.1; BD);
- c, decanter stopper top, pressed glass (Category C.1; Unit C, Level 7);
- d, white pressed glass, miscellaneous fragment with fugitive gold paint (Category E.1; U-2-10);
- e, drawer or cabinet pull, pressed glass (Category E.3; Unit L, Level 4);
- f, candlestick or bud vase basal fragment with rough pontil scar (Category C.2; Shovel test 8);
- g, blue pressed ware fragment (Category C.4,b; Unit C, Level 5);
- h, pressed or BIM basal fragment of a condiment or serving bowl (Category C.3; BD).



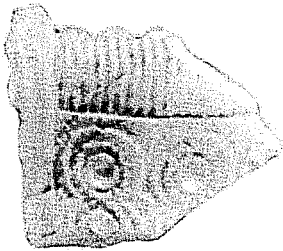
a



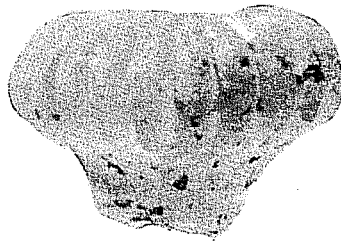
b



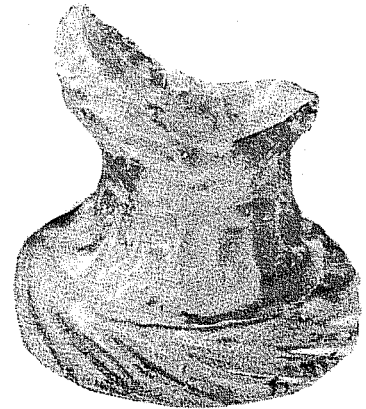
c



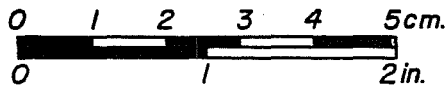
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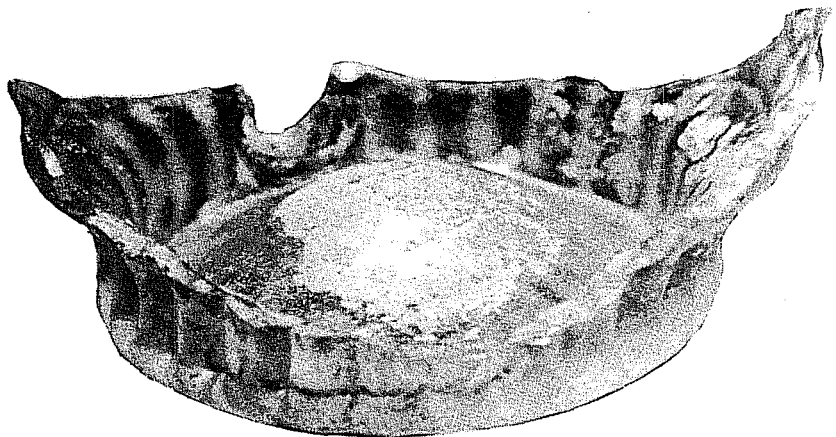
e



f



g



h

TABLE 9. GLASS ARTIFACTS SELECTED FOR ANALYSIS

Diagnostic Fragment	Number of Specimens	Color	Method of Manufacture				
			Pressed	Free-Blown or BIM*	Unknown Technology	Hand- Applied Corker	Lipping Tool
Basal	7	black		x			
Basal	2	green		x			
Basal	3	aqua		x			
Square facets	7	clear		x			
Impressed design	2	clear		x			
Rounded facets	2	clear		x			
Plain base	8	clear		x			
Clear miscellaneous	1	clear			x		
Mouth/lip	2	black		x			
Mouth/lip	5	green		x			
Mouth/lip	5	aqua		x		x(3)	x(2)
Tableware	16	clear	x		x(3)		
Lettered	2	clear			x		
Lettered	1	green		slug plate			
Lettered	1	clear		x			

Total selected for study = 72.

\*BIM - Blown-in-mold method.

