Archaeological Excavations at 70 Nassau Street: 1990-1991



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Chapter I Introduction and Background

Introduction

Archaeologists and volunteers from The Charleston Museum were called to a property at 70 Nassau Street by Historic Charleston Foundation in April 1990 and again in January 1991. Historic Charleston Foundation was rehabilitating the wooden single house and outbuildings as part of the Heritage Housing Program, with funding from Charleston Heritage Housing Community Development Block Grants. Architect Glenn Keyes and contractor Herbert A. DeCosta, Jr. were responsible for the renovations; Curt Wood & Company served as general contractor.

The property featured a two-story wood single house facing Nassau Street, with piazzas on the south side. The house was built in the 1840s, with a rear addition in the 1850s. The property also featured a smaller residential unit aligned with the rear property line, likely constructed after 1872. This structure featured two stories with a single-story porch



Figure 1: View of the front of 70 Nassau Street after renovation, 1991

70 Nassau Street is the only domestic property in Ward 7 investigated through archaeology. It is also the only property owned by African Americans before the Civil War to be excavated. The materials recovered from the site add to our data on the late 19th century, while providing the first sample of African American sites in the Charleston Neck.

Reconstruction revealed an open brick lined well beneath the 1850s kitchen addition to the main house. This was excavated by Museum archaeologists in April, while the flooring was removed from the building. Nine months later, as renovations were nearing completion, excavation across the yard for service lines revealed a brick foundation to a privy pit. Museum archaeologists and volunteers returned to the site to record the features and excavate a sample of the privy fill.

Historic Charleston Foundation provided the funding for salvage excavations. The well contained only a few cultural materials, but a wealth of faunal remains. The privy revealed a large sample of late 19th century materials, including faunal remains. Laboratory funds were used to conduct faunal analysis. The materials were transferred to the University of Georgia for analysis by Dr. Elizabeth Reitz and her students. All materials were returned to The Charleston Museum for final curation. The collection is curated as 1990.052.

Background

(Title search by Simons Young, HCF; background from "Between the Tracks" by Rosengarten et al., 1987)

Throughout the colonial era, the peninsula above Beaufain Street was countryside, occupied by plantations and small farms. Many large landholdings were subsequently divided among heirs. As the city spread northward, these tracts were subdivided and developed.



When Charleston was incorporated in 1783, the city limit was moved from Beaufain Street to Calhoun Street. The lower city was divided into four wards and the unincorporated areas above Calhoun were known as the Neck. In 1849 the Neck was annexed to the city and divided into four "upper" wards. By this time, the East Side of the peninsula, encompassing Wards 5 and 7, resembled the lower, eastern wards: bounded on the west by a retail commercial district and on the east by a wholesale and shipping zone.

Figure 2: Charleston in 1844, showing wards on the Neck

Around and between planters' large houses and spacious lots on the Neck, a heterogeneous population took up residence. Charleston merchants, manufacturers, attorneys, and physicians built or rented homes in the suburbs. White artisans, tradesmen, and mechanics lived in more modest homes. Later, German and Irish immigrants in increasing numbers staked a claim on the Neck.

While the East Side was home to a number of commercial and industrial enterprises in the 19th century, wood yards represented the principal route to prosperity for free black entrepreneurs. 58% of Charleston's free black businessmen were wood factors (Curry 1981:27). Foremost among these, the Dereef family purchased a creekside property in Mazyckboro in 1838, ideally suited for a wood lot and wharf. Wood yards were concentrated on the new wharves constructed north of Calhoun Street.

The Neck had special advantages for city dwellers of African descent, especially for free Negroes and for slaves granted the privilege to work and live on their own. Rents were lower, real estate was more available and less expensive, and new houses could be built of wood, a practice discouraged within the city limits. The suburb also offered some respite from police surveillance and control; hence the Neck appealed to runaways, slaves 'passing as free' and other people eager to expand their personal liberty.

The area of Charleston Neck that would become Ward 7 (bounded by East Bay, Line, King, and Amherst Street) was first developed as the village of Hampstead, a development planned by Henry Laurens in 1769. Hampstead first attracted a close-knit colony of Georgetown rice planters; many of these families retained their lots through the early 19th century.

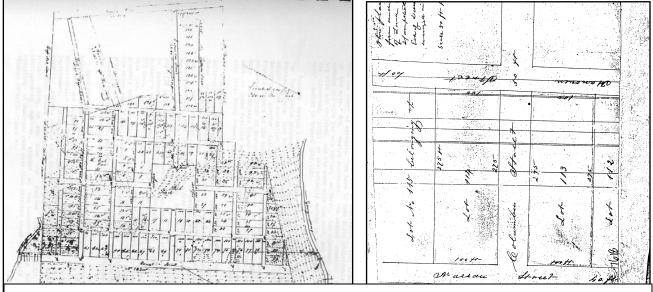


Figure 3: 1769 Plat of Hampstead;

Figure 4: Plat 7618, showing division of Lot 113 in 1798.

Several members of the Drayton family, prominent rice planters, purchased nine lots in Hampstead between 1790 and 1809; they eventually sold the majority to free black families. Enterprising free persons of color, including Rebecca and Henry Jackson, Jehu

Jones, Richard Holloway, Thomas Bonneau, Thomas Small, and Susan and Richard Dereef also invested in Hampstead lots. Thomas Bonneau, a well-to-do free African American who ran a school for black children on Coming Street, purchased lot #113 in 1826. He immediately divided lot #113, selling part to Rebecca Jackson and part to Richard Dereef. Richard's sister, Susan Ann, acquired the neighboring lot #112 in 1827. Rebecca and Henry Jackson did build on their portion of lot #113, for when Henry sold it in 1841 it was described as a "lot with buildings".

70 Nassau Street is the third house south of Columbus Street on the east side of Nassau (see Sanborn map of 1884), located in Ward 7 of Charleston. Up until 1989 the dimensions of this lot of land were reported as being 33 feet by 103 feet. In 1989 the boundaries were adjusted (Deed book L181, page 872). The original property was part of a larger tract subdivided by Tobias Bowles and sold to Thomas Sereven in 1799. It was then part of a lot that measured 100 feet by 275 feet (deed book Z6 page 86). The lot with these dimensions is known as lot 113 on a plat dated 1798 (plat 7618). The property was conveyed to Rebecca Drayton in 1800 (C7, pg. 118). In 1826 Rebecca Drayton sold the property to Thomas Bonneau (T9, page 1). Half of this lot, measuring 100 feet by 140 feet, was sold by Thomas S. Bonneau to Rebecca Jackson in 1827 (X9, page 64). The property was transferred to her son William Jackson in 1840 (E11 page 295). Jackson then divided this lot into four lots, three fronting on Nassau Street and one fronting on Columbus Street.

William Jackson sold the property to J.S Herren in 1856 (R13 page 242). A deed dated 1857 is the first to mention any house on the property (Deed book X13 page 158). This was a conveyance from J.S. Herren to Edward Wall. The property remained in the Wall family until 1951, when Maria J. Wall sold to John H Lee Jr. (N53 page 523). The Lee family sold to Joan R. Berlinsky in 1965 (V83 page 352). The City of Charleston acquired the property in 1986, and transferred the house and lot to Historic Charleston Foundation in 1981(L161 page 588; L181page 876).

The house at 70 Nassau was constructed in the 1840s; an addition was completed before 1860. The original portion of the house consists of two rooms at the front of the lot. Apparently a decade later a room was added to the rear. The original kitchen building with a central chimney stack and another small dwelling survive on the property. The State Architectural Survey suggests the rear dwelling was constructed after 1872, as it does not appear on the 1852 or 1872 maps of the city (figures 5 and 6). Other architectural scholars suggest the small structure appears to date before the Civil War, and served as housing for slaves (VAF 1994:261). The second story was entered through a separate entrance and staircase. Historic maps of the Charleston neck suggest these additional quarters in urban compounds were once common, but they are rapidly disappearing.

According to census and municipal records, the neighborhood around Columbus and Nassau streets were home to a number of Charleston's free and enslaved African Americans at the middle of the 19th century. Charleston's detailed census of 1848 lists a number of free persons (f.p.c.) on the east side of Nassau Street in Ward 7, including

Edward P. Wall. Free black neighbors on Nassau include George Lucas, Amos Baxter, and Joshua E. Wilson. The Dereef family owned a number of properties along the street. This wealthy free black family rented to other free persons of color, as well as a household of "slaves and free persons."

The Wall family, who owned the property for nearly a century (1857-1951) were African American. The Ward Book of 1871 lists Edward Wall as owning two houses on his 33' by 104' Nassau Street lot. Edward Wall was listed in the 1877 City Directory as a cigar maker and cutter, employed at the Cigar Factory on East Bay Street. Nearby neighbors Robert Whyte and E.O. Crosswell were butchers. Charles Dunneman was an ice cream manufacturer, while Charles Heinsohn was a sanitary inspector. William Desportes worked at Wharfinger Gas Company.

The 1860 Free Negro Capitation Tax book lists the David family, the Lee family, and the Mushington family, as well as three women named Lucas as African American residents of the Nassau Street neighborhood. Other free black residents of Nassau include Richard Downey, Ellen Edwards, Adell Prince, Rebecca Scriven, John Shirring and Abraham Taylor. According to the 1859 City Directory, James Mushington was a carpenter and Abraham Taylor was a tailor. Edward Wall evidently worked with Mr. Taylor in the same location. George Lucas was a millwright, and likely part of the household that included Josephine, Martha, and Georgianna Lucas. But the street included a number of working-class white residents, as well, including grocers, wheelwrights, blacksmiths, fruit dealers, and pattern makers.

The report on the 1848 City Census explained the slow increase of lower Charleston's population by pointing to its "populous suburb" (that area above the city limit at Calhoun Street). The suburbs, or "Neck" was separated from the city "only by a street." Lots on the Neck were larger and less costly, and the suburb was exempt from city corporation taxes and Charleston's "brick ordinance." Hence, people who wanted to build inexpensively moved across Boundary (Calhoun) Street. "Not many years ago," stated an 1870 City Guide, "the Neck was a suburb, and not a part of the body corporate and people could build wooden houses thereon without leave or license of the committee on brick and wooden buildings" (South Carolina Institute 1870:43). The 1848 Census accounted for the loss of city residents to the suburb in this way: "the slaves and free coloreds have removed to the Neck....where the class of houses suited to their condition are numerous, and obtained at modest rents" (City Census 1848:2). While panic over the danger of wooden houses increased after a major fire in 1838, legislation against such building practices was not new. Beginning in 1740, protective ordinances were enacted after every major fire, only to be ignored several months later (Pease and Pease 1978). Yet, figures which census takers compiled in 1861 comparing the number of brick and wooden houses in each of the city's eight wards substantiate the trend noted in 1848; whereas over half of the houses in the lower wards were built of brick, nine out of ten in the upper wards were of wood.

