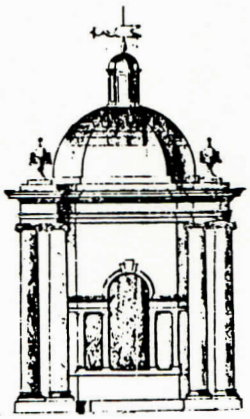
EXAMINATION OF CONSTRUCTION SEQUENCE AT THE EXCHANGE BUILDING



BY
MARTHA ZIERDEN
DEBI HACKER

THE CHARLESTON MUSEUM
ARCHAEOLOGICAL CONTRIBUTIONS 14

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Martha Zierden
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The Charleston Museum

prepared for
The Exchange Commission

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CHAPTER I

Introduction

In September 1986 workmen replacing an area of wooden flooring in the southeast corner of the Exchange building discovered a layer of fill dirt beneath the existing flooring. Further investigation revealed that the existing floor had been constructed directly on top of an earlier wooden floor. The upper floor consisted of planking running north/south, overlying joists running east/west. The lower floor consisted of wide planks running east/west, over large north/south joists.

Fill dirt was also present beneath this earlier floor, and the original brick flooring was present beneath this dirt. Realizing that the soil might contain significant archaeological remains, the Old Exchange Commission contracted with The Charleston Museum to conduct archaeological research in this area and to make recommendation. Excavations were conducted for two days, September 11-12. Controlled excavation of 25% of the area to be impacted resulted in the recovery of a quantity of materials. They also revealed three separate zones, deposited between 1780 and 1890. The excavations provided information on the building sequences on the interior of the structure, as well as activities at the Exchange in the nineteenth century.

History of the Exchange Building

The Exchange building, positioned at the foot of Broad Street on East Bay Street, was physically, commercially, and symbolically central to the economic activity of colonial Charleston. The intersection of Broad and East Bay Streets formed a central point in the original city, which was bounded by the Bay, Water Street, King Street, and Cumberland Street. Later in the eighteenth century, this location was central to the commercial activities of the city, which focused on the waterfront and three east/west streets, Broad, Tradd, and Elliott (Calhoun et al. 1982).

When the city was moved from the original settlement at Albemarle Point to the peninsula at Oyster Point, a location was chosen which was "ideally situated for trade" (Matthews 1954:153). The banks of the Cooper River between two major creeks (present day Water Street and Market Streets) exhibited relatively high bluffs, narrow strips of marsh, and a deep water channel unhindered by bars and shoals. The original city was surrounded by a heavy wall, including a massive seawall which ran along the bay. The seawall exhibited a number of bastions and batteries, the largest of which is located directly beneath the Exchange building. The old Council Chamber and Guard House was constructed on the battery in the early eighteenth century and was in place by the 1730s (Roberts and Toms 1739).

East Bay Street was the original water's edge when the city was founded, but the construction of wharves and the filling of the beachfront commenced shortly thereafter. As early as 1692 masters were permitted to dump ballast at the end of Broad Street, "above the water mark at half tide as ... described by two sedar stakes" (McCord 1840:6). The 1739 map of the city (Roberts and Toms 1739) still shows the seawall as the water's edge, but the wharf construction

and filling continued at an accelerating rate, until by 1788 an additional block of high land had been created and the waterfront was lined with wharves. Buildings extended 230 feet east of the street, and wharves continued an additional 160 feet. East Bay Street was widened in 1767, covering the half moon battery and other remnants of the sea wall (Zierden and Calhoun 1984:58).

The contract for construction of the Exchange building called for the demolition of the Council Chamber and the clearing of the land. Plans for the Exchange were approved in April 1767, and a contract for construction between John and Peter Horlbeck, masons, and the Exchange Building Commission was signed in December; in the spring of 1768 John Horlbeck left for England to obtain materials for the building (1898 Yearbook; Bryan 1973; Herold 1981:5).

The Exchange was built of the highest quality materials. The plans called for a building 92 feet north to south and 65½ feet east to west. The structure included two towers which projected into East Bay Street, and a porch on the east. The structure was two floors over an above-ground cellar. The building was used for meetings as well as commercial purposes. The cellars were rented out. The first floor was open. The second floor featured a grand ballroom which was used for public meetings and elegant entertainment.

The Exchange served a number of purposes, and is marked by a number of historic events. During the Revolution, a number of Charleston patriots were imprisoned in the basement. In 1783 the building became the property of the City of Charleston. On May 4, 1891, an elegant ball was held for President Washington, visiting Charleston on his tour of the south. In 1818 the building was sold to the Federal Government (Herold 1981:7). Until 1849, it housed the Customs House and, until the beginning of the twentieth century, the Post Office and the Light House Department. In 1917, it became the property of the Rebecca Motte Chapter of the Daughters of the American Revolution.

In conjunction with its numerous functions, the building underwent several alterations. Before the structure was completed in 1771, fire damaged a portion of it, necessitating repair. The towers to the west, an obstruction to traffic, were removed by 1802, and the porch was gone by 1837. The arches on the first floor were enclosed some time between 1826 and 1857. The cupola was removed and replaced several times throughout the twentieth century (Herold 1981: 7).

Although internal alterations are more difficult to document, several of these are evident. Of particular relevance to the present project is the renovations to the cellar in connection with its use as the post office. A circular staircase is still present in the central portion of the cellar. It is suspected that the wooden floors in the southeast corner of the building are also a product of this activity.

The Exchange building mirrors the economic and demographic development of the city. The position of the guard house and half moon battery in this location reflects the importance of defensive measures in the early eighteenth century, when Charleston was a small frontier outpost. The tremendous expansion and stabilization of Charleston's economy and its function as a

major port of entry is reflected in demolition of the seawall, expansion of the wharves and waterfront area, and construction of the imposing Exchange building in the late eighteenth century. As the center of commercial activity in the city, the Exchange was centrally located in the colonial business district. The change in function from Exchange to Post Office, Customs House, and other offices reflects the changing character of Broad Street in the nineteenth century (Calhoun and Zierden 1984). The business district, following population growth, shifted north to Meeting and King streets, and Broad Street changed from a retail/commercial function to an area of administrative/services enterprises. This is also mirrored in the construction of City Hall where the market had been (Calhoun et al. 1984) and the construction of the Post Office building in place of the guard house at the intersection of Meeting and Broad. Finally, the transfer of the Exchange building to the Daughters of the American Revolution, and its availability to the public as an historic site, reflects the increasing focus on historic preservation and tourism in the twentieth century.

Previous Research

The Exchange building has been the site of two previous archaeological investigations; both of these were quite extensive, and they resulted in a significant body of data. In 1965, John Miller conducted excavations in the cellar of the Exchange. Miller was the first to discover the location of the half moon battery, and his excavations were located between the sea wall and east side of the building. The area was divided into units and excavated by levels, and all materials were screened. The excavations revealed the exterior of the battery, and resulted in the recovery of extensive deposits which predate construction of the Exchange. The materials represent refuse that was thrown over the seawall; this area served as a convenient dumping ground, and the refuse simultaneously served to fill the area, creating new real estate. The lowest level of excavation revealed evidence of a coffer dam and artifacts postdating 1740. It appears that extensive repair to the seawall was necessary at this time. Herold (1981:88) suggests that the damage resulted from the 1752 hurricane.

Unfortunately, Miller died before a report was written, and his notes were minimal. The material, half of which was curated at The Charleston Museum, was not analyzed until 1981. At this time, Elaine Herold of The Charleston Museum removed the remainder of the collection from the Exchange building to the Museum, where the material was analyzed, quantified, and curated.

The results of this analysis were reported by Elaine Herold as part of her project on the exterior of the building (Herold 1981). Herold monitored construction associated with extensive renovation of the structure. This excavation was concentrated on the east side of the building, where replicates of the towers were being added. It proved impossible for the contractors to use power equipment in this area, so excavation of the footing trenches and the elevator shaft proceeded by hand; materials were recovered from these

excavations and soil profiles were recovered. Monitoring was also conducted in connection with the excavation of service trenches along the north and south sides of the building. Minimal work was also conducted on the interior of the building. The sand fill between the cellar arches and the first floor was tested, and shallow trenches were excavated in the cellar floor for electrical lines.

Once again, significant quantities of material were recovered from the excavations. The lowest level was an area of pitch which resulted in excellent preservation conditions. The zone contained quantities of barrel fragments, as well as wood shavings. This deposit appeared to be naval stores, spilled and destroyed during the hurricane of 1752 (Herold 1981:28). Proveniences predating and postdating construction of the Exchange were encountered.

Based on these two projects, it is apparent that the Exchange is one of the richest archaeological sites in the city. It is because of these results that the present soils were considered potentially significant, and were examined prior to disturbance.

CHAPTER II

Excavation methodology

The area to be examined is located in the extreme southeastern corner of the building, and measured 26 feet north to south and 15 feet east to west. Portions of the soil had been disturbed by the removal of the old wooden floor and discovery of the second wooden floor; other areas, however, remained intact. The object of the project was to test the soil deposit to determine its content, clarity, function, and temporal association (Figures 1 and 2)

A grid was established over the area, in order to test the soil by individual units. A line of points was located along the south and west walls of the area at 5 foot intervals. Those along the south wall were numbered alphabetically. Units were designated according to the coordinates of the southwest corner of the units, and numbering began in the southwest corner of the excavation area. Some adjustments in unit location were necessary, however, to avoid obstructions and areas of disturbance. Absolute size and location of each unit is discussed in the present text.

Vertical control was maintained with the use of a transit, and all elevations were taken relative to an arbitrary datum point, established at the northeast corner of the elevator entrance. This point was given an assumed elevation of 10.0 feet above sea level. All materials were dry screened through ¼ inch mesh and materials from each provenience were bagged and tagged separately. Small representative soil samples were also retained.