The glass goods that were available to the San Antonian of the 1830-1850 period include pressed table items such as serving dishes, creamers, etc.; flint wares provided fancy accents along with the decanter stoppers and candlestick bases. Utilitarian wares are represented by the liquor and prescription bottle fragments. However, in the first half of the 19th century, utilitarian ware did not necessarily mean inexpensive. The glass artifacts represent an assemblage which a middle-class citizen could afford. Glassware was, by definition, expensive until the 1860s and 1870s (Kendrick 1966:20; Lorrain 1968:38; Putnam 1968:69-80). The middle class cooked with condiments imported from Europe and drank a variety of wines and liquor. Ladies who could afford tasteful and relatively expensive items bought perfumes and toiletries in bottles and decorative containers. The medicine cabinet is represented by only a few fragments.

The source for the glass artifacts requires further study. San Antonio was the major trade and transportation center in south and central Texas and northern Mexico since the 18th century. Although this area was an extreme western frontier for America, Spain and Mexico had been trading for generations. It is quite reasonable to expect a market with a relatively wide selection of glass goods in San Antonio. These goods represent an active participation in a world market. The olive oil seal (Fig. 46,c) gives some indication of the extent of these trade contacts. Olive oil from Bordeaux must have been an expensive item. However, what is important is that the product was available. The flint glass pieces, tentatively dated before 1840, could have been produced in Britain. Flint glass was generally available in the United States from the 1840s, and most of this ware was produced on the eastern seaboard (Putnam 1968:69-80). The piece of Ohio Swirl-like ware indicates trade contacts with other regions of the United States which were more extensive than usually indicated in history texts. Much work remains to be done in this area.

As stated before, the availability of a wide selection of imported goods is not surprising. San Antonio had been a hub of travel and trade since the Mission Period. The Camino Real was the major mission route through the village to east Texas. The Matamoros Road linked south Texas to northern Mexico. This important freighting route was used by General Urrea in 1836. During the westward expansion through Texas after the 1836 Revolution, San Antonio was the major center of operations. Pool, Triggs, and Wren (1975:93-98) identify a Hill Country Frontier period from the years 1836 to 1860 and a Rio Grande Frontier period, 1848-1860. In this phase of expansion in Texas, several mapping and exploring expeditions used San Antonio as a base. These expeditions were led by Hays in 1848, Neighbors and Ford in 1849, Smith and Whiting in 1849, and Bryan in 1849. By the Civil War, more than seven major freighting and travel routes radiated from this growing center. Given this long period of trade and the number of routes, it is logical to expect that a wide variety of goods would be available to those who could afford them.

The earliest known glassmaker to open a shop in San Antonio was G. A. Duerler. The Sunset Mineral Water Bottling Works opened in 1857 and fronted 220 West Commerce Street and 423 West Market Street (Appler 1905-1906). Given this late date for a local glassmaker, as well as the fact that the Canterbury-Riddle home was built after 1858 (Chapter 2), effectively sealing

the lot, it must be assumed that the majority of the glass artifacts found at the site were all from glass vessels shipped to the town.

Additional research should include the search for glassmakers in other areas of Texas and shippers of glass-packed goods during this time period. For example, was L<sub>s</sub>. (Louis?) Chastant of Bordeaux a bottling or an exporting company? Did the company have an agent in Texas? The problem of origins for this glassware presents a number of areas which need to be examined. Much of this research will center primarily on historical document studies.

The glass artifacts represent trade links which are not exclusive to a Mexican government-dominated trade network. Given the bias of the literature examined to date, the vessels appear to have originated in Britain, France, and America (Lorrain 1968:35; Putnam 1968:69-80; Jones 1971:72). This does not exclude Mexican government-sanctioned trade which would include British goods. If Santa Anna bought British military hardware for his army, it is certain that extensive trade links existed which would bring other goods. At present, a reasonable idea of what the trade routes were does exist. What remains to be determined is what and in what quantity were goods being sent via these routes.