During the 1850s, growth in Ward 7 accelerated, outstripping that in Ward 5. In 1849, the proportion of residents living on non-commercial thoroughfares (Meeting and

King Streets, principally) was almost twice as high as for Ward 7. By the eve of the Civil War, population distribution became more even, and Ward 7's non-commercial streets actually claimed the larger proportion of inhabitants. Five new streets in Ward 7 were now occupied: Blake, Drake, Cooper, South, and Hanover (City Directories 1849, 1852, 1859). Growth in these areas can be attributed partly to the process of land filling, which created new real estate. The dates of occupation of certain streets can be directly related to this; portions of America, Amherst, Cooper, Columbus, Reid, South, Blake, Drake, Judith, and Bay streets were laid out on newly-made land.

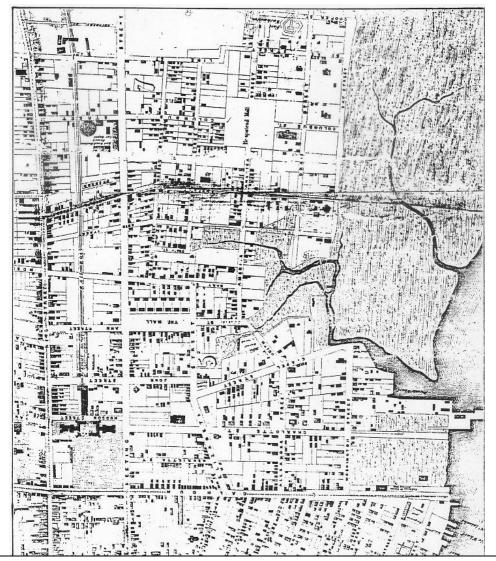


Figure 5: Portion of 1852 Bridgens and Allen map of Charleston, showing Wards 5 and 7

The African American population of the East Side (Wards 5 and 7) grew by leaps and bounds after the Civil War. Comparison of the 1860 and 1870 Federal Censuses reveal a tremendous in-migration during this period. The increase is partly because all black households were counted for the first time. Further, former slaves who had lived within their masters' compounds now searched for their own quarters. This

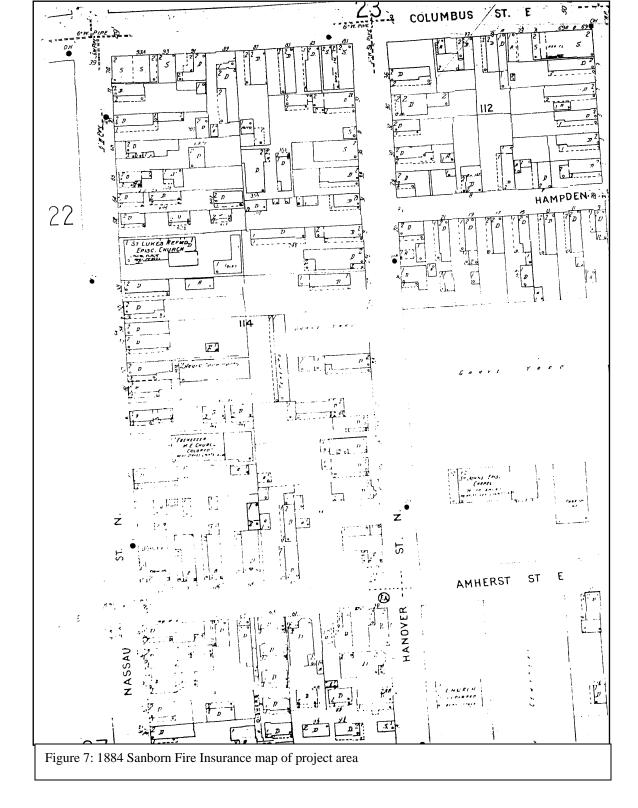
mobility resulted in a serious housing shortage. A brisk trade in houses and vacant lots, some for use and some for speculation, marked the first three postwar years.

New construction and building density show clearly on the 1872 Drie aerial view of the city. The decade of the 1880s was characterized by resurgence in building activity. In this phase of development, most vacant East Side lots were filled in. Interspersed among existing buildings, most new structures were built on smaller lots. The majority of the structures on the East Side today date from this period.



Figure 6: Portion of the 1872 Drie Aerial View of Charleston, showing Wards 5 and 7

Ward 7 and the neighborhood of Nassau Street remain an important area of Charleston for the study of a number of aspects of urban life in the 19th century. These include homes and neighborhoods of free and enslaved African Americans, as well as emerging industrial development in the antebellum city. As a household owned and occupied by African American residents, 70 Nassau Street provides the first opportunity to explore domestic life through archaeology.



Chapter II Fieldwork

Feature 1-April 1990

Archaeological investigations at 70 Nassau Street began when The Charleston Museum received notice from M.E. van Dyke of Historic Charleston Foundation that a brick-lined well had been located beneath an addition to the 1840s wooden single house. The well would have been originally located directly behind the main house. At some point, probably in the 1850s, the well was covered by the addition and a pipe was placed in the well, presumably facilitating its continued use. It was discovered open, with no cover.



Figure 8: 70 Nassau Street before renovation

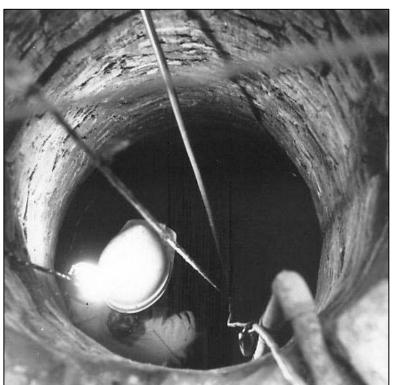
The well was 9.8 feet deep from the top of the mud fill to the top of the brick. The brick was mortared from the top to a depth of 6.8 feet. In this area the bond consisted of varying numbers of rows of stretchers alternated with a single row of headers; the number of stretcher courses varied from two to seven. Below the mortar all of the dry-laid bricks were headers. At the top of the well the outer diameter was 3.6 feet and the inner diameter was 2.2 feet. The interior walls began slope outward at 5.0 feet below the top; the maximum bottom diameter was 3.85 feet.

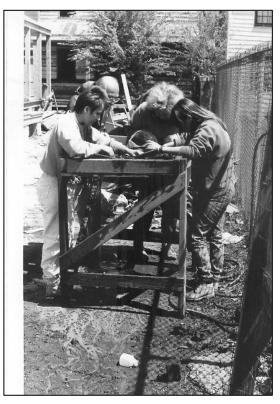
At the time of excavation on April 4, 1990, the well contained three feet of water. This was lowered with the use of a small electric sump pump. The well bottom contained one-half foot of dark brown sandy fill above white sterile sand. This soil was excavated



as a single level, designated Feature 1. It contained three whole bottles, a few buttons and marbles, some glass fragments, and five pink rubber balls. It also contained a large quantity of animal bone, which was analyzed by students at the University of Georgia under the direction of Dr. Elizabeth Reitz.

Figure 9: Well beneath structure Figure 10: Excavation of Well Figure 11: Screening material from well





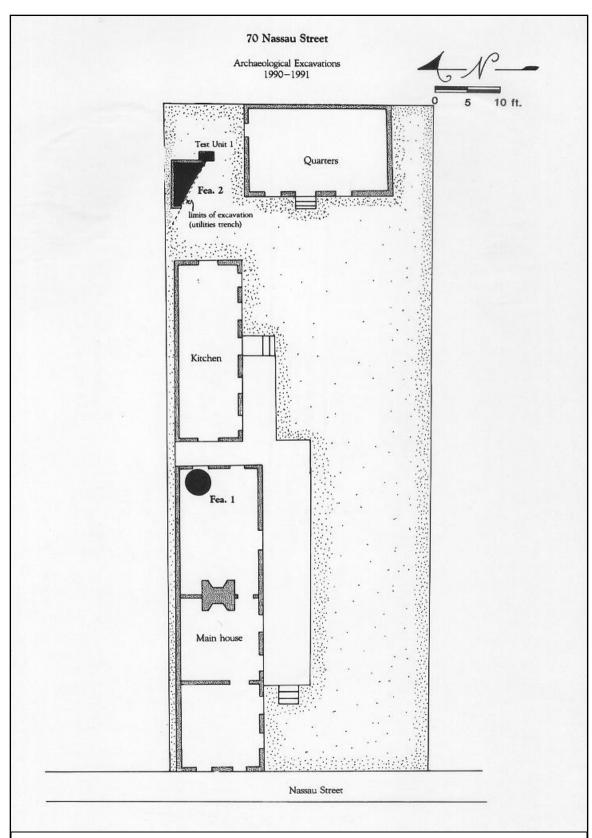


Figure 12: Site map of 70 Nassau Street, showing extant structures and excavated features

Feature 2 – January 1991

Investigation of the 70 Nassau privy, designated Feature 2, began on January 29, 1991, when the Museum again received a call from M.E. van Dyke of Historic Charleston Foundation. Excavation of trenches for electrical service had revealed two brick walls of a possible privy in the rear corner of the property. Further inspection of this trench, which measured 1.0 feet wide by 2.5 feet deep, showed dark soils extending to the base of the trench within these brick walls, in comparison to the remainder of the profiles, which revealed a more standard dark zone followed by lighter grey soil, and then sterile sand. Based on this evidence, and the special history of the property, it was determined that excavation of at least a portion of this feature was warranted.



Figure 13: Rear buildings at 70 Nassau Street

Despite rainy conditions, work commenced the next day, January 30. The utility trench had bisected feature 2 diagonally, exposing the interior northwest and southeast corners of the brick-lined feature. The tops of these brick walls were approximately .6 feet below the ground surface, and there was evidence of a concrete block foundation on top of the ground surface and on top of feature 2. This was a now-demolished 20^{th} century addition to the kitchen building. The concrete foundation runs parallel to the kitchen building, .8 feet north of the north wall of the kitchen. The inside northwest corner of the privy is 8.3 feet east of the kitchen; the inside southeast corner of the privy is 6.4 feet north of the north wall of the quarters building.