Description of Proveniences

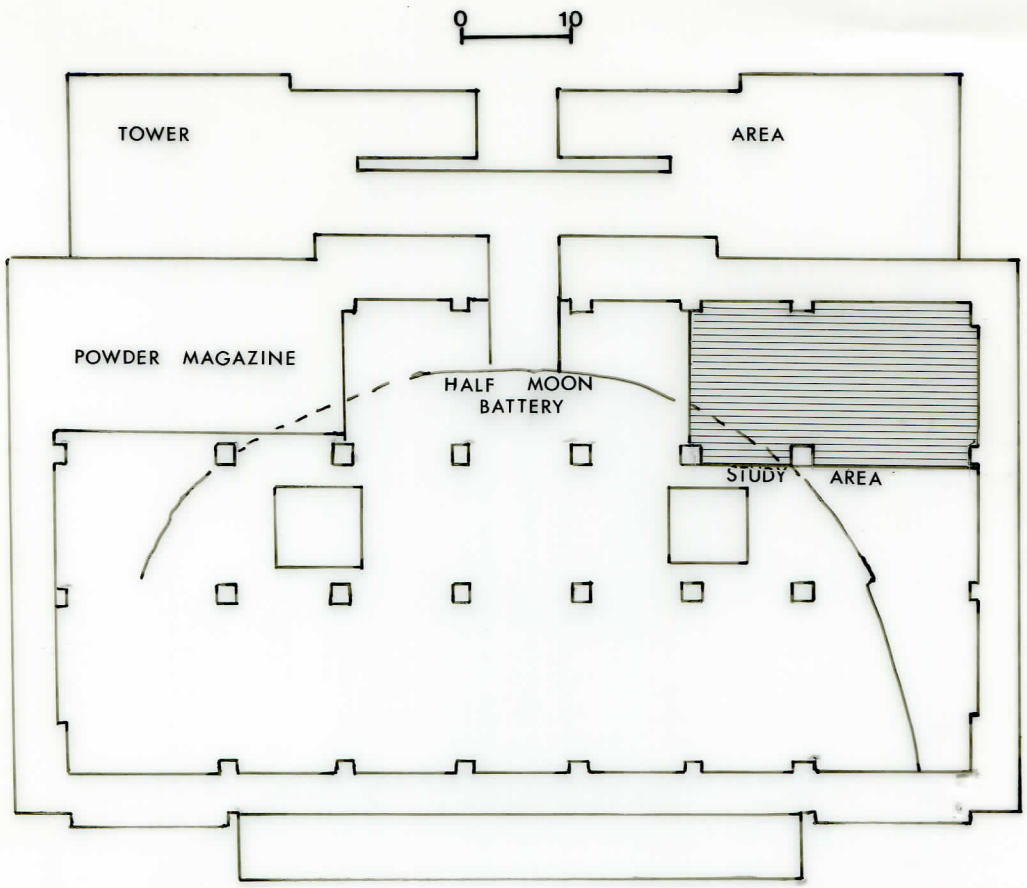
Unit 1-A measured 5 by 5 feet and was located in the immediate southwest corner of the excavation area. The soils in and adjacent to the upper wooden floor (designated floor 1) were excavated separately from those in and adjacent to the lower floor, designated floor 2. This procedure was facilitated by the fact that the flooring for floor 2, though rotted, was present. These soils were also texturally different, supporting the suggestion that they represent separate deposits. Zone 1 was dry, unconsolidated brown sand containing quantities of wood shavings and coal. Zone 2 was a moister, brown-grey sand. The artifact content of these soils was also quite different. A third zone was encountered directly above the original brick floor, which served as the base of the excavation. This was a thin (.1 feet) zone of hard packed grey sand. The compacted nature of the sand plus the small size of the artifacts contained in it suggest this soil represents refuse trampled onto the bricks before the wooden floor was added. The excavations initiated at 7.42 feet and zone 1 was .82 feet deep. Zone 2 was .48 feet deep, and the top of the brick floor was encountered at 6.12 feet (Figure 3).

Unit 3-A measured 3.5 feet north/south and 5.0 feet east/west. The southwest corner of the unit was .9 feet east and .6 feet south of datum point 3-A; the unit was so positioned to locate the excavations within the

Figure 1

A) plan view of the Exchange cellar, showing the location of the tested area.

B) plan view of the tested area, showing locations of excavation units, datum points, and elevation points.


0
10
TOWER
AREA
POWDER MAGAZINE
HALF MOON
BATTERY
STUDY
AREA

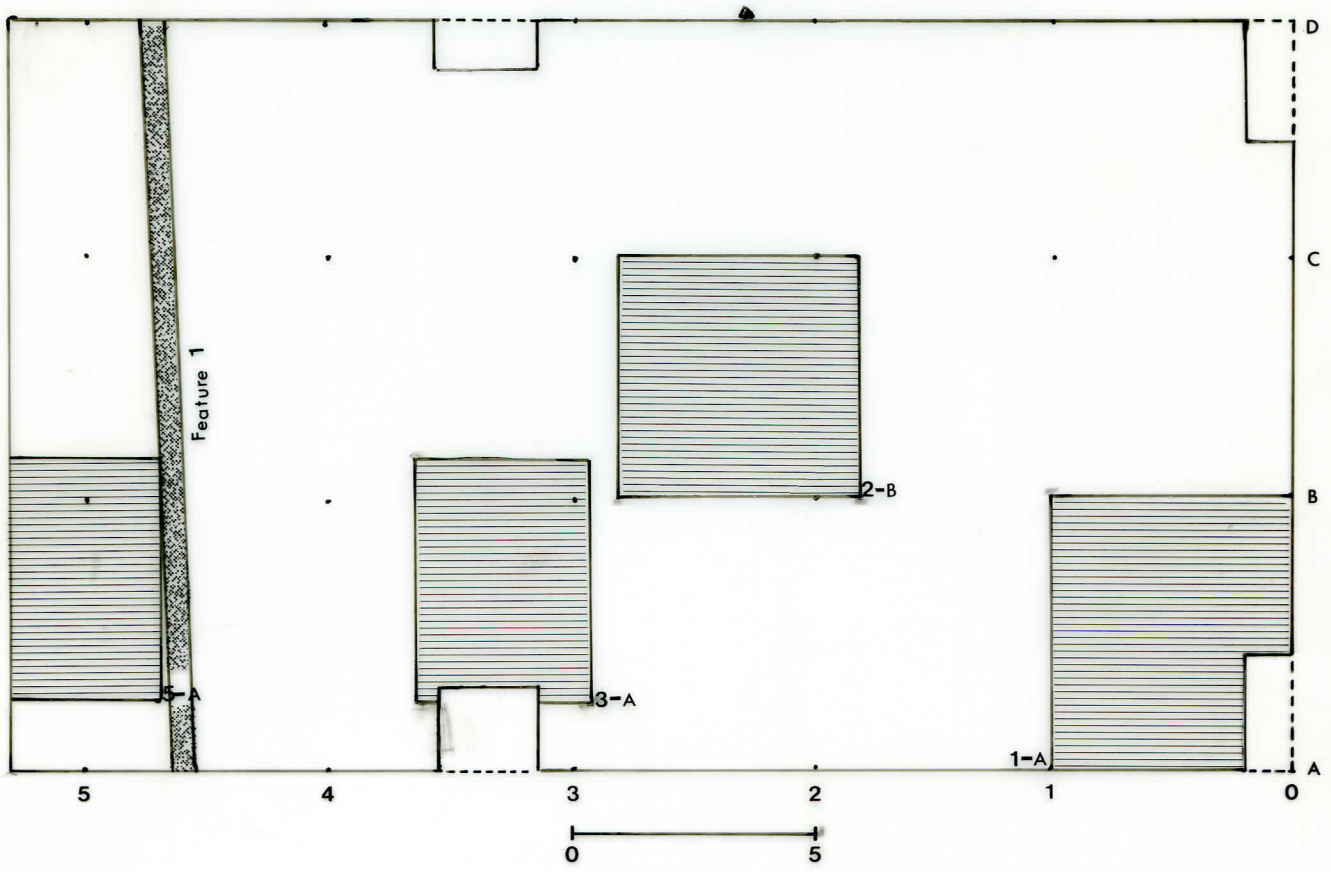

Feature 1
5-A
3-A
2-B
1-A
D
C
B
A
5
4
3
2
1
0
0
5

Figure 2

View of the test area prior to excavation, looking southwest.