## CONCLUSIONS

The glass artifacts from site 41 BX 677 represent a shopping list of expensive items which the middle-class people could afford. Glassware was, by definition, fairly expensive until the 1870s. Roughly half of the collection is of clear fragments. Several of the clear basal specimens are apparently formal dishes, fancy drinking glasses, etc. Only the decanter tops and the candlestick can be described as luxury items. The utilitarian wares represented by liquor and wine bottle fragments are not out of place in this assemblage. The fact that expensive items were purchased is proven by the presence of the embossed panel which states the vessel held a superior class French olive oil. There is a noticeable lack of prescription lip treatment bottles, only two specimens in the collection. A site dating to the last quarter of the 19th century would be expected to produce dozens of identifiable prescription lip fragments. This site can thus be placed before the 1860-1900 national fascination with patent medicines (Kendrick 1966:44; Lorrain 1968:44; Carley 1981:19-27).

This study has not focused primarily on provenience or stratigraphic context. It was designed to isolate specific technological attributes which could be used to construct a chronology for glass items from the site. When it is stated that a technology was used between specific years, it means that the artifact could have been produced at any given time within that period. The chronology of glass technology is poorly known, and some techniques may date earlier than currently thought. If the deposit is secondary refuse, as is thought, and was filled in after the battle, it would be possible to find bottles from later and earlier years in a trench dug in 1836.

San Antonio's citizenry, by 1858, had a wide range of glass items available for purchase; these included pressed, blown-in mold, and free-blown glass table settings. Decanter sets were available in stylized diamond and star

(or sunburst) designs. European condiments, wines, and whiskies also were on the market. The glass artifacts thus represent a trade network which linked San Antonio to America, Britain, and France, as well as Mexico. The presence of glassmakers in San Antonio is not documented before 1857. At this time, it must be assumed that most of the glassware recovered in this site was shipped into the city.

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## CHAPTER 8 CONSERVATION REPORT

Paul S. Storch

### INTRODUCTION

Two iron-alloy military artifacts from site 41 BX 677 were submitted to the Materials Conservation Laboratory (MCL) of the Texas Memorial Museum, University of Texas at Austin for conservation treatment. The request was to clean the objects in order to reveal as much of the surface shape and detail as possible. Active corrosion should be arrested by the treatment, resulting in long-term stability for the artifacts. Full documentation of the objects was undertaken before actual treatment was carried out, including surface and subsurface examinations.

The MCL operates under the American Institute for Conservation's (AIC) Code of Ethics (rev. 1980), which promulgates the following guidelines and principles for treatment methods: (1) Minimum intervention; i.e., the aesthetic, chemical, and physical properties of the artifact will be altered as little as possible by the treatment. (2) Preliminary analyses; thorough physical and chemical examinations will be undertaken when appropriate, to assess the state of the artifact and the identity of its material components. The data from such analyses will influence the choice of treatment. (3) Reversibility of treatment, a theoretical principle based on the actual properties of the treatment, the treatment materials used on the object, and the properties of the object itself. For example, a coating material, such as an acrylic, should be removable by adding the original solvent and should not undergo a chemical curing reaction which would make its removal damaging to the substrate. On the other hand, a cleaning treatment, such as applied to metal artifacts, is by nature irreversible and should be planned and undertaken with the utmost caution. These principles will be further discussed later in this chapter.

### THE ARTIFACTS

#### Sword Hilt

A sword hilt hand guard from a saber has been identified as British-made, ca. 1821. Sword parts of this type were usually mass-produced by casting. It is 75% complete, with parts of two of the smaller knuckle-bows missing (Fig. 26,c). The surface is heavily corroded with ferric oxide corrosion products and caliche mineral crusts. The corrosion has obscured most of the original surface of the metal. When corrosion proceeds, the metal surface is reduced below the line of its original extent, with the corrosion layer extending up above the surface line. The artifact also has areas of extensive mineralization of the metal, which forms fragile interleaved flakes. This mineralized metal may retain the shape and detail of the original surface, but the shape and detail are easily lost by removing the flakes.

## Bayonet

A Brown Bess musket bayonet (Fig. 28,b) has been identified as British-made. The Brown Bess muskets were manufactured by the Tower Armory and usually bore the Royal Tower proof mark of a crown. The bayonet was forged and then welded onto the shank and muzzle tube. The cross section of the blade is that of a trifoil. The proximal end attaches to the stud on the barrel by means of a slot in the bayonet tube.