Based on these features, it was determined to follow the outline of the trench and excavate the northern 'triangle' of soil, following natural levels. All materials were



water-screened through ¼ inch mesh. Level 1 consisted of topsoil above the limits of the brick walls, which were about .4 feet below ground surface. Level 1 was a very dark grey-black topsoil containing quantities of 20th century material and debris. Plastic strips from the recent demolition and renovation were visible to a depth of .6 feet, so level 1 was discarded to that point. A sample was screened and retained.

Level 2, initiating at .6' below surface, was lighter and browner, and the artifacts were more numerous. This was followed by an even lighter brown deposit, level 3, which again contained sparse artifacts. Level 3 initiated at 1.1 feet below surface and contained a large number of brick fragments.



Figure 14: Excavation of Feature 2 Figure 15: Feature 2, top Level 4

Level 4 initiated at 2.1 feet below surface. The soil was similar to level 3, but contained small pockets of dark soil, suggesting individual dumps or depositions. These depositions included ash and great quantities of coal cinders, with very few artifacts. These deposits continued to a depth of 3.0 feet below surface. Here, the coal cinders declined and dark soil resumed. This level 5 evidenced an increase in artifacts, including a one-gallon bottle and a mason jar. Pockets of darker soil were visible in the northeast corner.

At a level 3.4 feet below surface, the entire excavation area was dark organic loam, and this soil contained quantities of wood and bone. Twentieth century (TPQ of crown bottle cap) bottles were recovered from along the north wall of the feature. This level continued to a

depth of 4.3 feet below surface. The soil then became lighter and browner, and was designated level 7. Level 7 continued to a depth of 4.9 feet, where the water table was encountered.

It was also at this level that large numbers of ceramics began to appear. The soils below the water table were excavated by shovel, working from east to west. This lowest level, level 8, contained quantities of bone and artifacts dating to the 1880s. Sterile white-yellow sand was encountered at a depth of 5.4 feet below surface. Sampling of this level was logistically possible to within 2.2 feet of the west wall of the feature and 1.2 feet of the south wall.



Figure 16: Screening material from Feature 2 Figure 17: Post feature in Test Unit 1

The privy feature was brick, with walls .7 feet thick and a stuccoed interior. There appeared to be no type of flooring. The interior of the privy was 4.3 feet north/south by 6.5 feet east/west.

Cleaning of the profile of the utility trench outside the southeast corner of the privy revealed a possible builders trench, so Test Unit 1 was excavated in this area for a sample. The test unit paralleled the east wall of the unit, and began with the south profile of the trench. The test was 1.3 feet wide east/west; the east wall was 1.5 feet long and the west wall was 3.0 feet long. The unit was excavated by trowel. Zone 1, dark

grey-brown soil, was discarded to a depth of .35 feet below surface. Zone 2 was layers of pinkish coal residue with yellow and grey mottled sand. This continued to a depth of .6 feet below surface where zone 3, mottled yellow and orange sand, was encountered. Intruding into this were two small circular dark stains, designated Postmold 1 and Area A. These appeared to be postmolds, but upon excavation proved to be small pits full of fish scales and bones.

Beneath these features, the mottled clay layer gave way to a dense layer of medium grey-tan sand. It contained a moderate quantity of artifacts. Excavation of this continued to a depth of 1.8 feet below surface, where excavations were halted due to time constraints.



Figure 18: Soil profile, Feature 2, to base of Level 7

Chapter III Artifact Summary

Charleston's Free African American Population

A significant portion of Charleston's antebellum population was made up of free persons of color. Demographically, this social group was concentrated in Wards 5 and 6, in the subdivisions immediately north of Calhoun Street. Economically, a vast majority of Charleston's free African Americans were lower to middle class, employed in manual labor or trades. A large number were skilled artisans; many owned real estate and slaves. Yet, this elite group was "a working aristocracy, an aristocracy with calluses....Rather than acquire tidewater plantations or gangs of slaves, prosperous free Negroes tended to invest in urban real estate or in businesses employing a few bondsmen or women" Johnson and Roark 1984b:6).

Socially, Charleston's free African Americans occupied a "middle ground," modeling their lifestyles after white society, but barred from complete assimilation by the color of their skin. As the antebellum period progressed, free people of color found themselves in an increasingly precarious position. Their freedom was considered a privilege, not a right, and came under concerted attack by an expanding white working class. Dreading the prospect of more intense discrimination or even re-enslavement, some free African American families chose to emigrate from the city, while others sought to prove their trustworthiness to white society through emulation and unobtrusiveness.

Free African Americans who were able to achieve the limited success open to them in southern society formed a distinct group. Although wealth did not insulate them from restrictive laws or racial taboos, affluent free blacks saw themselves as a class apart. They established social organizations based on status, and sometimes on degree of color. In acquiring slaves, some were merely exercising their greater rights to ease the plight of their enslaved brethren; others sought primarily economic gain (Koger 1985). Free blacks were anxious to educate their children and guarantee their security in times of increasingly harsh restrictions. To do this, they had to tow the line drawn by white society, yet distinguish themselves in manners and material goods from blacks of lesser wealth and freedom.

The material culture of urban free blacks is expected to be more similar to white households of equal economic status than to that of urban slaves. While status is more easily recognized archaeologically than is ethnicity, intensive studies of free African American sites should reveal some evidence of the Africa heritage of the occupants. Ethnicity should be reflected most clearly in artifact categories that are culturally conservative, such as foodways and use of personal space (Deagan 1983; Reitz and Cumbaa 1983; Singleton 1999; Vlach 1978), or through the investigation of agency (Ferguson 1999; Perry and Paynter 1999).

The relatively vast documentary record on free African American people makes identifying where they lived and worked easier than identifying urban slave sites. Carefully designed, descriptive baseline studies are needed, however, before research questions concerning free urban black residents can be addressed successfully. Of particular importance is the separation of status and ethnic affiliation. The 70 Nassau project represents the first opportunity in Charleston to address these issues.

Formation of Archaeological Sites

Before the materials retrieved from the two large features at 70 Nassau can be analyzed, however, it is important to consider the processes responsible for the formation of the archaeological record at that site. Consideration of the processes responsible for physical creation of an archaeological site is an essential first step in analyzing material retrieved from that site. This includes biological and faunal remains (see Chapters 4 and 5) as well as the cultural remains.

Human habitation results in creation and gradual accumulation of soil. In his now-classic articles, archaeologist Michael Schiffer suggests that cultural materials, including natural and environmental data, enter the archaeological record (the soil) by four basic methods: discard, loss, destruction, or abandonment (Schiffer 1977, 1983). Discard, the throwing away of refuse, is the most common form of site creation on an ongoing basis. Artifacts and other debris are either broadcast on the ground surface, gradually forming zone deposits, or placed in newly dug (trash pit) or previously existing holes (such as abandoned wells, privy pits, etc.) called features. Items deposited due to loss are usually small, such as buttons, coins, toys, bits of jewelry, etc. Archaeologists often discover lost items in wells and drains, in soil lenses that collect beneath wooden floors, and in yards where children play, particularly in the later 19th century. Abandonment includes destruction of buildings and their contents from fire or storm, or the cleanup associated with vacating a property or building. In some cases, though not all, it is possible to distinguish proveniences (the defined archaeological boundaries of single behaviors) resulting from specific depositional processes.

Urban residents deposited most of their refuse in back yards or work yards, if they deposited it on-site. But crowded conditions and health considerations resulted in the deposition of refuse in any convenient place in the city. The numerous creeks, marshes, and wetland areas that crossed the peninsula were likely candidates, but open lots, unpaved streets, and alleys were also filled with trash from nearby households and activity areas. The filling of creeks and marshes created new real estate (Zierden 1996).

Urban archaeological deposits can reflect abandonment and loss, as well as discard. Lost items are usually small; when items resulting from loss are concentrated in a single provenience, it is usually one that represents a tight corner. The drain at the Miles Brewton house, for example, contained children's marbles and jacks, a number of buttons, and a concentration of finishing nails, as well as a concentration of fish bones (Zierden 2001).

Abandonment activities include loss of materials due to fire or storm, and the resulting cleanup activities. Such deposits can often be distinguished from daily discard deposits by the artifact profile, as well as the physical properties of the artifacts. In particular, artifacts that are highly curated and not normally disposable are recovered in higher numbers or in physical concentration; an example are scissors, a household item often used for a generation or more. Another common form of site 'abandonment,' particularly in urban areas, is the transfer of a domicile to a new tenant or owner (moving). The single-event filling of large features such as privies and wells with unusual numbers of curated items can reflect this activity. Such deposits were first noted at the Charleston Place block, where 19th century privies were filled with unusual concentrations of toothbrushes, pharmaceutical bottles, and other household items (Zierden and Hacker 1987).

Privies and wells often contain large archaeological assemblages, with relatively complete vessels, a signature of a primary archaeological deposit (one that has not been moved since its initial deposition). For this reason, archaeologists have often focused on these features for site interpretation. But these assemblages should be used with the cautionary note that abandonment assemblages do not reflect the same events that are reflected in daily discard. The extensive salvage excavations at the Charleston Place site provided an opportunity to compare assemblages from privies to other types of archaeological features. Comparison of the salvaged features (Zierden and Hacker 1987), to sampling of household lots on the same site (Honerkamp et al. 1982), resulted in assemblages with different characteristics. Further, comparison of the salvaged privies to the other large features revealed differences. The privies uniformly contained over 80% artifacts classified as kitchen-related, with a proportional paucity of architectural items. Privies were filled in a different manner than were miscellaneous pits and open areas (Zierden and Hacker 1987:91).

The above discussion is presented as a cautionary note prior to consideration of the artifact assemblage from 70 Nassau Street. While the materials from the two features provide a view of the materials owned and used by African Americans residing in the city, they likely do not reflect the complete range of on-site activities. The artifact proportions, further, likely do not reflect the proportional value of those items to the overall household.

The Well Assemblage (Feature 1)

Feature 1 contained a large faunal assemblage (see Chapter 4), but a small cultural assemblage. These materials are summarized in Table 1. The well contained three intact bottles, in styles dating between 1850 and 1902. All three were pharmaceutical, and two



Figure 19: Cosmetic bottle from Feature 1, "hair renewer"

contained patent medicines. Two crown bottle caps date to the early 20^{th} century. Three fragments to a paneled-style tumbler were recovered. The largest category was fragments of bottle glass.

Toys included a glass marble and a hard rubber ball. Two buttons were typical of the 19th century, including a bone 1-hole disc and an iron 4-hole button. The remaining artifacts included a nail, a bedspring, and two sections of iron pipe. Two large lumps of sulphur and a lump of lead completed the assemblage.