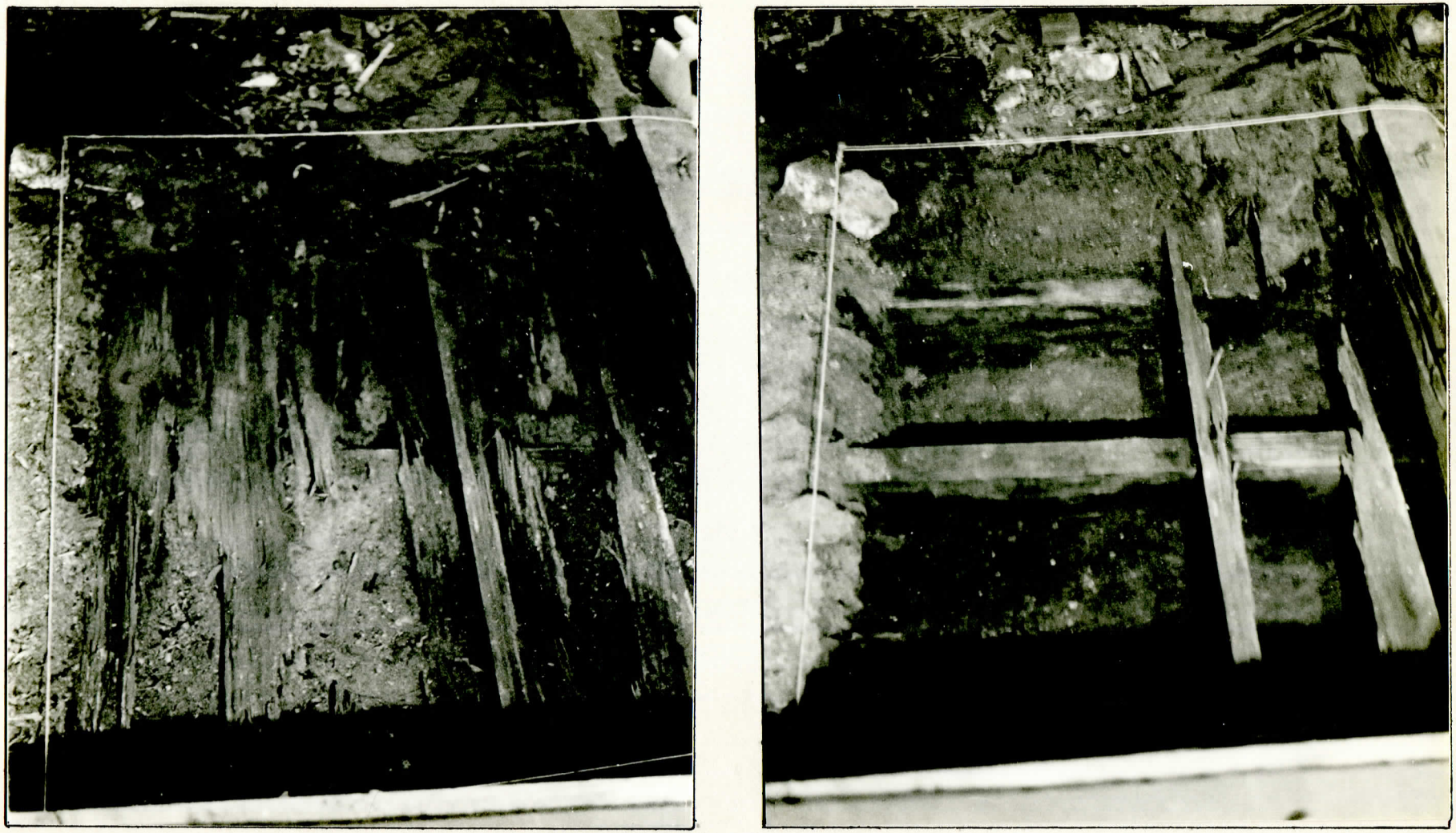


Figure 3

Unit 1-A, facing east
a) base zone 1
b) base zone 2

network of wooden joists. Zone 1 had been removed from this area, so excavation began with zone 2. This zone initiated at 7.51 feet MSL and the brick floor was encountered at 6.96 feet MSL in the northwest corner and 6.34 feet in the southeast corner. Zone 3 was not present in this unit (Figure 4).

Unit 2-B was a 5 foot square. The southwest corner of the unit was 1.0 feet south of the 2-B datum point. Zone 1 was present in the unit. It initiated at 8.97' MSL, and ranged from .48 to 1.25 feet in depth. Zone 1 in this unit contained moderate amounts of coal and large quantities of wood shavings. Present beneath zone 1, flush with the top of floor 2, was a large beam, simply set in the dirt beneath. The beam was 4 feet long, and measured .45 feet by 1.0 feet. The ends were beveled, creating a trimmed measurement of .4 by .9 feet. Zone 2 was shallow, averaging .28 feet in depth. Beneath zone 2 was a previously unencountered deposit of deep grey sand filled with brick rubble. This deposit was labeled zone 2b, in that it did not appear to be the same as zone 3 encountered elsewhere. The brick floor was intact beneath this at a depth of 6.33 feet. A change in the brick bond, from a north/south running bond to an east/west running bond, was noted in the center of this unit. It appears that zone 2b was deposited to fill a low spot in the obviously sloping brick floor (Figure 5).

Unit 5-A was the only unit excavated north of the brick wall, and it exhibited substantially different stratigraphy. Close examination of the brick wall revealed that the joists for floor 2 are tied into it, suggesting that the brick wall is contemporaneous with floor 2, and that this was the northern limits of that floor.

Zone 1 was not present in this unit. The provenience designated zone 2 consisted of a medium brown sand with quantities of brick rubble. The brick floor of the Exchange cellar and zone 3 were present in the southeast corner of the unit, but the brick wall sloped up, and was substantially higher in this unit. Apparently, much of the brick floor was removed in this area for construction of the brick wall (designated feature 1) and floor 2. The zone 3 present on the intact brick was excavated separately. Beneath this was a yellow sand, designated zone 4. Several features intruded into this zone. The first was a builder's trench, designated feature 2, associated with the brick wall, feature 1. Feature 3 was an amorphous area of medium brown sand. These were removed, and zone 4 was excavated. This revealed the top of the half moon battery in the southwest corner of the unit. The wall had been breached elsewhere, and a deposit of debris laden brown soil was present instead. Because further excavations of these pre-Exchange building soils were beyond the scope of the present project, excavations were halted at this point (Figure 6).

Laboratory Methodology

Following excavation, all materials were removed to The Charleston Museum where they were washed, sorted and identified. The first step in the analysis of the assemblage was identification of the materials. Noel Hume (1969) and Stone (1974) were the major sources consulted. Following identification,

Figure 4

Unit 3-A, base zone 2
facing west.

Figure 5

Unit 2-B, facing north

a) base zone 1, with large beam in place.

b) base zone 2b, showing change in brick bond in southwest corner.

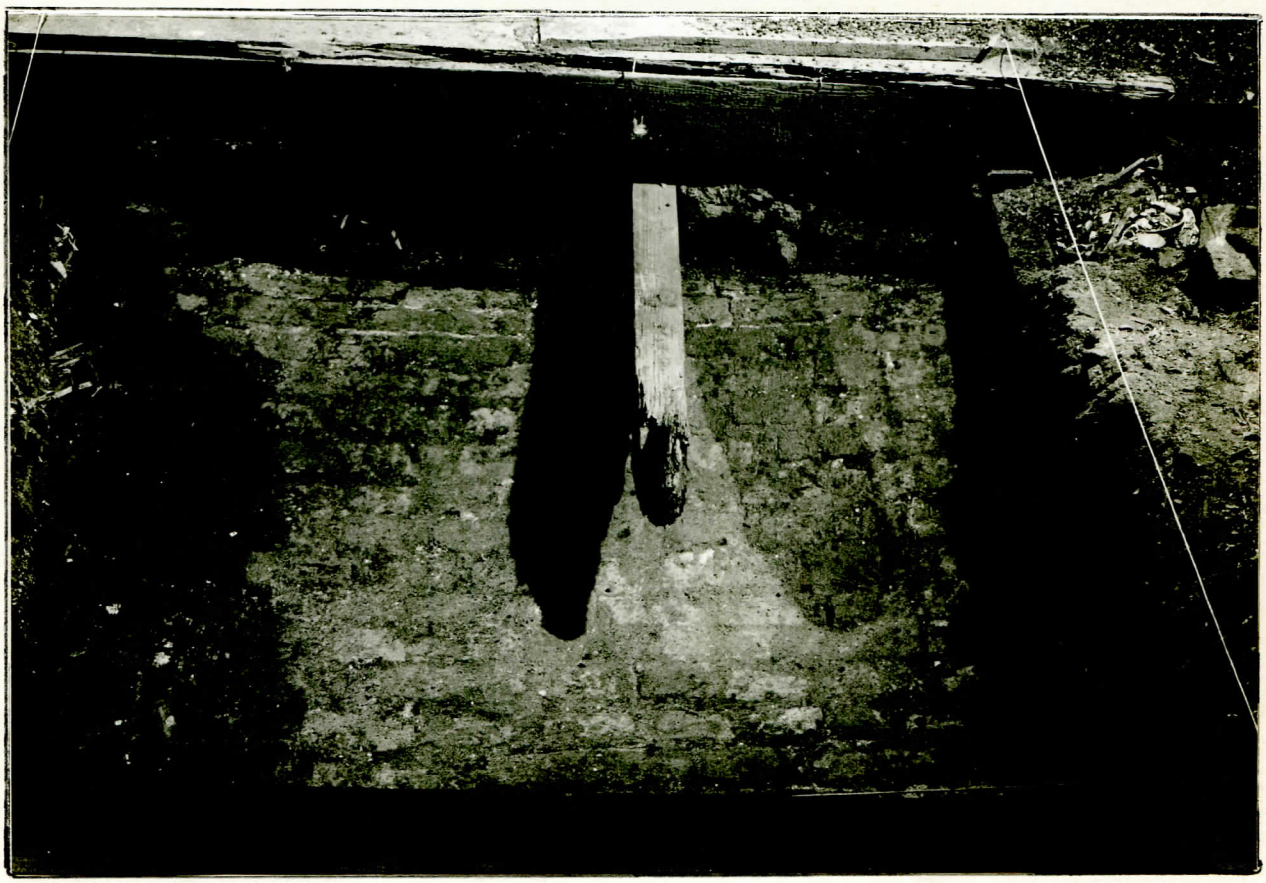


Figure 6

Unit 5-A, facing west, showing features 2, along south wall, and 3, along north wall.

the materials were grouped according to functional categories, based on South's (1977) and Garrow's (1982) models for the Carolina Artifact Pattern. Under this method, artifacts are organized into different types, groups, and classes, based on their function. South's technique has been widely adopted by historical archaeologists, allowing for direct intersite comparison; all of the data from Charleston has been organized in this manner. South's categorization is an extremely useful heuristic device, in that it allows complete quantification of the assemblage.