The surface of the metal is eroded away and obscured by corrosion crusts and mineral metal scale over most of the surface of the artifact. The point is bent and rounded by corrosion. The tang end of the blade is eroded and almost completely mineralized.

## ANALYSIS

Preliminary to treatment, the objects were examined with a portable industrial X-ray unit. The films were exposed to 90Kv at 5 mA from 1.5 to 3 minutes. The surfaces under the corrosion layers are pitted to various extents. Tests with a bar magnet show that a substantial metal core does exist under the corroded surfaces on both artifacts except in the areas of lowest radiographic density.

None of the radiograms showed any signs of engraved or embossed designs, writing, or numbers on the artifacts.

Wet chemical tests indicated that chloride ions were not present. Calcium ions were present as components of the calcium carbonate (caliche) crusts.

## TREATMENT

It was decided to clean the objects primarily by mechanical means, which would remove the most disfiguring, indurate crusts while leaving mineralized areas and areas of substantial metal intact. The color of the objects would remain the reddish brown to reddish orange of corroded iron with rough and uneven surface texture. The areas of active corrosion would be reduced, and coating with a clear acrylic after treatment would isolate the surface from the influences of atmospheric water vapor and oxygen. Electrolytic cleaning is often chosen as a treatment for historic archaeological iron alloy artifacts. This treatment usually removes all of the corrosion products down to the actual remaining metal. The surface is left with a grayish, metallic appearance and may be pitted further by the treatment. It must be monitored constantly and the current readjusted to compensate for the lowered resistance as corrosion is removed. It is the author's opinion that electrolytic cleaning is unnecessary except for objects which contain harmful amounts of chloride ions (i.e., above 20-50 ppm). These artifacts will usually come from marine areas, and it is rare that soils from anywhere other than in the immediate vicinity of a large body, or former body, of salt water will contain such high amounts of chlorine. In this case, therefore, electrolytic cleaning would not conform to the principles of conservation as stated in the Introduction.

Figure 49 shows the mode of treatment chosen. The lower right quadrant is the schematic representation of what was done. The dense and hard corrosion layers were left above the "epidermis" and the actual metal core. The "epidermis" is the first corrosion layer to form on the object. It can be stable under ideal conditions, but there is usually a flaw in its surface or the surface of the underlying metal which, along with high moisture and oxygen in the presence of an electrolyte (i.e., soil), allows a galvanic cell to form. The "epidermis" usually contains whatever surface detail remains. The stabilization consists of the introduction of a solvated laquer-type acrylic resin.

A Columbus Cental Orbison 30 dental tool was used to remove the crusts. The Orbison operates by forcing compressed air over a rotor, which in turn vibrates a tuning fork in the instrument's handle. The cleaning tip is on a flat stage which translates the vibrations of the tuning fork into a rotatory, or orbital, motion. The instrument operates at approximately 2000 cps, at 10 to 15 psi. The air pressure can be adjusted at the control box to control the intensity of the tip motion. There are several tips which are interchangeable, ranging from a flat, blunt tip to a hooked point. Each type has its usage on various areas of the crust.

After the outer corrosion layers were removed, the surfaces were further cleaned with a 10% gm/l solution tetrasodium ethylenediametetraacetic acid (EDTA) in deionized water. The pH was lowered with the addition of ammonium acetate to pH 7. The solution was applied with cotton swabs; this served to remove the looser, active corrosion products. The artifacts were rinsed with water and acetone and dried thoroughly.

During the mechanical treatment, there were several small areas where mineralized metal flakes were dislodged. Loss of these flakes altered the outline and the morphology of the artifacts. Wherever possible, the dislodged flakes were readhered to the artifact with Acryloid B-72, an ethyl methacrylate copolymer.

After the cleaning treatments were completed, the artifacts were coated with a 3% liter/liter solution of Acryloid B-48N, a methyl methacrylate copolymer formulated for noncupreous metals. A small amount of microcrystalline wax was added to the solution in order to tone down the gloss of the acrylic.