Table 1: Feature 1 (well)

- 3 fragments undecorated whiteware
- 1 teal-green bottle, mold seam disappears at neck, "Halls" "Hair Renewer" (1850-1902)
- 1 clear glass bottle, pharmaceutical, 3-piece mold
- 1 brown glass bottle, mold seam disappears at neck, paneled "Raine's" "Celery Compound"
- 4 fragments brown glass
- 1 fragment blue glass
- 1 fragment dark aqua glass
- 14 fragments clear bottle glass
- 1 fragment yellow glass
- 1 fragment milk glass
- 2 fragments thin clear frosted glass
- 3 fragments paneled tumbler
- 2 crown bottle caps
- 1 button, bone 1-hole
- 1 button, iron, 4-hole
- 1 glass marble, cat's eye
- 1 hard rubber ball
- 1 pipe bowl fragment
- 2 large lumps sulphur
- 1 lump lead
- 1 wire nail
- 2 sections iron pipe
- 1 bedspring

The Privy Assemblage (Feature 2)

Feature 2 was excavated in eight levels. Levels 1-3 represent an assemblage from the mid-twentieth century. Levels 4-7 reflect deposition at the turn of the 20th century. Level 8 represents a deposition from the 1880s. In addition to the temporal difference, the three assemblages vary in content and relative proportions of artifact groups. Level 8, the largest and least disturbed assemblage, is described in detail. The 20th century assemblage is summarized in Table 3.

Level 8 contained 444 artifacts, both fragmentary and complete. The ceramics were dominated by tablewares, principally undecorated whitewares. Complete or recognizable vessels included a plate, four saucers, and three cups with handles. A pitcher and a cream jar likely are not table wares, but hygiene vessels. Undecorated whiteware also dominated the ceramic fragments, with only four decorated fragments recovered.

Bottle glass was more numerous, with nine complete bottles and 71 fragments



Figure 20: Whiteware cup Figure 21: Condiment bottle

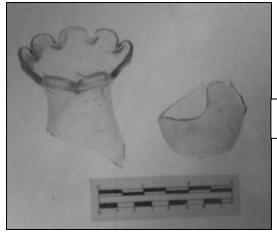
recovered. Clear glass dominated the assemblage, which included a soda water bottle and three paneled or condiment bottles. Also in this group were a Vaseline jar and two ink bottles. One olive green bottle and 5 olive green fragments were recovered.

Table glass included three goblets, a paneled tumbler, and a mug or stein. There were over 100 fragments of clear glass that were from table vessels rather than bottles. There were also 14 fragments of frosted glass and one fragment with red paint.



The clothing group was robust and varied. The most common artifact was prosser buttons with four holes. Fourteen undecorated and three decorated prosser buttons in various sizes were recovered. Three bone and one shell four-hole buttons were found, as well. There were four decorative items, likely from women's clothing. These included a molded black glass button, a faceted glass bead from a hat pin, and two glass stones set in brass. One was a rectangular jet setting, while the second was a round moonstone. A brass buckle fragment was recovered, as well. The most remarkable find was a collar

stud of gold. The only other recovered gold from Charleston was a small watch chain fragment from the Aiken-Rhett house (Zierden et al. 1986).



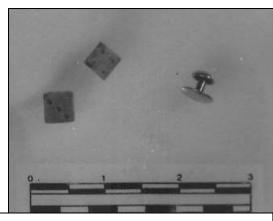
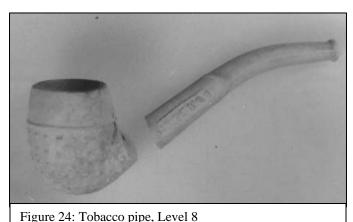


Figure 22: Bone dice, gold collar button Figure 23: Kerosene lamp chimney glass

Furniture was dominated by glass from kerosene lamp chimneys. Four intact chimney tops were recovered, two with straight tops and two with crimped tops. Kerosene lamps with glass chimneys became

popular after 1859; crimped tops were developed in 1879 (Miller et al. 2000). Lamp glass is thin and therefore breaks easily; this is reflected in the large number of recovered fragments (127). The only other furnishing was a fragment of a bisque porcelain figurine.

Two pipes and six pipe bowl fragments came from level 8. One is a stub-stemmed white clay pipe, the other was an undecorated kaolin pope with a short curved stem. Two clay flower pot fragments and two brass spheres completed the late 19th century assemblage.



Tigure 21: Toodeed pipe, Eever d

Table 2: Feature 2, level 8

- 1 whiteware plate, round, undecorated (7 fragments)
- 4 whiteware saucers (13 fragments)
- 3 whiteware cups, with handles (12 fragments)

- 1 whiteware cream jar and lid
- 1 whiteware pitcher (9 fragments)
- 5 whiteware fragments, cup
- 26 whiteware fragments, body
- 1 whiteware handle, chamber pot
- 2 yellow ware fragments
- 1 blue-sponged whiteware fragment
- 1 hand-painted whiteware fragment
- 1 transfer-print whiteware fragment, blue
- 1 creamware fragment
- 1 clear glass soda water bottle, "C.L. Kornahrens, Charleston, SC)
- 1 clear glass bottle, square pickle
- 1 clear glass bottle, rectangular panel
- 1 clear glass bottle, paneled on 3 sides
- 1 clear glass jar, Vaseline, screw top
- 1 ink bottle, round, hand-applied lip "T. Davids &Co, Pat. Nov 7, 76"
- 1 ink bottle, igloo, "J&IEM"
- 1 brown glass bottle, pharmaceutical, small, "McKesson& Robbins"
- 1 dark olive green bottle, bulbous neck (mend from 14 fragments)
- 1 clear glass bottle, oval, bottom half
- 1 clear glass bottle, round, bottom portion
- 1 clear glass bottle, base
- 1 clear glass bottle, neck, hand-applied lip
- 1 clear glass bottle, neck, sheared with extra ring
- 61 clear glass fragments
- 5 olive green glass fragments
- 1 small goblet bowl, paneled
- 1 large goblet, paneled from base to bowl
- 1 goblet bowl, hexagonal faceted
- 1 glass mug/stein, handle and base
- 1 glass tumbler, paneled sides, small
- 108 fragments misc, table glass
- 1 fragment red painted glass
- 14 fragments white frosted glass
- 3 bone buttons, 4-hole
- 3 prosser buttons, 4-hole, large
- 4 prosser button, 4-hole, medium
- 5 prosser button, 4-hole, small
- 2 prosser button, half
- 1 prosser button, 2-hole, medium
- 3 prosser button, 4-hole, decorated
- 1 shell button, 4-hole
- 1 molded glass button
- 1 moonstone jewel set in brass
- 1 jet, rectangular, set in brass
- 1 faceted glass bead, top to hat pin
- 1 brass buckle fragment
- 1 collar stud, gold
- 2 slate pencils
- 2 bone die, small

- 2 hard rubber combs
- 4 fragments of hard rubber
- 5 toothbrushes, bone
- 2 kerosene lamp tops, straight
- 2 kerosene lamp tops, crimped
- 127 fragments kerosene lamp chimneys
- 1 fragment porcelain figurine, unglazed
- 1 pipe bowl, stub-stemmed, white clay, ribbed surface
- 1 pipe bowl, short curved stem oval in cross-section
- 6 pipe bowl fragments
- 2 flower pot fragments
- 2 spherical brass objects, unknown function
- 1 fragments 18th century ceramic, water-washed

The assemblage from the early 20th century was tabulated separately. This includes materials recovered from level 3 through level 7. The overall assemblage was similar to that in level 8, but included some artifacts that are markers of the period. The identifiable bottles included the 1893 South Carolina Dispensary bottle, as well as those less clearly marked. The 20th century assemblage also included a complete quart-size Mason jar (patented 1858). Table glass included standard tumblers, as well as fragments of a range of 20th century glass, such as molded and pressed glass, carnival glass, and milk glass.



Figure 25: Mason jar from Level 4

Levels 4 through 7 contained a few ceramic fragments typical of the early 19th century (colono ware, Chinese export porcelain, pearlware), as well as those that span the 19th century (whiteware in various decorative styles, yellow ware, luster ware and utilitarian stonewares). The late 19th/early 20th century ceramics include white porcelain

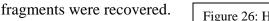
and Victorian majolica. Four whiteware ceramic fragments were identifiable as chamber pots.

As is typical of the mid- to late- 19th century, rusted can fragments were common in the assemblage. While some appear to be from larger cans, such as paint cans, others were part of food containers. The final food artifact typical of this period was the crown bottle cap; five were recovered from levels 4-7, providing a firm date of deposition for the levels.

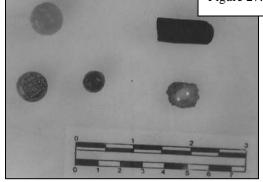
The assemblage from levels 4 through 7 varied from level 8 in the presence of a number of architectural items, likely associated with renovation, demolition, or addition

to the structures on the property. These included a large number of nails and fragments of window glass. Door locks and associated hardware were also recovered. The paint can fragments may also be associated with these activities.

Furnishings were represented by fragments of kerosene lamp chimneys. Flower pots reflected gardening activities. Like the level 8 assemblage, only a few tobacco pipe







Clothing and personal items were more common, and more varied. The assemblage included the common prosser buttons, as well as buttons of shell and hard rubber. More decorative buttons included black glass dress buttons and a small brass button with a glass setting. Collar studs of porcelain and bone were recovered.

Personal items included hard rubber hair combs and bone toothbrushes, as well as an eyeglass lens. Toys included glass and clay marbles, and parts of porcelain dolls.