Conservation and Curation

The excavated materials, plus copies of all field notes and laboratory records, are in the possession of the Exchange Commission. The original field and laboratory records are maintained by The Charleston Museum.

Because of time and budgetary limitations, and the fact that the materials are not being curated by the Museum, no conservation was conducted on the ferrous materials, except where necessary for identification. In order to maintain the materials for perpetuity, it will be necessary to soak all ferrous artifacts in successive baths of distilled water to remove chlorides. The leather artifacts were cleaned and treated with leather dressing.

Dating of the Proveniences

After all of the materials were identified, each provenience was analyzed to determine the date of deposition. This was based on the stratigraphic point of initiation and the terminus post quem (or TPQ), the initial manufacture date of the latest dating item in the provenience (Table 1). Based on this information, the materials were divided into three temporally distinct subassemblages. These consist of 1) zone 1; 2) zones 2 and 3) zones 3-4, plus the features intruding into zone 4. The zone 1 deposits provided a construction date for floor 1, while the zone 2 deposits, in turn, date construction of floor 2. A dispensary bottle, a monogrammed Jo-Jo flask, postdates 1893 (Huggins 1971), providing a TPQ for zone 1 in unit 1-A. A brass telephone receiver hook, dated to 1890-1910, provided a TPQ for zone 1 in unit 2-b (A.T.&T. 1971). The data suggest that floor 1 was constructed in the 1890s, or the early years of the twentieth century.

The zone 2 deposits contained wire nails, manufactured after 1850, and kersone lamp glass, manufactured after 1867. These materials suggest that floor 2 was constructed between 1860-1870. Floor 2 was associated with the brick wall, feature 1. This exhibited a substantial builder's trench, feature 2, but unfortunately no datable materials were recovered from the provenience. It is interesting that feature 2 contains a black glass button, identical to those recovered from other proveniences at the site.

The zone 3 deposits likewise contained no tightly datable material, but the stratigraphic position between the brick cellar floor and zone 2 suggests a late eighteenth/early nineteenth century date of deposition. Zone 4 and

feature 3 predate the construction of the Exchange; the latest dating artifacts in these provenience are oriental porcelain, dating to the mid-1700s, and white saltglazed stoneware, postdating 1740.

The relative proportions of artifacts in the three subassemblages varied considerably, supporting the suggestion that these are discrete deposits (Table 2). Each assemblage will be discussed separately.

Zone 1 assemblage

A total of 1300 artifacts were recovered from zone 1 proveniences. The kitchen group, usually the largest in Charleston assemblages, comprised only 4.4% of the assemblage. This group included six ceramics, two nineteenth century types and four eighteenth century examples. The remainder of the kitchen group consisted of fragments of bottle glass in clear, green, and brown. Two fragmentary and one complete South Carolina Dispensary bottles were recovered, indicating a late nineteenth/early twentieth century date of deposition.

Architectural materials dominated the assemblage, comprising 86.8% of the assemblage. This group consisted of a large number of nails, as well as window glass. Nails include machine cut, manufactured after 1780, and wire nails, manufactured after 1850. A variety of nail sizes were recovered, including a number of finishing nails. It is possible that many of these nails were lost or discarded during the floor construction process. Other architectural materials include screws, spikes, a hinge, a fragment of wire screen, and a keyhole escuteon.

Clothing items comprised 3.2% of the assemblage, and included a porcelain button and a bone 1-hole button. The majority of the group consisted of large numbers of crudely manufactured 5-hole bone discs. It appears that the buttons were made locally, if not on site. The personal group comprised .3% of the assemblage and included a fragment of newspaper, two paper clips, and a safety pin. Furniture items comprised .76% of the assemblage and included fragments of kerosene lamp chimney glass, a brass lock mechanism, and a brass telephone receiver hook. Kaolin pipe fragments comprised .3% of the assemblage.

The activities group was large and varied, comprising 3.2% of the assemblage. Included in this group were a brass nail, a bow saw fragment, a variety of hardware and machine parts, lead scraps, coal, and fragments of barrel straps. Many of the hardware objects, such as nuts and bolts, may be related to construction activities in the building.

Zone 2 assemblage

The zone 2 assemblage consisted of 1050 artifacts, in proportions drastically different from the zone 1 assemblage. Kitchen artifacts comprised 40.95% of the assemblage, and were evenly divided between ceramic and glass materials. It is interesting that, although the zone was deposited after

1860, only two ceramics postdate 1830. The remainder of the ceramic assemblage consists of ceramics manufactured in the eighteenth to early nineteenth century. These include such colonial types as lead glazed slipware, delft, a variety of lead glazed earthenwares, white saltglazed stoneware, and creamware. The relative proportions of these ceramic types are shown in Table 3. Glass artifacts consisted of fragments of green and clear bottle glass, as well as minor amounts of milk glass and manganese glass. Five fragments of iron containers, or tin cans, were recovered. These were manufactureed as early as the 1820s, but were not common until the 1850s (Fontana and Greenleaf 1962). A single rim sherd from a tumbler was the only table glass recovered.

Architectural materials comprised 41.61% of the assemblage and consisted primarily of unidentified nails and fragments of window glass. A number of wire nails were recovered, supporting a post-1850s date of deposition. Other architectural items included a corner brace and a hinge. Arms items comprised .19% of the assemblage and consisted of a lead shot and a fragment of worked flint. Clothing items comprised 7.23% of the assemblage and included a variety of items. The majority of this group consisted of the same crude bone 5-hole buttons present in zone 1. Other artifacts included seven black glass buttons with a wire eye. All seven were recovered in a single unit. Other artifacts included three iron buttons, two brass buttons, and a glass tube bead. The final clothing artifact was a pair of iron scissors. Personal items comprised .38% of the assemblage and included a bone toothbrush handle and three watch keys. The final item was a 1788 Spanish coin. Furniture items comprised 1.14% of the assemblage, and included brass upholstery tacks and chimney lamp glass. Kaolin pipe fragments comprised 3.8% of the assemblage. The activities group comprised 4.66% of the assemblage and included a variety of items. Among these were barrel strap fragments, lead scraps, coal, a bolt, a flower pot fragment, scraps of leather, and a child's stone marble.

Zone 3 assemblage

The zone 3 assemblage consisted of the materials from zones 3 and 4, plus feature 3. This rather small assemblage consisted only of 167 objecst. The majority of these materials, particularly in zone 3, were very fragmentary. Kitchen items were the predominant artifacts, comprising 75.4% of the assemblage. Ceramics consisted of eighteenth century types; porcelain, creamware, whieldon ware, slipware, white saltglazed stoneware, Nottingham stoneware, Westerwald stoneware, delft, and lead glazed earthenwares. Creamware, manufactured after 1750, was the latest dating object in the assemblage. Other kitchen artifacts included green and clear bottle glass, and a tumbler rim.

Architectural items comprised 16.7% of the assemblage and consisted entirely of unidentified nails and window glass. Clothing items comprised 3.5% of the assemblage and included four black glass buttons, a bone button, and a brass button. The single activities item, a fragment of a clay flower pot, comprised .59% of the assemblage. Tobacco pipe fragments comprised 3.5% of the assemblage. No arms, personal, or furniture items were recovered.

Table 1

Provenience Guide

Field #	Provenience	Function	TPQ	Date of Deposition
FS 1	unit 1-A, zone 1	fill	1893, dispensary	1890s
FS 10	unit 2-B, zone 1	"	1890s, telephone hook	1890s
FS 2	unit 1-A, zone 2	fill	1830, whiteware	1860s
FS 4	unit 3-A, zone 2	"	1850s, wire nail	"
FS 5	unit 5-A, zone 2	"	1867, lamp glass	"
FS 6	unit 5-A, zone 2 trowel	"	-	"
FS 11	unit 2-B, zone 2	"	1867, lamp glass	"
FS 12	unit 2-B, zone 2b	"	1850s, tin can	"
FS 7	unit 5-A, fea 2	builders trench	-	"
FS 3	unit 1-A, zone 3	zone	1750s, creamware	1780-1790s
FS 9	unit 5-A, zone 3	"	-	"
FS 8	unit 5-A, fea 3	pit	1760, porcelain	1760s
FS 13	unit 5-A, zone 4	fill?	1740, white sg stoneware	1750s
FS 14	unit 5-a, zone 4-5	"	1740, white sg stoneware	1750s

Table 2

Relative Proportions of Artifacts

	Zone 1		Zone 2		Zone 3		Carolina Pattern
	#	%	#	%	#	%	%
Kitchen	57	4.38	430	40.95	126	75.44	63.0
Architecture	1129	86.4	437	41.61	28	16.76	25.5
Arms	0	-	2	.19	0	-	.5
Clothing	48	3.20	76	7.23	6	3.50	3.0
Personal	4	.30	4	.38	0	-	.2
Furniture	10	.76	12	1.14	0	-	.2
Pipes	4	.30	40	3.80	6	3.50	5.8
Activities	8	3.20	49	4.66	1	.59	1.7
	1300		1050		167		

Table 3

Quantification of the Assemblages

	Zone 1	Zone 2	Zone 3
Kitchen			
porcelain, white	1	3	
porcelain, oriental		28	6
misc stoneware		1	
brown saltglazed stoneware		11	
grey saltglazed stoneware		8	
white saltglazed stoneware		18	
Nottingham			1
Creamware	1	56	7
Whieldon ware			1
Pearlware, plain		4	
pearlware, transfer print		3	
pearlware, hand painted		10	
pearlware, shell edged		1	
pearlware, annular		1	
whiteware		2	
slipware	1	19	12
delft	2	23	8
tortoise shell earthenware		2	2
North Devon ware		1	1
lead glazed earthenware	1	5	
lead glazed redware		7	
unglazed earthenware		1	
Jackfield ware		3	
colono ware		3	2
black glass	9	151	59
light green glass	17	23	8
clear bottle glass	19	23	13
dispensary bottle	3		
milk glass	1	3	
brown glass	5		
manganese glass		13	
table glass		1	1
iron container		5	
Architecture			
wire nail	283	22	
cut nail		9	
wrought nail	1	5	
ud nail	503	257	20
spike	1		
screw	11	1	
hinge	1	1	
window screen	1	1	
window glass	282	140	8
keyhole	1		
brace		1	

Table 3, cont.