## CONCLUSIONS

As can be seen from comparing the before (Figs. 26,c; 28,b) and after (Fig. 50) photographs, details of the surface were revealed in both sword hilt and the bayonet without completely altering the appearance or composition of the surface. The objects have been stabilized; however, periodic close examinations should be undertaken to assure that the coating retains its structural integrity and that corrosion has not started again underneath it. The author would like to stress that not all of the details of the treatment have been given. The intention of this article is to explain the theory and practice of modern archaeological conservation and not as an

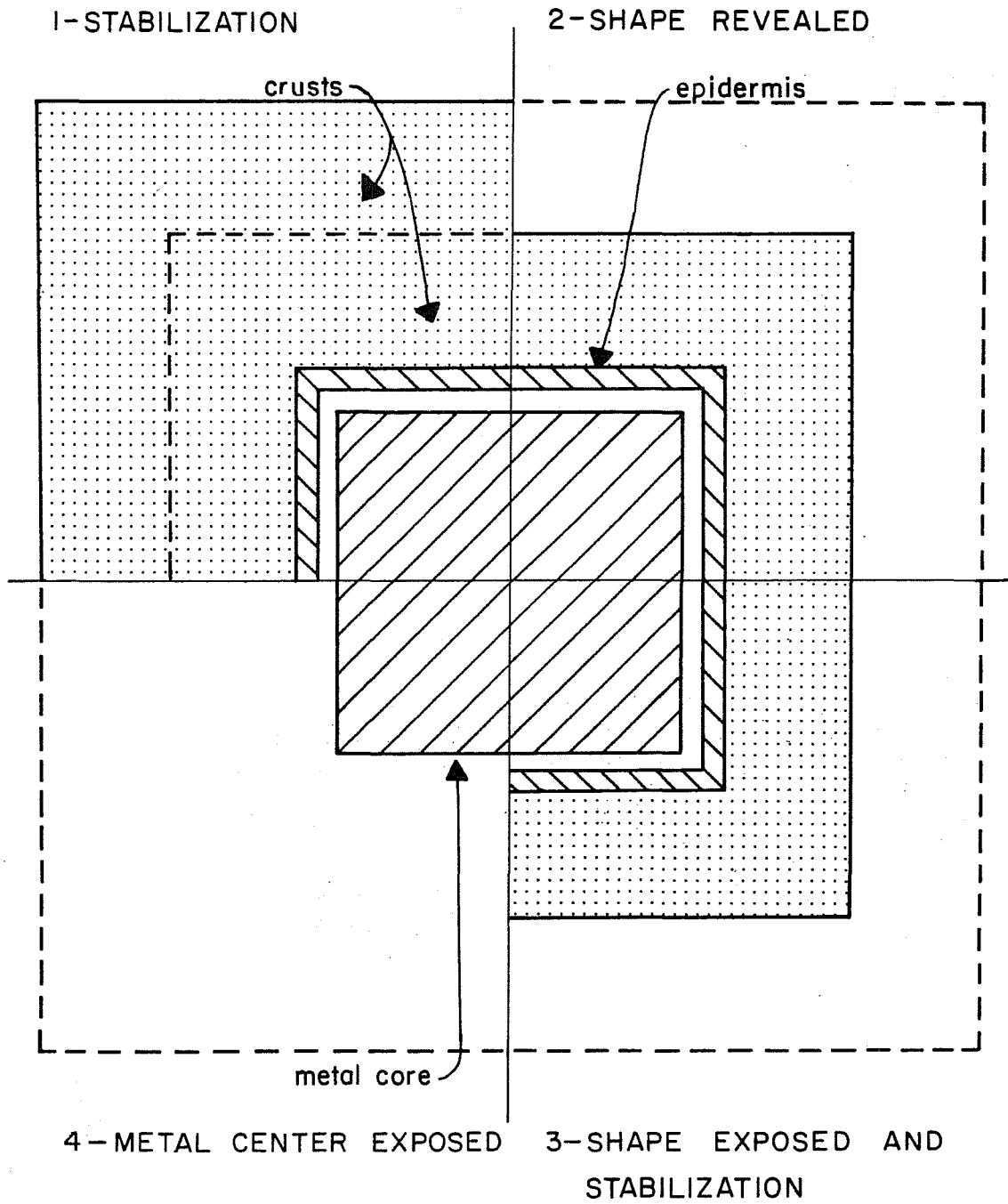


Figure 49. Options for Treating Corroded Metal.