Table 3:Feature 2, levels 4-7*

	Level	4	5	6	7
South Carolina Dispensary bottle		1		1	
Pint (liquor) bottle		1		2	1
Panel bottle				1	2
Clear bottle, crown cap				1	
Brown bottle, crown cap (beer)					1
Small pharmaceutical					1
Perfume					1

Mason jar, quart	1	1	3	
Clear bottle glass Aqua bottle glass	176 1		183	70
Clear bottle neck	11	2	34	
Brown bottle glass	19	11	10	45
Blue glass Olive green glass	1	6	1	
Onve green grass		U	1	
Tumbler	1	2	2	4
Table glass		3	_	
Carnival glass	1	2	2 4	1
Milk glass Molded glass	1	3	4	1
Red glass	1	3	7	
Green, yellow glass	5	35	18	1
		25	4.0	
Undecorated whiteware	14 2	27	18	2 1
Annular whiteware Shell edge whiteware	1		1 2	1
Polychrome hand-painted whiteware	1		1	
Transfer printed whiteware	1	2	4	
Polychrome hand painted pearlware	1		1	
Transfer printed pearlware	2	1		
Yellow ware	1		2	
19 th century stoneware	1	8	2	
White porcelain	1	3		
Glazed brown 'majolica'	1		1	
Luster ware Whiteware chamber pot		4	1	
Chinese export porcelain	1	7		
Colono ware	-	1		
Tin can	25			166
Crown cap				5
Clear flat glass	101	62	21	37
Nails, u.d.	111			45
Wire	5			
Hardware	3			3
Black glass button				
Hard rubber button	1		1	
	1 1		1	
Prosser button		2	1 2	3
Prosser button, decorated			2	
Prosser button, decorated Shell button		2	2	3
Prosser button, decorated Shell button Glass button setting			2 1 1	3
Prosser button, decorated Shell button Glass button setting Collar stud, porcelain		1	2	3
Prosser button, decorated Shell button Glass button setting Collar stud, porcelain Collar stud, bone			2 1 1	3
Prosser button, decorated Shell button Glass button setting Collar stud, porcelain Collar stud, bone Straight pin		1	2 1 1	3
Prosser button, decorated Shell button Glass button setting Collar stud, porcelain Collar stud, bone		1	2 1 1 1	3
Prosser button, decorated Shell button Glass button setting Collar stud, porcelain Collar stud, bone Straight pin Scissors Hard rubber comb	2	1	2 1 1 1 1 1	3 1 2
Prosser button, decorated Shell button Glass button setting Collar stud, porcelain Collar stud, bone Straight pin Scissors Hard rubber comb Glass marble	2 1	1	2 1 1 1 1	3 1 2
Prosser button, decorated Shell button Glass button setting Collar stud, porcelain Collar stud, bone Straight pin Scissors Hard rubber comb	2	1	2 1 1 1 1 1	3 1 2

Doll part	2			
Eyeglass lens			1	
Wood pencil				1
Pipe bowl	3		1	1
Brass ring			1	
Flower pot	7	4	10	
Human tooth with caries			1	

^{*} metal retained only from levels 4 and 7

Test Unit 1

A small area excavated as Test Unit 1 included materials retrieved in zone 2, plus artifacts from the builders trench associated with feature 2. This small sample reflects materials from daily discard activities, and so is presented as an example of that on-site activity. The materials retrieved from the builders trench all have a relatively long date range, but together suggest construction of the brick-lined privy in the mid-19th century. The privy is probably contemporary with the house, or with additions to the house in the 1850s.

The assemblage from Test Unit 1 is small, and features table ceramics and bottle glass. Table glass is present. A few fragments of window glass and seven nails were recovered. A prosser button, and two fragments of tobacco pipe were found. Fragments of a flat shovel completed the assemblage.

	Table 4:	Test Unit 1
	Zone 2	Trench
		_
Lustered fine redware		2
Yellow ware		1
Undecorated whiteware	4	
Shell edged whiteware	1	
Transfer printed whiteware		8
Hand-painted whiteware	2	
Annular whiteware		2
Undecorated pearlware	1	
Annular pearlware		1
Black lead-glazed earthenware	1	
Colono ware		1
Olive green glass	13	
Clear glass		12
Brown glass		1
Table glass		9
Nail		7
		10
Clear flat glass Prosser button		10
	2	1
Pipe blow/stem	2	1
Shovel blade	1	1
Fossil shark tooth	1	

Summary

Salvage excavations of an open well (Feature 1) and a privy vault (Feature 2) produced an assemblage of cultural and environmental materials from the mid-19th to early 20th centuries. Large features such as wells and privies often contain assemblages deposited quickly, under special circumstances, and may not reflect the range of daily affairs at domestic sites. With these limitations in mind, the 70 Nassau site is the first in Charleston associated with an African American family and neighborhood, and may be used to examine aspects of daily life in this community.

Assuming the level 8 assemblage reflects the average range of materials from the late 19th century household at 70 Nassau Street, it appears that the residents paid particular attention to dress and appearance. The artifacts reflect dress clothes (the gold collar stud, hat pin, glass buttons) as well as everyday ware (4-hole bone and prosser buttons). Hair combs and toothbrushes further reflect personal hygiene and attention to appearance. The kitchen and tablewares, in contrast, are those most often associated with an everyday, informal table setting. Tumblers are present, but goblets are not. As is typical of the late 19th century, glass containers dominate the kitchen group, as machinemade bottles become common and disposable. Kerosene lamps also become common during this period, and the fragile glass shades are easily broken and often discarded. These trends are noted in the early 20th century assemblage (levels 4-7), as well.

Again, caution is urged in using this assemblage to interpret differences and similarities between the household at 70 Nassau and the city assemblage in general. The feature was likely filled under circumstances different from the general daily accumulation of refuse. The small size of the site assemblage, the limited nature of the overall site sampling, and the salvage nature of the excavations further compromises the integrity of the assemblage for reliable interpretation. For these reasons, interpretations of African American lifestyle derived from the 70 Nassau assemblage must be considered tentative.

Chapter IV Vertebrate Faunal Remains from Feature 1 (Well)

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Introduction

One of the difficulties faced by zooarchaeologists is to distinguish bones which became incorporated into an archaeological collection through human activities from those which did not. Sites occupied by humans are also occupied by many other species which are attracted to human residences. These include opossums, rodents, raccoons, birds, snakes, and frogs or toads. For example, snakes may be attracted to human habitations because of an increased access to mice, which are in turn attracted by stored grains or other foods. Opossums and raccoons may be attracted to stored foods, discarded foods, to gardens, or to other animals. Squirrels and owls frequently are attracted to houses for nest sites, although stored foods, other commensal animals, and gardens may also induce them to take up residences near houses. Pets are another class of commensal animal. Dogs in particular are often found on archaeological sites and, after the 1500s, cats also could be included in archaeological deposits of this hemisphere. However, none of these animals can be considered commensal without some proof since all could also have been consumed.

Clues to the function of these animals at an archaeological site are the context in which the remains are found, the percentage possibly commensal animals comprise in the collection, and the degree of skeletal completeness of the animals in question. While depositional settings at archaeological sites are varied, food remains are typically found in hearths, garbage heaps, trash pits, and abandoned wells or cellars. Pits, wells, and cellars are dangerous places once abandoned since children in particular may fall into them. Valuable livestock and pets may also fall into these open holes and be injured or killed. Hence, pits, wells, and cellars should be filled in or covered as soon as possible after they are abandoned. On the other hand, pits, wells, and cellars are sometimes not closed up, and then they serve as natural traps for animals which fall into them. Wells in particular are fatal traps since they often contain water and may have narrow, straight sides lined with wood, stone, or bricks, offering little hope of escape. There have been a number of studies of natural traps (Anderson 1968; Guilday and McGrady 1969; Hirschfeld 1968; White et al. 1984; Whyte 1988). These suggest that rodents, rabbits, carnivores, and frogs/toads are common components in natural traps depending on the setting in which the trap is located.

Commensal individuals are often identified in archaeological collections along with animals which probably served as food. For example, in a survey of Atlantic coastal plain faunal assemblages from urban and rural sites, it was found that commensal taxa constituted 11% of the individuals in urban samples and 4% of the individuals in rural

samples (Reitz 1986). Vermin (rants, snakes, frogs, and toads) were far more common in rural collections than were commensal domestic animals such as dogs, cats, and horses, which are not typically consumed by peoples of European descent. In rural collections, 95% of the commensal taxa were vermin, while in urban collections 79% of the commensal taxa were vermin. It was thought that commensal taxa were more common in urban collections because of the compressed space in which human and non-human activities take place. Pets in particular are probably less common in rural collections because they could be buried further away from the structures which are typically the focus of archaeological excavations, while pets were of necessity buried near living areas in cities if they were to be buried on the householder's owned or rented property.

There have been, however two cases in which the number of commensal taxa was greater than expected. One of these, Atlantic Wharf, was an open dump along the wharf's edge in Charleston (Reitz 1984; Zierden and Reitz 2002). Commensal taxa, particularly rats, constituted 35% of the individuals in this collection, much higher than the normal 11% for urban samples. Taxa which were interpreted as food contributed the remaining 65% of the individuals. A single cat was also identified in the Atlantic Wharf collection. The second unusual deposit was Feature 106 on Daniel's Island (Wood and Reitz 1986). This feature was a well associated with the Lesesne occupation of the plantation. The only animals in this well which might wave been food were a mammal identified only as UID Artiodactyl, a bird identified only as UID bird, and five rabbits. A puppy, a pine vole, 10 Hispid cotton rats, a turtle, 28 frog/toads, and four snakes were identified in the well. These contributed 85% of the individuals, which is above the rural average of 4%. The majority of the individuals (64%) were amphibians, primarily frogs and/or toads. Many of the animals in the well were young individuals. While commensal taxa were prominent in the Atlantic Wharf sample, food remains were the dominant component and hence this deposit was interpreted as being a general garbage disposal area which attracted a large number of rats, rather than a natural trap. The contents of the Lesesne well, however, clearly suggest a natural trap.

Skeletal completeness is another way to distinguish between animals which become incorporated into wells because the well was a natural trap and animals which were food refuse. The skeletons of animals used for food often are subjected to a great deal of post-mortem disturbance as the meat bearing portions of the skeleton are separated from the hide and viscera, distributed among family members or other consumers, and discarded. However, if an animal's skeleton is undisturbed after it dies, the skeleton should be relatively complete, perhaps even intact. A good example of high skeletal completeness correlating with lack of post-mortem disturbance is a burial of a pet. Animals which die where scavengers and other forces cannot disturb their carcass, such as a well, might also have a high degree of skeletal completeness.

At historic sites in particular, the ability to distinguish between animal remains which become entrapped in a well through natural processes and those which were thrown into the well as a final stage of consumption is important. It has been argued that during the First Spanish Period when wells at St. Augustine, Florida, become contaminated they were quickly filled with trash and another well dug (Deagan 1980). IF

this was the case, the wells represent short-lived phenomena, the contents represent a very discrete time period, and the faunal remains primarily represent food remains. Since Spaniards complained of being forced to eat vermin, it is also important to be able to tell if the contents of these wells were consumed or not. So far, commensal taxa constitute no more than 8% of the individuals from 16th-18th century Spanish Florida (Reitz and Cumbaa 1983; Reitz and Scarry 1985), suggesting that wells were not left open for very long and that vermin as defined here were rarely if ever consumed by Spaniards regardless of their official reports.