Arms			
lead shot		1	
flint		1	
Clothing			
porcelain button	1		
black glass button		7	4
bone 5-hole button	44	63	
bone, other	1		1
iron button		3	
brass button		2	1
scissors		1	
bead		1	
Personal			
paper clip	2		
toothbrush		1	
safety pin	1		
watch key		3	
coin		1	
Furniture			
chimney glass		4	
telephone hook	1		
brass tack		8	
lock part	1		
Pipes	4	36	6
Activities			
ud	4	1	
machine part	2		
wire	1	2	
strap fragment	5	6	
lead scrap	6	4	
coal	12	17	
bolt	4	1	
flower pot		1	1
marble		1	
leather	2	16	
bow saw	1		
brass nail	1		
nut	2		
staple	1		

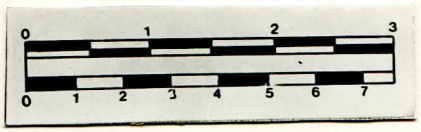
Figure 7

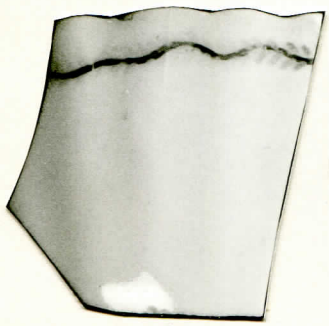
Glass and Ceramic Artifacts

a) South Carolina Dispensary bottle, zone 1
b) Mold blown pharmaceutical bottle
c,d) Overglaze decorated porcelain
e) White Saltglazed Stoneware, dot diaper basket pattern
f) White Saltglazed Stoneware cup
g) Lead glazed earthenware, possibly American
h,i) Combed and Trailed Slipware
j) Redware flower pot fragment
k) Staffordshire earthenware
l) Mottled ware

A

B





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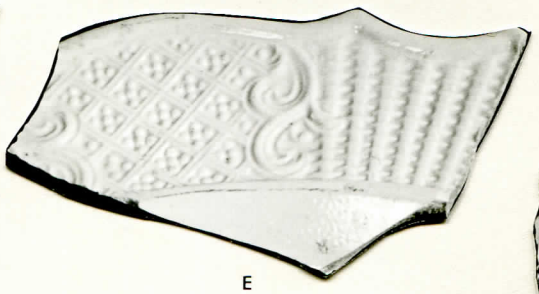

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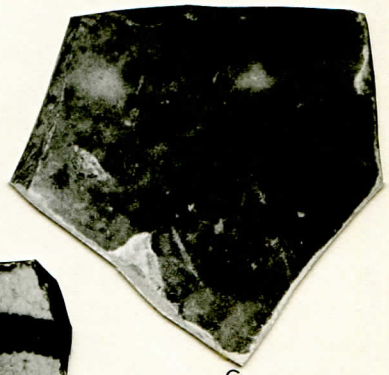

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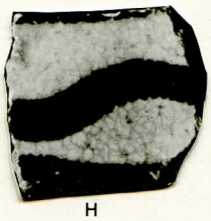

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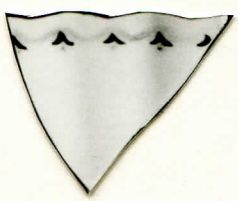

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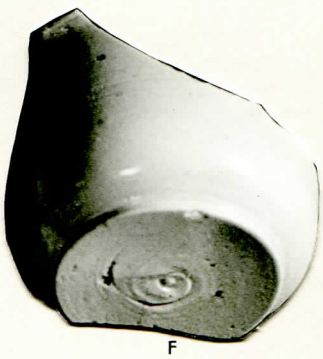

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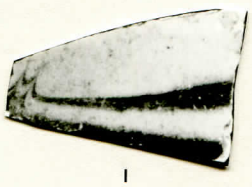

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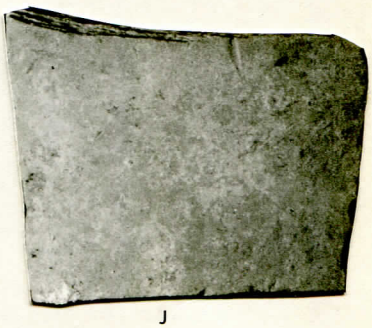

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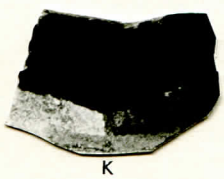

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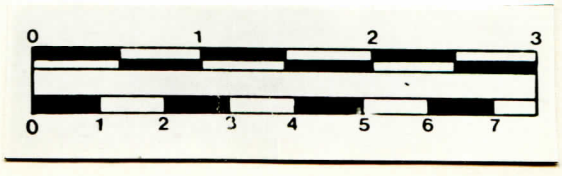
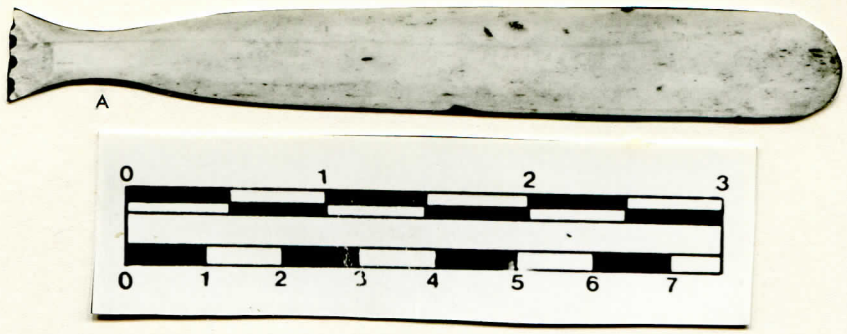


L

Figure 8

Miscellaneous Artifacts

a) bone toothbrush handle
b) hand blown bottle base
c) scissors
d) lead shot
e) pharmaceutical bottle neck, with cork intact
f) pipe bowl
g-i) watch keys
j-n) hand made bone buttons
o-q) black glass buttons
r) drawer pull, brass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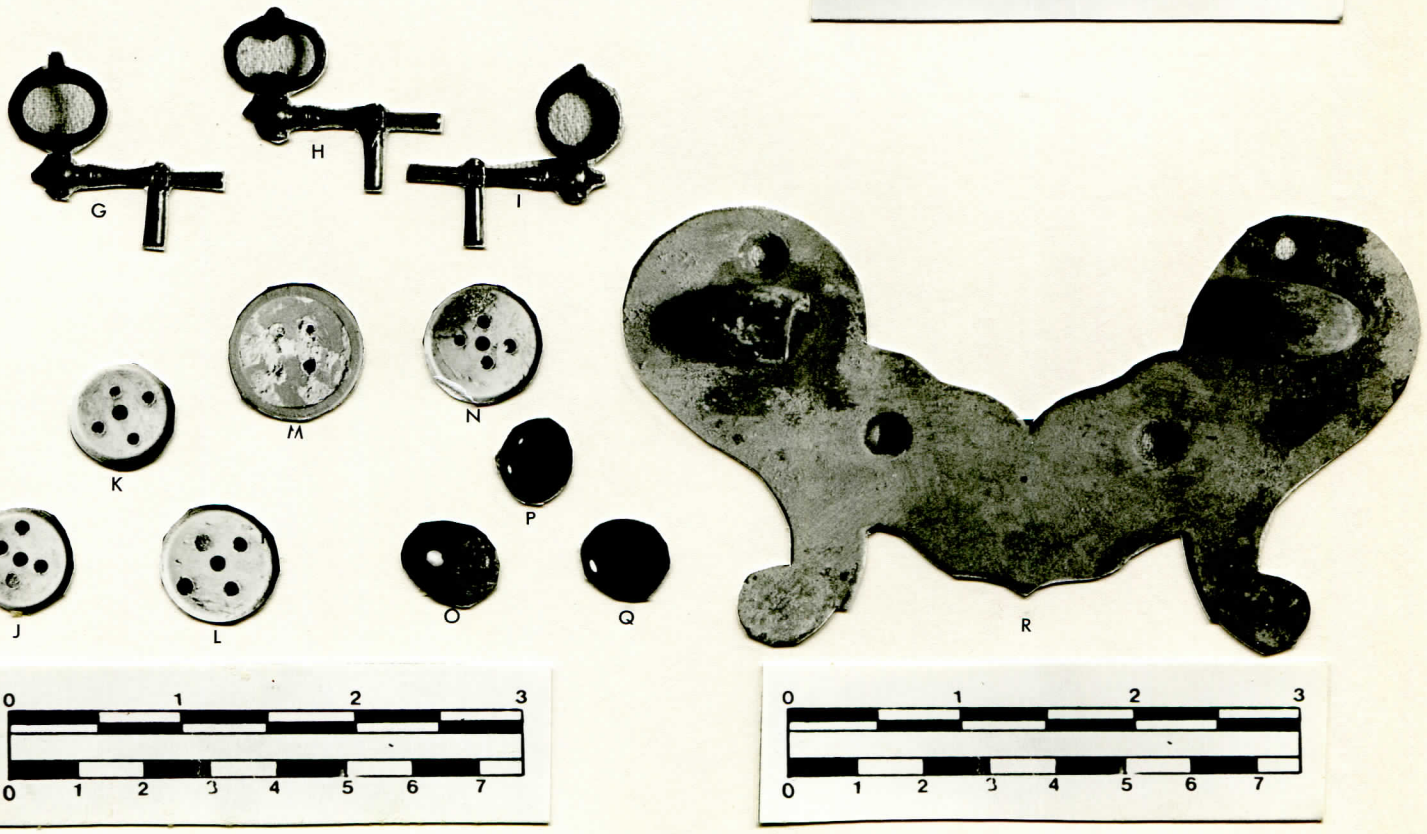
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CHAPTER III

Interpretations

While the project was limited in scope and results, excavation of the fill has provided data useful for interpreting a sequence of construction events at the Exchange and, on a more general level, on the archaeological record of the city.