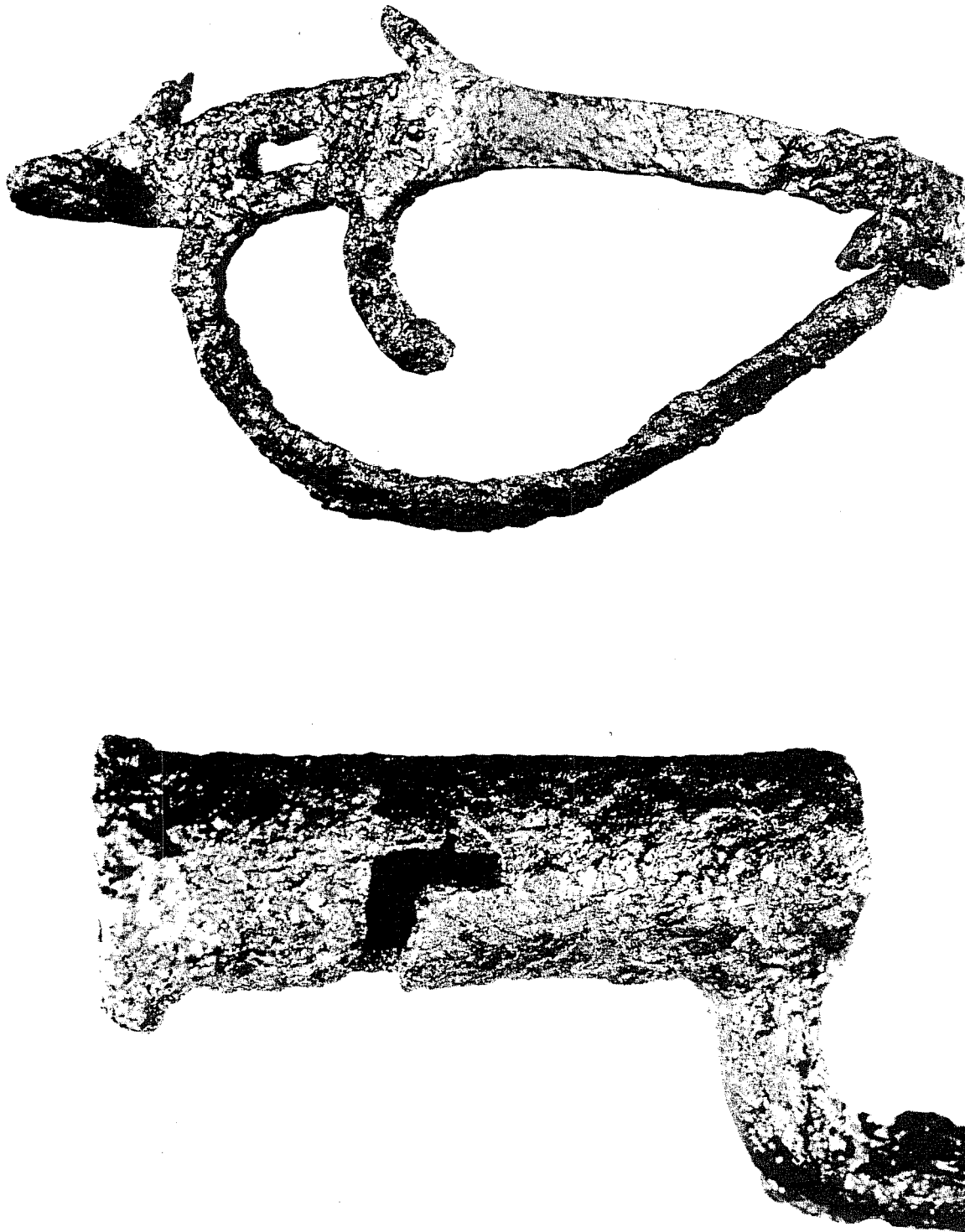


Figure 50. **Specimens After Treatment.** Upper, iron two-branch sword hilt from a British 1821 model light cavalry and artillery sword after cleaning and stabilization (length, 19.8 cm); lower, iron bayonet manufactured in England for use on a Brown Bess musket (outside diameter of shaft, 3.0 cm).

instructional manual on metal treatments. The author cannot accept responsibility for the improper application of the information contained in this article.