From this limited sample it appears that while Spaniards may have filled their wells in quickly, Americans did not. Perhaps, however, the difference between the Lesesne well and the St. Augustine well is that in urban centers such as Charleston and St. Augustine more care was taken to cover wells while on rural plantations there were fewer precautions. Until now we have not had a well from Charleston to compare with these data. Excavations at 70 Nassau Street in Charleston provide an opportunity to explore this question further.

Methods

Field work at 70 Nassau Street was conducted in 1990 by Martha Zierden, The Charleston Museum. During excavation, faunal materials were recovered using ¼ inch screen. All of the materials are from a well, which was designated Feature 1. The well was associated with a free black family. Although it was probably constructed in 1840 when the house was built on the property, the well was covered by an addition to this house sometime later. Water may have been drawn off using a pipe after this. The well did not contain abundant non-faunal remains, but it did contain a sizeable quantity of bone.

The vertebrate materials recovered were examined using standard zooarchaeological methods. All identifications were made by Jennifer Freer using the comparative skeletal collection of the Zooarchaeology Laboratory, Museum of Natural History, University of Georgia. Bones of all taxa were counted and weighted to determine the relative abundance of the species identified. A record was made of all 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) and are reported in Appendix A. Minimum Number of Individuals (MNI) was determined based on paired elements and age. In calculating MNI, faunal materials recovered from the feature were lumped.

The presence or absence of elements in an archaeological sample provides data on butchering, animal husbandry practices, and site formation processes. The elements recovered from the 70 Nassau Street well are summarized into categories by body parts. Head category includes bones associated with the cranium, mandible, and teeth. The atlas and axis formed a separate category along with other vertebrae, sternum, and ribs.

The forequarter category includes the scapula, humerus, ulna, and radius. Forefeet include carpals and metacarpals. The hindfeet include the tarsals, metatarsals. The hindquarter category includes the innominate, sacrum, femur, and tibia. The feet contain bones identified only as metapodials and other phalanges. These elements could not be assigned to other categories.

In order to assess the degree of skeletal completeness the "corrected number of bone specimens per individual" or CSI was calculated. The formula for CSI is:

where the estimated number of elements is an approximation of the number of bones in a complete skeleton of the species in question which might be identified; the higher the result, the greater the degree of skeletal completeness. CSI was calculated for Old World rats (Rattus spp.), dog (Canis familiaris), and cat (Felis domesticus) with the estimated number of elements taken from David H. Thomas (1971). The estimated number of rat elements is 29 and the estimated number of dog/cat elements is 83. The number for dogs and cats is taken from Thomas's Canis estimate in his Table 1 (1971), but with teeth subtracted since few loose carnivore teeth were recovered from the 70 Nassau Street well. Teeth still in the cranium and mandible were not counted in this study. The estimate for rats is Thomas's estimate for Neotoma in Table 1 (1971).

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 eighteenth 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.

Results

The collection from the 70 Nassau Street well consisted of 2,214 bones weighing 913.72 gm and contained the remains of an estimated 48 individuals (Table 1). The pig (Sus scrofa), deer (Odocoileus virginianus), cow (Bos Taurus), chicken (Gallus gallus, and rock sea bass (Centropristis philadelphica) were probably food items. The remainder of the collection consisted of rats, dogs, and cats. These commensal taxa constituted 88% of the individuals (Table2). The primary commensal animals were Old World rats (Rattus spp.), an estimated 21 of the 33 rat individuals were probably Norway rats (Rattus norvegicus) although some roof rats (Rattus rattus) may also have been present.

While the commensal taxa are relatively complete, the food taxa are not (Table 3). Pig and deer were represented by a single bone while the cow was represented by three bones, one of which was the forefoot. These bones are illustrated in Figure 1. While pigs, deer, cows, chickens, and rock sea bass were skeletally very incomplete, rats, dogs, and cats had high CSI values. Rats had 97.3, dogs 33.3, and cats 50.3.

Modifications were present on only a few bones (Table 4). Three UID Large Mammal bones had been burned. This was less than 1% of the collection. One mature rat ulna was pathological. The pathological chicken was a misshapen immature femur. One cow bone had been gnawed by a rat. All but one of the bones from animals thought to have been food animals (pig, deer, cow) had been sawed. Sawed bones included a deer femur, which had also been cut. Only one cow bone had been gnawed by rodents and none had been gnawed by carnivores. In Figure 1, the saw marks are shown by straight lines which extend beyond the outline of the bone.

Age of the animals was estimated (Tables 5 and 6). It appears that both of the dogs were juveniles, although one of the puppies was several weeks younger than the second puppy. Each of the seven cats died at a different age. Five of the cats were juveniles and two were adults. Three of the kittens were probably about six weeks old when they died and the other two kittens were several weeks older than this. The cow was a subadult which died before 24 months of age, based on an unfused proximal humerus diaphysis. There were 14 immature chicken bones, suggesting that one of the two individuals was a young bird while only one bone was clearly from a mature individual.

Discussion

The primary reason that this deposit is interesting is the possibility that this urban well was either filled in quickly and so served as a short-lived trash deposit, as at St. Augustine, or that it was left open and served as a natural trap, as on Daniel's Island. The low incidence of food remains in the well suggests that it was not used routinely as a garbage dump while the high percentage of vermin is in keeping with the possibility that the well served as a natural trap. The high degree of skeletal completeness for rats and cats suggests that entire skeletons were present in the well at one time and suffered very

little post-mortem disturbance. The puppies were less complete. Since juvenile bones have a lower potential for survival than do adult bones, and these were very young puppies, this may reflect the age of the animals rather than other post-mortem factors. For example, the kitten skeletons were less complete than the adult cant skeletons. Wjocj were almost complete.

The observations that few of the bones had been burned or gnawed indicates that they were not exposed to such post-mortem disturbances, providing additional evidence that the animals either fell into the well or were thrown here intact rather than exposed someplace else such as a garbage dump first and later moved to the well. The high number of rats in the well should correlate with a high number of gnawed bones. The lack of gnawing in combination with the large number of rat bones recovered from the well, may indicate that most bones were gnawed so completely that they did not survive deposition. Alternately, the evidence may indicate that all of the rats were not alive in the well at the same time. The rats might have been thrown into the well dead or it could be that only one or two rats were alive in the well at any one time and spent most of that time trying to get out.

So how did two puppies, five kittens, two cats, and thirty-three rats get into the well? The construction of the house over the well precludes the possibility that these animals were thrown into the well. Although the house was extended out over the well, the house was on pilings and consequently the well was still accessible to all animals under the house. The observation that the kittens and puppies were at different stages of development indicates that they did not fall into the well at a single moment in time. This suggest that these animals, over months and maybe years, fell into the well as they played or learned to walk under the house's deceptive protection. The rats likewise probably simply fell in over the years. Even the chickens might have fallen in and been unable to get out. The few fragments which were more probably by-products of human consumption (UID Large Mammal, cow, deer, pig, fish) could have been drug here by some other animals from elsewhere. Since only one of these bones was gnawed, it seems more likely that generalized activity under the house probably moved these bones to the well's edge and eventually into the well itself.

Conclusion

Zooarchaeologists look to the context in which animal remains are found, the percentage of possibly commensal individuals comprising the collection, and the degree of skeletal completeness of the animals in question in order to distinguish between remains which may have been incorporated into an archaeological collection through human activities and those which did not. Based on the observation that these materials are from a well, that the majority of the individuals are rats, and that there is a high degree of skeletal completeness for commensal taxa, this particular well was probably a natural trap rather than a trash receptacle.

Chapter V Vertebrate Faunal Remains from Feature 2 (Privy)

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Introduction

Since 1982, vertebrate faunal remains recovered from archaeological contexts in Charleston, South Carolina, have been examined at the University of Georgia's Zooarchaeology Laboratory. As a result of this long-term commitment to the study of these materials, much has been learned about animal use in this city (Bastian 1987; Calhoun et al. 1984; Grime and Zierden 1988; Honerkamp et al. 1982; Reitz 1984, 1986, 1987, 1990a; Reitz and Zierden 1991; Zierden et al. 1987; Zierden and Calhoun 1986, 1990; Zierden, Calhoun, and and Paysinger 1983, Zierden, Calhoun and Pinckney 1983, Zierden, Calhoun and Hacker 1986; Zierden and Grimes 1989, Zierden, Grimes, Hudgens, and Black 1988; Zierden and Hacker 1987; Zierden and Raynor 1988; Zierden, Reitz, Trinkley, and Paysinger 1982). Questions pertaining to rural/urban distinctions in subsistence efforts as well as the roles of domestic and wild resources in the diet have received most of the attention in this research.

Two related aspects of animal use in Charleston are central to this discussion. One of these is the role of butchered meats in the diet and the other is the role of fish in the diet (Reitz 1987; Reitz and Zierden 1991). Based on element distributions it has generally been concluded that, prior to the middle part of the nineteenth century, some if not most of the bones in archaeological sites may have originated from on-site butchery. After the middle part of the century mass-marketed meat became more common and replaced meat from home-slaughtered animals by the end of the century. Developing a hypothesis about the role of fish in the diet has been less straightforward, primarily because fish remains seem to be rare or common in samples on a random basis (Reitz 1990a). This point will be returned to below.

A General Subsistence Pattern describes most faunal materials recovered from urban Charleston (Table 2; Reitz 1986). Since element distributions suggest that on-site butchery was a common activity in Charleston (Reitz 1987; Reitz and Zierden 1991), an estimate of the Minimum Number of Individuals (MNI) has routinely been made along with other analytical procedures. Using this derived measure, domestic mammals generally are the most abundant group of individuals in deposits associated with eighteenth and early nineteenth century occupations. Cattle are usually the most abundant domestic animals, although pigs are also common in collections (Reitz 1986, 1987). Charleston samples contain few sheep or goats, although these are generally more common in samples from urban contexts than in rural ones, perhaps because these small ungulates are more appropriate for the urban setting. Domestic birds, usually chickens,

are commonly identified from Charleston sites; muscovy ducks and rock doves have been identified as well. All of these birds could be easily raised on urban lots.

Wild animals are common in Charleston collections. Deer are the primary wild mammal, although opossums, rabbits, squirrels, beavers, muskrats, and minks have been identified as minor components in several collections. Wild birds are almost exclusively Canada geese and turkeys. Canada geese and turkeys are interpreted as wild birds since morphological changes characteristic of domestication have not been observed. The high percentage of these "wild" birds in Charleston collections may indicate that that were at least captive, if not domestic, animals. Resources of the nearby harbor and marshes are also found in Charleston collections. These include a variety of turtle species, alligators, and a number of inshore fishes. Fishes have constituted 18% or less of the estimated individuals in most Charleston collections.