The project revealed evidence of three distinct archaeological episodes; two of these deposits represent fill episodes; that is, the soils comprising zones 1 and 2 were transported from another area and deliberately deposited on the Exchange building interior. Zone 3, in contrast, appears to be a primary deposit; it appears that the thin zone represents a gradual accretion of soil and artifacts, accumulating as the result of daily pedestrian traffic in the building. The artifacts contained in this soil, then, were probably used and discarded at the Exchange. These artifacts were all extremely small. It has been noted that one of the most visible results of trampling and other cultural disturbances is size reduction of the artifacts (Baker 1978; Schiffer 1977).

The soils comprising zones 1 and 2 represent an entirely different type of archaeological behavior. Filling is the deliberate introduction of soils to produce a more desirable ground surface. The result of the introduction of fill to an archaeological site, particularly within the city of Charleston, is the introduction of artifacts contained in that fill. The artifacts thus were originally deposited elsewhere, and the source of these materials is often unknown. Archaeologists have traditionally concentrated their research efforts on primary deposits, or those that have remained in place since they were originally discarded. Secondary deposits, such as fill, in which the materials have been removed from their original place of deposit, were considered "disturbed", and thus incapable of providing reliable information. Archaeologists working in urban areas, however, have found that such reorganization, or the creation of secondary deposits, is actually a true reflection of urban behavioral processes (Honerkamp et al. 1983). In Charleston, for example, refuse from city households was routinely dumped into lowlying areas and along the waterfront in order to fill such niusance areas and to create additional real estate; the soils which serve as the foundation for the Exchange building are entirely secondary deposits (Zierden and Calhoun 1984, 1986). Analysis of fill, then, is important to ongoing research in Charleston.

Analysis of the materials provide some clues to the source of the fill comprising zones 1 and 2. The high percentage of architectural and hardware items in zone 1 suggest that these materials were generated on site by construction activities, of which the new floor was a part. It is possible that the soil used as a foundation for floor 1 was relatively sterile, and that these materials accumulated in the soil during the construction process.

In contrast, the artifact assemblage in zone 2 suggests that earlier midden material, dating to the late eighteenth century, was used as fill for the mid-nineteenth century floor construction. The presence of only one post-1830 ceramic in a deposit dating to 1860 supports this interpretation. It appears that the fill material may have been excavated from nearby, possibly right outside the Exchange. This is based on the similarity of the artifacts in the fill to materials recovered elsewhere on the site, both inside and outside the structure. In particular, the black glass buttons recovered from zone 2 are identical to four recovered by John Miller in 1965. Unfortunately, those recovered by Miller have no provenience information, so it is impossible to determine whether these predate of postdate construction of the Exchange. The fact that they were also recovered from features 2 and 3, which initiated below the brick floor, suggest that Miller's could also predate the Exchange. The fact that no such buttons have been recovered from other sites in Charleston further supports the suggestion that all of these were originally deposited on site.

The large number of buttons recovered from the zone 2 deposits suggests specialized activities at the Exchange. In addition to the unusual black glass buttons, the plain bone 5-hole buttons are also uncommon, and their recovery in such large numbers is extremely unusual. While no button blanks were recovered, it is highly likely that the buttons were manufactured on site. An alternate explanation is that bulk quantities of these were stored at the Exchange for some purpose, and that a large number were lost through cracks in the floor boards. Loss of small objects is a common site formation process (Schiffer 1977).

Finally, the project has provided information on a series of alterations to the Exchange. Some time after 1860, it appears that a small room or office was created in the southeast corner by construction of a brick foundation, which probably supported a wooden wall. Adjoined to this wall was a wooden floor. Evidently, a dirt foundation was necessary, for the brick cellar floor was extremely uneven; during the late eighteenth/early nineteenth century, the Exchange cellar was heavily used. It appears that dirt and refuse accumulated, and was trampled into the brick floor. The construction of the Exchange on top of the old seawall and a foundation of fill resulted in settling over the years. The brick floor became very uneven, and more dirt and brick rubble was used to fill the low places, as evidenced by zone 2b. As part of the construction of the wooden floor, a certain amount of wedging and patching was necessary to level it, even after the introdution of the fill. By the end of the nineteenth century, this floor was no longer servicable, and a replacement floor was constructed on top of the old floor. Once again, fill dirt was brought in to make a level foundation, and this dirt also collected a large amount of construction debris.

Recommendations

The fill layers contained a surprisingly large and varied artifact assemblage. Preservation was excellent, as demonstrated by the presence of the paper label on the dispensary bottle recovered from zone 1. Faunal and floral remains

were present, and were in excellent condition. It was possible to discern separate building episodes and three separate temporal components. It was also possible to suggest the origin of much of the materials, and to suggest previously undocumented activities at the site.

Based on these results, it is clear that the soils examined constitute an important archaeological data base. The remaining soils should be preserved if at all possible; this is the only portion of the site where these deposits still exist. A new wooden floor could be constructed on top of the existing soils with little adverse impact. An alternative would be to excavate the remaining soils, which would probably take 5 to 7 days of fieldwork, followed by an appropriate period of laboratory analysis and report writing.

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VERTEBRATE FAUNA FROM THE CHARLESTON EXCHANGE BUILDING

Elizabeth J. Reitz

Department of Anthropology

University of Georgia

Athens, GA 30602

July 1, 1988

Abstract. Vertebrate and invertebrate fauna recovered by Martha Zierden, The Charleston Museum, from the Charleston Exchange Building were examined. The vertebrate sample contained 302 fragments, weighing 1,448.40 gm, and contained the remains of at least 27 individuals. The sample was subdivided into three temporal groups and hence provides a rare glimpse into the use of food at a public building between 1750 and the 1890's. While the importance of sample size bias and disturbances associated with urban growth cannot be overlooked, it appears that even vertebrate remains from secondary deposits such those from the Exchange Building may accurately reflect the urban diet.

INTRODUCTION

One of the chief problems associated with zooarchaeological analysis of subsistence strategies and environmental relationships in the urban setting is that biological samples are often very small and of dubious integrity. The small sample size can be attributed to the fact that generally only a small amount of any site is excavated and that often the excavation units are placed so as to maximize recovery of architectural features and/or cultural information other than animal remains. It is possible that few animal bones were actually ever discarded on particular lots and it is probable that what bones were discarded had to survive a wide range of post-depositional assaults in order to become part of the recovered archaeological assemblage. As a consequence zooarchaeological analysis is often omitted from the routine archaeological study of urban sites.

Over the past several years The Charleston Museum has regularly included zooarchaeological studies in the archaeological program of study. Most of the faunal collections studied have been very small, their temporal affiliation often imprecise (although always better than that enjoyed for prehistoric deposits), their relationship with a specific social or economic activity unknown, and the cultural association tentative.

In 1986 what was known of Charleston subsistence from the archaeological record was summarized (Table 1; Reitz 1986). Only two of the five collections included in this statistical summary contained over 100 individuals. Each of the Charleston faunal collections studied since that time has been compared to this summary. In each case the new collection was found to conform to the summary very closely. Variations from the summary could often be explained by what little was known of the specific case under study. Although it runs counter to what most archaeologists believe, it may in fact be true that urban faunal usage, at least in Charleston, was remarkably uniform within the city. So much so that the processes involved in forming the archaeological assemblages have not produced any major deviation in the archaeological record's reflection of that use.

The vertebrate collection from the Charleston Exchange Building is a good case in point. Excavations took place within the basement of the building. Most of the animal remains were recovered from a layer of fill dirt between two floors; yet the vertebrate remains from this deposit very closely match the original Charleston summary. It appears that there is good reason to believe that fill deposits can be relied upon to provide useful information about urban life.

METHODS

Field work in the Charleston Exchange Building was conducted in 1986 by Martha Zierden, The Charleston Museum. During

excavation, faunal materials were recovered using 1/4-inch screen. Three separate zones, deposited between 1780 and 1890, were identified. A list of the samples examined for this study are included in the appendix.

These zones are associated with the commercial and social functions of the Exchange Building. The building was used for storage, public meetings, entertainment, a prison, finally it housed the Federal Customs House, Post Office, and other government offices (Zierden and Hacker 1986). The materials recovered from zone 1, deposited during the 1890's, were probably debris which accumulated during construction at the site during this period. The remains found in zone 2 were probably included in fill brought into the building from elsewhere, possibly from immediately outside the building when a new floor was laid. This zone had a TPQ for the 1860's. The materials associated with zone 3 (1750-1790's) were probably deposited in place and trampled underfoot during the early history of the building.