#### **ACKNOWLEDGMENTS**

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## CHAPTER 9 CONCLUDING REMARKS

Kenneth M. Brown

As this is being written, Texas has already entered its sesquicentennial year. Overcome by commemorative fever, manufacturers are offering a bewildering variety of Bowie knives, rifles, cups, medallions, belts, and other gear. Local historical societies and individual citizens are gearing up to sponsor community celebrations, special exhibits, and the like. The state's attics are being emptied of historical relics as various descendants donate family memorabilia--perhaps having nothing or little to do with the Texas of 1836--to local museums. The historians are entering the fray, too, with historical symposia, new books, and public lectures. We can expect to see a blizzard of paper rivalling the snowfalls that harried the Mexican forces as they pressed northward in February of 1836. Much of this historical publishing will have little concern with the events of 1836. Others may deal with battles of the revolution, but are unlikely to offer much in the way of truly new information. Sometimes new documents are discovered, or documents long available only in manuscript form are published and become more widely known, but in all likelihood it seems that much of our sesquicentennial historicism will consist, in the main, of rehashing the historical facts as they are already known.

Meanwhile the Alamo, which in recent years has become a symbolic backdrop for almost every sort of modern vision quest, is being spruced up with new paint and polished brightwork. Hardly a day goes by without a newspaper photograph of some proponent of one or another cause, posing in front of the venerable chapel, presumably hoping for a measure of added legitimacy.

Faced with inescapable commercialization and trivialization of history, it is all too easy to lose sight of the reality of the events themselves--until confronted, face-to-face, with the past. Documents such as the Travis letters, yellowed, stained, frayed from years of chancy curation, have the power to confront us with the past. Compelling thoughts and observations frozen in time, like those of Isaac Millsaps, written on March 3 before the assault of the Alamo: "early this morning I watched the mexicans drilling just out of range they was marching up and down with such order . . . they have bright red & blue uniforms and many canons . . . we have beef & corn to eat but no coffee, bag I had fell off on the way here so it was all spilt" (Nevin 1975:96-97).

Archaeologists are confronted with the past on a daily basis. Usually it is a blurry and unyielding past measured in hesitant centuries and uncertain millennia. At times, though, the past breaks through to confront us with as much immediacy as can be found in the historian's yellowed documents--or perhaps even more. Then, we can measure the past on a daily basis, possibly an hourly basis. We can measure it by the laminated mud filling an abandoned entrenchment as a chilly rain fell in March 1836. We can measure it by a hastily quenched fire huddled against the north wall of the trench, backed against the wall for protection against a frigid north wind and against hostile fire from the Alamo. And we can measure it with broken bayonets and impact-flattened musket balls.



It was serendipity, nothing more, that the particular date on which we began controlled excavations at La Villita Earthworks was just a couple of days short of 149 years after Santa Anna rode into Main Plaza on February 23, 1836. But what serendipity! Taking stock of what we know and where we remain ignorant, we can say that it is very probable that the ditch we partially cleared at La Villita represents one of the entrenchments of Santa Anna's army during the assault on the Alamo. But what kind? Is it an artillery emplacement, an infantry position, a rifle pit? There are arguments to be considered for and against each function, as presented in Chapter 3. The balance of these arguments might favor the idea that it was an artillery emplacement, but the identification is hardly certain. It is perhaps safer to say simply that we do not know exactly what the function of the site was. Here the documents are, of course, silent. It is important that we remember what we do not know, lest we create our own archaeological mythology. Perhaps some of the answers will spring from further studies, perhaps not.