Only two of the assemblages used to construct this General Subsistence Pattern are from households of moderate income. [See Reitz and Zierden (1991) and Zierden and Calhoun (1986, 1990) for a discussion of status in the city.] Atlantic Wharf, Lodge Alley, McCrady's Tavern, and part of the First Trident assemblage are from commercial or poor areas of the city and the remainder are from higher class residential deposits (Reitz 1986, 1987; Reitz and Zierden 1991; Zierden and Calhoun 1986, 1990). Moderate income households are represented by the Charleston Place (Zierden and Hacker 1987) and 66 Society Street (Zierden, Grimes, Hudgens, and Black 1988) collections. The Charleston Place collection represents a number of middle-class or working-class residential/commercial activities that took place on this urban block from the late 18th to the mid-19th century. In many respects Charleston Place duplicates the General Pattern, perhaps because it was such a large component of the General Pattern in the first place (Table 2).

The 66 Society Street lot was owned sequentially by a number of individuals of moderate as well as higher status. The faunal assemblage, which was deposited between 1800 and 1870, differs slightly from the General Subsistence Pattern (Table 2). No Canada geese or turkeys were identified in the 66 Society Street assemblage and the only commensal animal in the collection was a dog which had been intentionally buried. This assemblage also appeared to contain few cranial elements of pigs or cows and 10% of the bone was sawed. Evidence of sawing is found in most Charleston deposits, but usually on less than 5% of the bone.

A high percentage of sawed bone is found in the 66 Society Street collection and in two other assemblages: the Visitor's Reception and Transportation Center (VRTC, 8% of the bone) and the President Street collections (15%) (Grimes and Zierden 1988; Zierden and Raynor 1988). These two collections were deposited somewhat after the 66 Society Street assemblage, primarily in the late 19th and early 20th centuries. In most respects the species in these two assemblages are not markedly different from those found in earlier collections, although wild birds were somewhat more common in both assemblages (Table 2). These wild birds were primarily ducks, although each assemblage also included one (President Street) or two (VRTC) turkeys. However the

primary difference between these collections and the other Charleston assemblages is that they contain a higher percentage of sawed bone.

In all three cases there appears to have been a more active involvement in an urban market system. It may be that families which did not own large properties in the city purchased more of their meat from markets than did large urban landowners and they began to do this earlier in the century than did large landowners. Households with smaller lots may have had more space and staff to tend urban livestock, but some may have had greater access to meats and other foods from their plantations.

On the basis of the research summarized above, it is possible to identify assemblages which appear markedly different from the typical Charleston faunal collection. This ability is useful when considering the faunal assemblage from 70 Nassau Street, the only one associated with a free black family. It was deposited in the late 19th century and was excavated in 1989 (Reitz 1990b). All of the materials from this excavation are from a well which was probably constructed in 1840 when a house was built on the property and covered by an addition to the house sometime later. Water may have been drawn off using a pipe after this, although the well was probably abandoned sometime in the later part of the 19th century. Since organic preservation in the well was quite good, it was hoped that the samples would contain large quantities of fish; preservational factors would then explain, at least in part, the scarcity of fish remains in other Charleston deposits. However, the materials from this well were significantly different from those recovered from other Charleston contexts for another reason (Table 2). The well contained a high percentage of rats rather than a high percentage of fish. These data probably indicate that the well served as a refuse dump and, primarily, as a natural trap (Reitz, this volume) rather than representing subsistence by a black family in Charleston.

The presence or absence of fish seems to be unrelated to screen size, depositional context, or behavioral factors such as time period, socioeconomic status, or ethnic affiliation. There are nine Charleston components in which fishes constitute more than 18% of the individuals (Table 1). It is hard to envision what adverse taphonomic conditions would exist in Cahrleston and not at nearby plantations or St. Augustine, where fish are common in archaeological deposits (Reitz 1986; Reitz and Cumbaa 1983; Reitz and Scarry 1985). However it is true that oyster shells are more common as part of the depositional matrix in St. Augustine and that many of the archaeological deposits are from damp locations, where preservation of organic materials is enhanced. In Charleston, fish have been common in damp locations such as the First Trident site (Zierden, Calhoun and Pinckney 1983), but most of the collections in which fish are common are from contexts that were not markedly damp or otherwise anaerobic (Reitz 1990a).

There does not appear to be a consistent relationship between fish remains and behavioral factors. There is no correlation between time period and abundance of fish (Table 1) nor does status appear to be a determining factor. Many of the residential sites were occupied by upper status households, however fish were rare in three upper status

collections and common in some collections which were not from upper status households. The earlier effort to determine if high fish use might be associated with ethnicity at 70 Nassau Street was also unsuccessful (Reitz, this volume). An alternative explanation is that fish were an important food item by filleted before being sold in the city by vendors, or brought to the city from plantations, or filleted for their own use by individual fishermen. Perhaps fish were simply rarely consumed in the city—a sharp contrast to behavior at contemporary plantations and in St. Augustine. The few collections in which fish are common may represent sites where household members simply ate more fish in a city where fish consumption was infrequent. Recently additional work conducted at 70 Nassau Street provided an opportunity to explore this question further with materials from another damp context.

Methods

Additional field work at the 70 Nassau Street site was conducted by The Charleston Museum under the direction of Martha Zierden in 1991. A house was built on the site by a free black family in 1840 and underwent several cycles of remodeling. Vertebrate faunal remains were recovered from a brick-lined privy (Feature 2) and a builder's trench (Martha Zierden, personal communication, 1991). Only half of the privy was excavated. Eight natural levels were defined. Levels 1 through 3 date from the second half of the 20th century; Levels 4 through 7 date to ca. 1900, and level 8 dates to ca. 1880. Most of level 8 was below the water table. The materials in the builder's trench were probably deposited around 1850. A list of the samples examined for this study is included in Appendix A. During excavation, faunal materials were collected using a ¼ inch meshed screen.

The vertebrate materials recovered were examined using standard zooarchaeological methods. All identifications were made by Barbara Ruff using the comparative skeletal collection of the Zooarchaeology Laboratory, University of Georgia. Bones of all taxa were counted (NISP) and weighted to determine the relative abundance of the species identified. A record was made of identified elements and their symmetry. Age, sex, and bone modifications were noted when observed. Butchering marks were recorded.

Where preservation allowed measurements were taken. These generally followed the guidelines established by Angela von den Dreisch (1976) for mammals and birds. The anterior width of the fish atlas was also recorded. These measurements are reported in Appendix B. Additional measurements were taken in an attempt to distinguish between the mandibles of roof rats (Rattus rattus) and Norway rats (R. norvegicus) following Armitage and his colleagues (1984). In this case a ratio is set up between the smallest diastema height (dh) and the diastema length (dl) as follows:

Diastema Index = $Dh/Dl \times 100$

The index should be larger for the roof rat than for the Norway rat, with Norway rat having a diastemal index below 65 and roof rats having a diastemal index above 65 (Philip Armitage, personal communication 1990.

Minimum number of Individuals (MNI) was determined based on paired element and age. In calculating MNI, faunal materials recovered from the three separate deposits in the well were considered discrete analytical units (Levels 1-3; 4-7; 8) and the builders trench plus other archaeological proveniences were combined into a fourth analytical unit. While MNI is a standard zooarchaeological qualification 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 the 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 (Thomas 1971; White 1953). 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 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 principal 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, Roe, and Lewontin 1960:397). Many biological phenomena show allometry described by this formula (Gould 1966, 1971). In this equation, \underline{X} is the skeletal weight or a linear dimension of the bone, \underline{Y} is the quantity of meat or the total live weight, \underline{b} is the constant of allometry (the slope of the line), and \underline{a} is the Y-intercept for a log-log plot using the method of least squares regression and the best fit line (Casteel 1978; Reitz and Cordier 1983; Reitz et al. 1987; Wing and Brown 1979). 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 \underline{a} and \underline{b} are obtained from calculations based on data at the Florida Museum of Natural History, University of Florida and the University of Georgia Museum of Natural History. The allometric formulae used here are presented in Table 3.

Biomass and MNI are subject to sample size bias. Casteel (1978), Grayson (1979, 1981), 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.

In order to summarize the data, the species list was reduced into several categories based on vertebrate class and husbandry practices. This is done to contrast the percentage of various groups of taxa in the collection. Domestic mammals include pigs (Sus scrofa), cows (Bos taurus), and sheep or goats (Caprine). These latter animals are combined due to the difficulty in distinguishing between them. Domestic birds were chickens (Gallus gallus). Wild birds include ducks (Anas spp., A. platyrhynchos), Canada goose (Branta Canadensis), turkeys (Meleagris gallopavo), and laughing gull (Larus atricilla). Canada geese and turkeys 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-18th century. Aquatic reptiles included a pond turtle (Emydidae). Commensal taxa included house mouse (Mus musculus), Old World rat (Rattus spp.) and dog (Canis familiaris). It should be noted that only biomass for those taxa for which MNI had been determined is included in the summary table in order to make comparison of MNI and biomass estimates possible. For example, biomass for Anatidae is not included in the following summary, while biomass for Emydidae is.

The presence or absence of elements in an archaeological sample provides data on butchering and animal husbandry practices. The elements for mammals found in the 70 Nassau Street assemblage were summarized into categories by body parts. "Skull" includes only skull fragments and teeth. The atlas and axis, along with other vertebrae and ribs, formed a separate category. The forequarter category includes the scapula, carpals, and metacarpals. The hindfoot includes the tarsals and metatarsals. The hindquarter category includes the innominate, sacrum, femur, and tibia. The foot contains bones identified only as metapodials and phalanges. These elements could not be assigned to other categories. It should be noted that there is a considerable bias against identification of artiodactyl ribs and vertebrae to species, especially for the smaller members of this order such as pigs, sheep, goat, and deer. Hence the numbers of these elements identified probably do not reflect accurately the percentage of these bones actually discarded at the site.

To illustrate the number of elements and their location on a carcass, the artiodactyl elements identified are presented visually. Skull fragments and loose teeth are not illustrated. Although the atlas and axis are accurately depicted, other cervical vertebrae, as well as thoracic, lumbar, and caudal vertebrae and ribs are placed approximately on the illustration, with the last lumbar location used to illustrate fragments that could be identified only as vertebrae. Bones identified only as sesamoids, metapodials, or phalanges are illustrated on the right hindfoot.