The vertebrate materials recovered were examined using standard zooarchaeological methods. All identifications were made by C. Scott Butler and Elizabeth J. Reitz using the comparative skeletal collection of the Zooarchaeological Laboratory, Department of Anthropology, University of Georgia. Bones of all taxa were counted and weighed to determine the relative abundance of the species identified. A record was made identified elements. Age, sex, and bone modifications were

noted when observed. Butchering marks, such as cutting, slicing, or hacking, were recorded and where preservation allowed measurements were taken following the guidelines established by Angela von den Dreisch (1976). Minimum Number of Individuals (MNI) were determined based on paired elements and age. In calculating MNI, faunal materials recovered from the three zones were considered discrete analytical units.

While MNI is a standard zooarchaeological quantification medium, the measure has several problems. MNI is a measure which emphasizes small species over large ones. This is easily demonstrated by a hypothetical sample which consists of four rats and only one deer. While four rats represent a larger number of individuals, one deer will supply substantially more meat. A further problem with MNI is the assumption that the entire individual was utilized at the site. From ethnographic evidence we know that this is not necessarily the case, particularly in regard to larger individuals and for animals utilized for special purposes (White 1953; Thomas 1971). This is an especially relevant issue when dealing with historic samples where marketing of processed meat products was substantial, but the exact extent unknown. Additionally, MNI is influenced by the manner in which the data from the archaeological proveniences are aggregated during analysis. The aggregation of separate samples into one analytical whole (Grayson 1973), allows for a conservative estimate of MNI while the "maximum distinction" method applied when analysis discerns

discrete sample units results in a much larger MNI. Furthermore, some elements are simply more readily identified than others and the taxa represented by these elements may appear more significant in the species list than they were in the diet.

Biomass determinations attempt to compensate for problems encountered with MNI. Biomass provides information on the quantity of meat supplied by the animal. The predictions are based on the allometric principle that the proportions of body mass, skeletal mass, and skeletal dimensions change with increasing body size. This scale effect results from a need to compensate for weakness in the basic structural materials, in this case, bone. The relationship between body weight and skeletal weight is described by the allometric equation:

$$Y=aX^{b}$$

(Simpson et al. 1960:397). Many biological phenomena show allometry described by this formula (Gould 1966, 1971). In this equation, X is the skeletal weight or a linear dimension of the bone, Y is the quantity of meat or the total live weight, b is the constant of allometry (the slope of the line), and a is the Y-intercept for a log-log plot using the method of least squares regression and the best fit line (Casteel 1978; Wing and Brown 1979; Reitz and Cordier 1983; Reitz et al. 1987). A given quantity of bone or a specific skeletal dimension represents a predictable amount of tissue due to the effects of allometric

growth. Values for a and b are obtained from calculations based on data at the Florida State Museum, University of Florida. The allometric formulae used here are presented in Table 2.

Biomass and MNI are subject to sample size bias. Casteel (1978), Grayson (1979), and Wing and Brown (1979) suggest a sample size of at least 200 individuals or 1400 bones for a reliable interpretation. Small samples frequently will generate a short species list with undue emphasis on one species in relation to others. It is not possible to determine the nature or the extent of the bias, or correct for it, until the sample is made larger through additional work.

The presence or absence of elements in an archaeological sample provides data on butchering and animal husbandry practices. The elements recorded from the Charleston Exchange Building were summerized into categories by body parts. Head category includes only teeth. The atlas and axis formed a separate category. The forequarter category includes the scapula, humerus, ulna, and radius. No carpals or metacarpals, associated with the forefeet, were identified. The hindfeet include the tarsals and metatarsals. The hindquarter category includes the innominate, sacrum, femur, and tibia. The feet contain bones identified only as metapodials and phalanges. These elements could not be assigned to other categories.

Relative ages of the species identified were noted based on observations of the degree of epiphyseal fusion for diagnostic elements. When animals are young their bones are not fully

formed. Along the area of growth the shaft and the end of the bone, the epiphyses, are not fused. When growth is complete the shaft and epiphysis fuse. While environmental factors influence the actual age at which fusion is complete (Watson 1978), elements fuse in a regular temporal sequence (Gilbert 1980; Schmid 1972; Silver 1963). During analysis, bones identified were recorded as either fused or unfused; the bones were then placed into one of four general categories based on the age in which fusion generally occurs. This is more informative for unfused bones which fuse in the first year or so of life and for fused bones which complete growth at three or four years of age than for other bones. An element which fuses before or at eighteen months of age and is found fused archaeologically could be from an animal which died immediately after fusion was complete or many years later. The ambiguity inherent in age grouping is somewhat reduced by recording each element under the oldest category possible. Attempts to age animals are particularly relevant to an historic site. Indications of an animal's age may provide data concerning animal husbandry practices such as the utilization of younger animals for food and older animals for nonfood by-products.

In order to summerize the data, the species list was reduced into several categories based on vertebrate class and husbandry practices. Domestic mammals include pigs (Sus scrofa) and cows (Bos taurus). Domestic birds were chickens (Gallus gallus). Wild birds include ducks (Anas spp.), Canada geese (Branta

canadensis), and turkeys (Meleagris gallopavo). Canada geese and turkeys may actually belong in the category of domestic birds. According to the American Poultry Association (1874) standards of excellence for these two species had been established by the mid-eighteenth century. The only wild mammals identified were deer (Odocoileus virginianus). Aquatic reptiles included only diamondback terrapin (Malaclemys terrapin). Commensal taxa included rats (Rattus norvegicus) and a cat (Felis domesticus). It should be noted that only biomass for those taxa for which MNI had been determined is included in the summary table. For example, biomass for UID Fish is not included, while biomass for Anatidae is.

RESULTS AND DISCUSSION

The faunal sample recovered from the Charleston Exchange is very small, containing 302 bone fragments and the estimated remains of 27 individuals (Table 3). The collection weighed 1,448.40 gms. Bone preservation was quite good, with an unusually large amount of the collection being identifiable beyond the class level. Most of the materials were recovered from the second zone, which was fill between two floors (Tables 4 and 5).

As elsewhere in Charleston (Reitz 1986), most of the bones recovered from the Exchange Building were from domestic animals

(Table 6). Domestic mammals contributed 22% of the individuals and 84% of the biomass in the sample. This is very similar to the Charleston percentage tabulated in 1986. Pigs (Sus scrofa) and cattle (Bos taurus) contributed the same number of individuals, but cattle contributed the majority of the biomass. Of the possible domestic birds, only chickens (Gallus gallus) were identified in the Exchange collection. Chickens contributed 19% of the individuals, although only 4% of the biomass.

Wild animals were included in the collection. The only wild mammal identified was a deer (Odocoileus virginianus) identified from zone 2. Of more importance were the wild birds. The most common of these were Canada geese (Branta canadensis) and other ducks (Anatidae; Anas spp.). A single turkey (Meleagris gallopavo) was identified. Likewise, the remains of a single diamondback terrapin (Malaclemys terrapin) was recovered. While none of these identifications are unusual for Charleston collections, the fish remains did include some surprises. The identification of a possible codfish (cf. Gadidae) represents the first time that remains of one of the fishes involved in the trade of salt fish has been identified from Charleston. This tentative identification was made on the basis of a badly damaged preoperculum, but suggests that it may be possible to find archaeological evidence that salt fish were used in the town where the deposit is relatively protected. The second unusual identification is the snapper (Lutjanidae). While some

snappers are present in Charleston waters, they are not common. It is possible that this fish was caught outside of the harbor.

The number of commensal taxa identified in the Exchange collection is somewhat high compared to the 1986 summary for Charleston. The commensal taxa included one cat (Felis domesticus) and five rats (Rattus spp.; R. norvegicus). At least two of these rats were Norway rats, although the other three individuals could not be identified to species. It does not seem unexpected to have larger numbers of rats associated with this type of context.

The elements identified in the Exchange sample are presented in Table 7. The distribution of elements for cows and pigs is similar to that found at other Charleston sites. Usually the presence in archaeological assemblages of both meaty cuts, represented by forequarters and hindquarters, and of non-meaty cuts, represented by teeth and bones from the foot, suggests that on-site slaughter and butchering of animals had taken place. It seems unlikely that live animals were slaughtered at the Exchange Building. The presence of cuts of meat represented by non-meaty bones is often associated with lower socio-economic status; although this association has not been found to be a strong one in Charleston. The identification of large numbers of non-meaty cuts in the Exchange collection is a case in point. If most of the debris from zone 2 was generated through activities occurring in the Exchange during the 1860's, it should not be representative of lower status activities. While

food consumption was not a major activity at the site, what did occur was primarily associated with business activities and elegant entertainment. It appears increasingly possible that cuts containing non-meaty bones were not as undervalued as they are today.

Modifications to the bones included hacking, burning, sawing, cutting, and what are referred to as sliced bones, and gnawing by both carnivores and rodents (Table 8). Small percentages of the collection had been hacked, burned or sliced. Hack marks closely resemble cut marks in their shape and irregularity but are deeper and wider. They may indicate the use of a cleaver in butchering. The one burned bone was from zone 1. Sliced bones were ones which had smooth, clean surfaces such as would be found on bones which had been sawed, but lacked the striations typical of sawed bone. Both sliced bones were identified fron zone 2. Sawing, found on 20% of the modified bones, was limited to mammalian elements. Sawing was not present on bones from zone 3. Cut marks, probably representing incisions left by a knife used to deflesh meat from the bone either as a result of preparation techniques or during consumption, were found on 21% of the modified bones. The dominant modification was gnawing. A large portion of the modified bones were gnawed by carnivores, probably by dogs rather than by cats, but 39% of the modified bones had been gnawed by rodents, presumably by rats. The high incidence of gnawing is usually interpreted as evidence that the materials

lay exposed for some time after they were discarded. However, the location of these bones under the floor of a basement in an old building suggests that these bones may have been gnawed after they were deposited in the fill. The fact that few of the bones have been burned, a modification commonly found on bones which have been exposed in cities which have experienced fires, suggests that many if not all of these bones were gnawed inside the building rather than outside. All of the carnivore gnawed bones were from zones 1 and 2 and all but one of the rodent gnawed bones were from these same zones.