The layout of the siege work is rather unusual. Knowing that the Mexican officer corps would have been conversant with European military engineering principles, we looked for evidence of such knowledge as we dug, yet did not find it. This suggests the siege work may have taken ad hoc advantage of nearby standing buildings. Is the ditch L-shaped because it was wrapped around the corner of a building? Here we need documentary evidence to help us, but so far the evidence has not been forthcoming. What other buildings lay nearby in 1836, and how did they structure the field of fire? Again, we need archival help with these questions. Construction of the Convention Center and renovation of La Villita has removed much of the evidence that archaeology might have provided.

There are many things we do not yet fully understand about the site. For example, how did such a large quantity of ceramic tableware come to be buried in the trench? In many ways the collection looks very different from the assemblages we are often accustomed to seeing. The sherds are larger, there is little evidence of use wear (abrasion, cut marks, and the like), there is a great deal of redundancy in the manufacturer (Davenport), the importer (Henderson and Gaines), and in the patterns represented. Does the collection represent household trash, or never-used goods that were being warehoused or retailed in San Antonio? How long a span of time is represented by the deposits in the trench? Was the trench filled rapidly or slowly, and did filling begin immediately after abandonment or at some later date? The interplay of these considerations is critical to our understanding of the site. If we can establish that most of the artifacts in the trench came to San Antonio near the time of the battle, and were thrown in the trench not long after the battle, we may establish a firm ending date for the age of the collection. The collection then becomes a useful chronological tool for assessing the age of other 19th-century San Antonio sites. On the other hand, we depend on the known ages of the artifacts to establish the age, and hence the historical significance of the trench. How can we avoid the inherent circularity of these arguments? The answer lies in further careful study--studies of the spatial distribution of the sherds in the fill, archival studies of Henderson and Gaines and their role in supplying the frontier, and so forth.

Analysis of the glassware reinforces many of the impressions registered in the ceramics. Much of the glassware seems to represent either expensive goods or containers for expensive imported goods. Does this contravene the notion that the artifacts represent household refuse from La Villita, or are our impressions of the socioeconomic ranking of La Villita in error? Does any of the glassware represent unconsumed retail goods destroyed during any of the various invasions? Some of the wine bottle bases have abrasion, but even in our contemporary throwaway-container society, glass soda pop bottles are reused, and these too have basal abrasion. The struggle to relate the known history of glassmaking technology to the problem of dating the ditch fill is instructive. If, as we suggest here, the ditch fill is secondary refuse, there is no reason why the fill in an 1836 ditch might not include artifacts both earlier and later than 1836. Both Berlandier (1980:291-292) and Martinez (1983:34) explicitly state that La Villita escaped the disastrous flood that struck the town at 5 A.M. on July 5, 1819 (though Berlandier errs in giving the date as 1817), hence it would not be surprising to find sheet refuse with a lengthy pedigree in La Villita of the 1830s. Likewise, if the ditch stood open for any length of time, post-1836 artifacts might have been added to the sheet refuse in the interim. Unfortunately, the chronology of glassmaking technology is still poorly understood.

We also need to ask the significance of the bulky collection of animal bone (mostly beef) from the trench. Is this, too, household trash, or does it signify something else, such as the operation of a butcher shop nearby? Again, further studies of the bone are needed before we can attempt a resolution.

Pending a final report, then, what are the paramount lessons to be learned from La Villita Earthworks? One lesson, surely, is that it is through archaeology (combined with archival research) that new data on long-past events such as the battle of the Alamo will come. Another lesson, apparently still not understood by all, is that all of downtown San Antonio is a critical historical zone, one that should be approached with caution by those who alter the city and its substrate. We might also add that well over half a dozen other military positions associated with the two battles of the Alamo existed at some time, and some may still exist, as the example of La Villita shows. We know enough now to predict the locations of many of these with a fair degree of accuracy (see Fig. 14). Until we can prove that nothing remains, each of these locations should be regarded as a critical zone in which archaeological testing must proceed hand-in-hand with development. The feasibility of such cooperation has already been demonstrated by the River-center project just a few blocks away.

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