There was very little evidence for age at death for the animals in this assemblage (Table 9) and no evidence for sex. At least two of the pigs were subadults when they died. One of the cows was less than 3 years of age and another was over 18 months of age when it died. The age of the other pig and cow individuals was indeterminate. Interesting, the cat was actually a kitten which died a few days after birth. One of the chickens was a juvenile at death and the turkey may have been young as well.

Table 10 contains the measurements taken from the Charleston Exchange collection. These will be added to the growing data base from Charleston which will be used to analyze the size of domestic animals used in Charleston during the eighteenth and nineteenth centuries.

CONCLUSION

Although the vertebrate sample from the Exchange Building is a small one primarily recovered from fill, it has contributed to our knowledge of Charleston. Perhaps the most interesting contribution is the similarity this collection has to the Charleston summary. This suggests that urban faunal collections, even when from fill, may consistently reflect the urban diet. The collection also raises the possibility that non-meaty cuts of meat may not have been low status foods in the past. Finally, the Exchange collection documents the archaeological presence of cod in Charleston and the snapper suggests that some off-shore fishing contributed to the Charleston diet.

Acknowledgements. I wish to thank Martha Zierden for the opportunity to examine the faunal remains from the Exchange Building. I am particularly grateful for her permission to use the Exchange sample as a student's class project in Zooarchaeology. The student was C. Scott Butler. His work is incorporated into this report.

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Table 1. Charleston Summary".

	MNI	%MNI
Domestic Mammals	167	28.9
Domestic Birds	114	19.7
Wild Mammals	47	8.1
Wild Birds	44	7.6
Aquatic Reptiles	31	5.4
Fishes	114	19.7
Commensal Taxa	61	10.6
TOTALS	578	

"(Reitz 1986)

Table 2. Allometric Values Used in Study.

Faunal Category	N	Y-Intercept (a)	Slope (b)	r^2
Bone Weight (kg) to Body Weight (kg)				
Mammal	97	1.12	0.90	0.94
Bird	307	1.04	0.91	0.97
Turtle	26	0.51	0.67	0.55
Osteichthyes	393	0.90	0.81	0.80
Non-Perciform Fish	119	0.85	0.79	0.88
Perciformes	274	0.93	0.83	0.76

Table 3. Charleston Exchange: Species List.

	NISP	MNI	Wt, gms		Biomass	
		#	%		Kg	%
UID Mammal	25			46.4	0.889	3.8
UID Lg Mammal	119			356.9	5.526	23.6
UID Rodent	1			0.2	0.006	0.03
Rattus spp.	17	5	18.5	8.2	0.180	0.8
Old World rat						
Rattus norvegicus	2			2.7	0.064	0.3
Norway rat						
Felis domesticus	1	1	3.7	0.5	0.014	0.06
Domestic cat						
Artiodactyl	57			474.5	7.446	31.8
Sus scrofa	9	3	11.1	80.9	1.517	6.5
Pig						
Odocoileus virginianus	4	1	3.7	15.9	0.317	1.4
Deer						
Bos taurus	13	3	11.1	387.5	6.097	26.1
Cow						
UID Bird	22			19.5	0.317	1.4
Anatidae	6	2	7.4	3.7	0.067	0.3
Duck family						

Table 3. Charleston Exchange: Species List. (cont.)

	NISP	MNI	Wt, gms		Biomass	
		#	%		Kg	%
Anas spp.	1			0.8	0.017	0.07
Duck						
Branta canadensis	5	2	7.4	11.9	0.206	0.9
Canada goose						
Gallus gallus	11	5	18.5	23.9	0.401	1.7
Chicken						
Meleagris gallopavo	1	1	3.7	5.7	0.100	0.4
Turkey						
UID Turtle	2			2.2	0.064	0.3
Malaclemys terrapin	1	1	3.7	3.4	0.072	0.3
Diamondback terrapin						
UID Fish	2			0.9	0.027	0.1
cf. Gadidae	1	1	3.7	1.6	0.044	0.2
possible codfish						
Lutjanidae	1	1	3.7	0.9	0.025	0.1
Snappers						
Mugil spp.	1	1	3.7	0.2	0.007	0.03
Mullet						
TOTAL	302	27		1448.40	23.403	

Table 4. Charleston Exchange: Count and MNI for Time Periods.

	1890's		1860's		1750-1790's	
	NISP	MNI	NISP	MNI	NISP	MNI
UID Mammal	12		13			
UID Lg Mammal			82		37	
UID Rodent					1	
Rattus spp.	1	1	16	4		
R. norvegicus			2			
Felis domesticus			1	1		
Artiodactyl	17		34		6	
Sus scrofa	3	1	4	1	2	1
Odocoileus virginianus			4	1		
Bos taurus	1	1	9	1	3	1
UID Bird			20		2	
Anatidae			6	1		
Anas spp.					1	1
Branta canadensis	1	1	4	1		
Gallus gallus	1	1	6	2	4	2
Meleagris gallopavo	1	1				
UID Turtle			1		1	
Malaclemys terrapin			1	1		
UID Fish			2			
cf. Gadidae			1	1		
Lutjanidae			1	1		
Mugil spp.			1	1		
TOTAL	37	6	208	16	57	5

Table 5. Charleston Exchange: Weight and Biomass by Time Period.

	1890's		1860's		1750-1790's	
	Wt	Bio	Wt	Bio	Wt	Bio
UID Mammal	18.2	0.358	28.2	0.531		
UID Lg Mammal			266.0	4.003	90.9	1.523
UID Rodent					0.2	0.006
Rattus spp.	0.6	0.017	7.6	0.163		
R. norvegicus			2.7	0.064		
Felis domesticus			0.5	0.014		
Artiodactyl	113.1	1.854	268.1	4.032	93.3	1.560
Sus scrofa	34.7	0.630	26.5	0.502	19.7	0.385
Odocoileus virginianus			15.9	0.317		
Bos taurus	12.9	0.263	212.0	3.264	162.6	2.570
UID Bird			16.7	0.265	2.8	0.052
Anatidae			3.7	0.067		
Anas spp.					0.8	0.017
Branta canadensis	8.0	0.136	3.9	0.070		
Gallus gallus	7.7	0.131	12.5	0.203	3.7	0.067
Meleagris gallopavo	5.7	0.100				
UID Turtle			1.8	0.047	0.4	0.017
Malaclemys terrapin			3.4	0.072		
UID Fish			0.9	0.027		
cf. Gadidae			1.6	0.044		
Lutjanidae			0.9	0.025		
Mugil spp.			0.2	0.007		
TOTAL	200.9	3.489	873.1	13.717	374.4	6.197

Table 6. Charleston Exchange: Summary.

	MNI		Biomass	
	#	%	kg	%
Domestic Mammals	6	22.2	7.614	84.2
Domestic Birds	5	18.5	0.401	4.4
Wild Mammals	1	3.7	0.317	3.5
Wild Birds	5	18.5	0.373	4.1
Reptiles	1	3.7	0.072	0.8
Fishes	3	11.1	0.076	0.8
Commensal Taxa	6	22.2	0.194	2.1
TOTAL	27		9.047	

Table 7. Charleston Exchange: Elements Identified.

	Pig	Deer	Cow
Head	2		2
Atlas/Axis		1	2
Forequarters	3	1	4
Feet	1	2	2
Hindquarters	1		2
Hindfeet	2	-	1
TOTAL	9	4	13

Table 8. Charleston Exchange: Modifications Observed.

	Hacked	Burned	Gnawed		Cut	Sawed	Sliced
			Carni.	Rodent			
UID Mammal		1	1				
UID Lg Mammal				9	6	3	1
Artiodactyl	2		3	14	5	11	1
Pig				1	1	1	
Cow				4	1	2	
UID Bird			2	2	1		
Ducks			2		2		
Canada goose			2	1	1		
Chicken			2	1	1		
Turkey	-	-	—	1	—	—	-
TOTAL	2	1	12	33	18	17	2

Table 9. Charleston Exchange: Number of Elements Identified for Selected Age Categories.

Pig	
Less than 2 years of age	0
At least 2 years of age	1
Less than 3 years of age	1
3 years of age or older	0
TOTAL	2
Cow	
Less than 1.5 years of age	0
At least 1.5 years of age	1
Less than 3 years of age	2
3 years of age or older	0
TOTAL	3

Table 10. Charleston Exchange: Measurements.

Taxon	Element	Dimension	Measurement, mm
Sus scrofa	Scapula	GLP	36.6
		LG	28.9
		BG	24.5
Bos taurus	Humerus	Bd	89.4
Anatidae	Radius	GL	70.2
Branta canadensis	Carpometacarpus	Bp	18.4
Gallus gallus	Scapula	Dic	13.1, 13.6
	Humerus	Bp	30.7
		GL	103.1
		SC	10.8
		Bd	21.5
	Ulna	Bp	8.4
		Dip	11.7
		Did	9.0
	Tibiotarsus	Dd	12.2
		Bd	14.4

APPENDIX: SAMPLES STUDIED

FS#	FS#
1	9
2	10
4	11
5	12
6	13
7	14