In order to assess the degree of skeletal completeness the "corrected number of bone specimens per individual" or CSI was calculated. The formula for CSI is:

where the estimated number of elements is an approximation of the number of bones in a complete skeleton of the species in question which might be identified; the higher the result, the greater the degree of skeletal completeness. CSU was calculated for Old World rats (Rattus spp.), dog (Canis familiaris), and cat (Felis domesticus) with the estimated number of elements taken from Thomas (1971). The estimated number of rat elements is 29 and the estimated number for dog/cat is 83. The number for dogs and cats is taken from Thomas's Canis estimate (1971), but with teeth subtracted since few loose carnivore teeth were recovered in the 70 Nassau Street assemblage. Teeth still in the cranium and mandible were not counted in this study. The estimate for rats is Thomas's (1971) estimate for Neotoma.

Modifications to bones can indicate butchering methods as well as site formation processes. Modifications were classified as sawed, sliced, cut, hacked, rodent gnawed, and burned. The presence of striations on the outer layer of compact bone indicates that the bone has sawed, presumably before the meat was cooked. Bones recorded as sliced 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 bones. Slicing was usually found on bones that had only a thin layer of compact bone on the outer edge where saw striations are usually seen or it is possible that striations were not preserved. Cut marks were small incisions across the surface of bones. These marks were probably made by a knife as meat was removed from bone before or after the meat was cooked. Cuts may also result from attempts to disarticulate the carcass at joints. Some cut marks that appear to be made by human tools may actually be abrasions inflicted after the bones were discarded, but distinguishing the source of small cuts requires access to higher powered magnification than was available during this study (Shipman and Rose 1983). Hacks closely resemble cut marks in their shape and irregularity but are deeper and wider. Hack marks are evidence that some larger instrument was used. Presumably a cleaver, hatchet, or axe would have been employed as the carcass was being dismembered rather than after the meat was cooked. Rodent gnawing indicates that bones were not immediately buried after disposal. While burial would not insure an absence of gnawing, exposure of bones for any length of time might result in gnawing. Gnawing by rodents, as well as by carnivores, would result in loss of an unknown quantity of discarded bone. Burned bone may result from exposure to fire when a cut of meat is roasted. Burns may also be inflicted if bones are burned intentionally or unintentionally after discard.

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 three 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 eighteenth months of age and is found fused archaeologically could be from an animal which died immediately ater fusion was complete or many years later. The ambiguity inherent in age gouping 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 or slaughter of older animals after their usefulness as draft, wool, or dairy production is over.

Evidence of sex was also noted when present. Spurs on the tarsometatarsus of Galliformes such as chickens, turkeys, and quails indicate male birds. Hens in laying condition are indicated by medullary deposits on bone (Rick 1975). Medullary bone is a source of calcium for females while laying eggs..

Results

The 70 Nassau Street assemblage contained 1,991 bones containing the remains of at least 105 individuals and weighted 4,252.6 gm. The largest component was from the privy, especially Levels 4-7 (Table 4). Although initially it was anticipated that Level 4 was deposited in the privy during the second half of the twentieth century along with Levels 1-3, a sawed cow illium fragment was found in Level 4 which cross-mended with one in Level 5, so Level 4 was combined with Levels 5-7 during analysis. The bulk of the collection, therefore, was deposited around 1900. The sample is reasonably large and probably biased less by sample size than by the fact that it originated from a privy.

The majority of the individuals and most of the biomass in the 70 Nassau Street assemblage were contributed by domestic animals (Table 5). Pigs (Sus scrofa) constituted 9% of the individuals and 31% of the biomass from taxa for which MNI had been estimated while cows (Bos taurus) contributed 6% of the individuals and 52% of the biomass (Table 6). Caprines were also identified, constituting 3% of the individuals and 2% of the biomass. In terms of individuals, chickens (Gallus gallus) were the most abundant single species, contributing 39% of the individuals and 6% of the biomass. No caprines were indentified in the Level 8 sample. Domestic mammals constituted 20% of the individuals (N=3) in Levels 1-3, 16% of the individuals (N=9) in Levels 4-7, 9% of the individuals (N=3) in Level 8, and all of the individuals (N=3) in other contexts. Chickens constituted 7% of the individuals (N=1) in Levels 1-3, 42% of the individuals (N=23) in Levels 4-7, and 53% of the individuals (N=17) in Level 8.

Wild birds and aquatic reptiles were not common in the 70 Nassau Street collection (Table 5). Wild birds and reptiles contributed 8% of the individuals, but only 2% of the biomass (Table 6). Wild birds included mallard (Anas playtrhynchos), Canada goose (Branta Canadensis), turkey (Meleagris gallopavo), and laughing gull (Larus atricilla). Both the Canada goose and the turkey might have been domestic birds and the laughing gull might have been a commensal animal. A single pond turtle (Emydidae) was also identified.

Fishes constituted 23% of the individuals but only 3% of the biomass in the 70 Nassau Street assemblage (Table 6). Fish included the freshwater channel catfish (Ictalurus punctatus) and eight marine species. All of these could have been taken from within the Charleston estuarine systems. The most common fishes were sea basses (Centropristis spp.) followed by drums and porgies. All of the fish were from the privy. Seven of the fish individuals were from Levels 1-3, 12 were from Levels 4-7; and five were from Level 8.

While large numbers of cranial bones were identified for rats and dogs, the domestic mammals evidence a great deal of skeletal incompleteness (Table 8; figures 2-4). Only five artiodactyl teeth were identified, four of which were from pig and one from caprine. The pig teeth were from Levels 4 and 6 and the caprine tooth was from Level 4 in the privy. Bones from the lower leg were also rare in the assemblage. The CSI values for rat was 44.1 and for dog 22.1. While rats were more complete than were dogs, both had endured some level of post-mortem disturbance.

Modifications were observed on 11% of the bones (Table 9). The most common modification was associated with sawing, including both sawed and sliced bones in this category. Sawed/sliced bones were most common in Levels 4-7, where they comprised 10% of the bones in that occupational zone (N=111). In Levels 1-3, sawed/sliced marks were found on 1% of the bones (N=8); in Level 8 they were found on 4% of the bones (N=11); and in the other contexts they were found on 4% of the bones (N=1).

Age of death could not be estimated for all of the animals, but most artiodactyl individuals were subadults at death (Tables 10-12). Three of the pig individuals were of indeterminate age at death. In Levels 1-3, one pig was less than 18 months of age at death; in Levels 4-7, two were less than 18 moths at age of death; in Level 8, one was less than 18 months at age of death and one was less than 36 months; and in the other contexts one was less than 24 months at age of death. One of the cow individuals was of indeterminate age at death. One of the individuals in Levels 4-7 was less than 36 months of age when it died and the other two were adults; in Level 8, one of the individuals was less than 36 months of age, in the other contexts one was less than 36 months of age when it died. Two of the caprine individuals were of indeterminate age at death and one individual in Levels 1-3 was less than 36 months at age of death. One of the dogs in Levels 1-3 was an adult while the other was a puppy. The dog in Level 8 was also a puppy.

There was some evidence both for the use of young chickens and of roosters. In Levels 4-7, 15% of the chicken bones (N=23) were from juveniles and in Level 8, 32% of the chicken bones (N=21) were from juvenile animals. Two of the roosters were also found in Level 8. Although none of the chickens had medullary bone, two of the UID Bird bones did have a medullary deposit.

Discussion

The 70 Nassau Street materials recovered during the 1991 excavations may be more reasonably considered representative of subsistence by a black family in Charleston than those recovered from the well excavated in 1989. it appears that members of this household made extensive use of chickens, limited use of wild birds and aquatic reptiles, and no use at all of wild mammals. None of these characteristics were found in approximately contemporaneous collections from the VRTC or President Street sites. The high numbers of chickens, especially young ones, might indicate consumption of birds raised on the property.

The elements identified from pigs and cows, combined with the percentage of sawed bones, suggest that the 70 Nassau Street household purchased meat primarily from markets. It is important to note, however, that the amount of sawed bone is not high compared to other collections from this time period. Only 6% of the bones were sawed. Sawing was found on 10% of the 66 Society Street bones, 8% of the VRTC bones, and 15% of the President Street bones. Also, the elements recovered do not conform to standard cuts of meat in most cases. Pigs, in particular, may have occasionally been slaughtered on the property since both cranial and foot bones were recovered. Skeletal distribution of cow bones is best explained by purchased meat cuts even though the types of fragments recovered do not conform to standard cuts.

Fish are more abundant in the 70 Nassau Street collection than in collections from other Charleston sites occupied during this time period (Table 2). This might be due to the fact that 20% of the fish individuals were from Level 8, below the water table, and that 50% of the fish individuals were from the four levels immediately above the water table. This distribution suggests that fish might be generally rare in Charleston faunal collections because of preservation problems. Alternatively, family members at 70 Nassau Street may have fished frequently in local waters or purchased more fish than did members of other urban households. In either case, it is clear that the resources of the harbor were not ignored by all of the households in Charleston.

Determining whether this collection is characteristic of black subsistence efforts in the city at the end of the nineteenth century and into the twentieth century will require additional data from other African American households. Differences between this and other collections could be attributed to behavioral patterns or to the fact that it is at present the only representative of urban African American subsistence efforts in the city.

Conclusion

The materials excavated from 70 Nassau Street appear to represent subsistence at the site. This contrasts with the well materials excavated from this site earlier and which appear to represent a natural trap rather than a household trash pit. The faunal assemblage from 70 Nassau Street suggests that this household purchased much of its meat from markets. Chickens may have been raised on the property, however. Fish are very common in the collection. This may be due to the damp conditions of the privy or because the household made extensive use of fish in their diet. The pattern of animal use is dissimilar to that found in samples from other late nineteenth to early twentieth century sites. This may be because the 70 Nassau Street collection is larger than the VRTC and President Street collections, or due to behavioral factors which are not well understood at this time.

Feature 1 (well)

- 3 fragments undecorated whiteware
- 1 teal-green bottle, mold seam disappears at neck, "Halls" "Hair Renewer" (1850-1902)
- 1 clear glass bottle, pharmaceutical, 3-piece mold
- 1 brown glass bottle, mold seam disappears at neck, paneled "Raine's" "Celery Compound"
- 4 fragments brown glass
- 1 fragment blue glass
- 1 fragment dark aqua glass
- 14 fragments clear bottle glass
- 1 fragment yellow glass
- 1 fragment milk glass
- 2 fragments thin clear frosted glass
- 3 fragments paneled tumbler
- 2 crown bottle caps
- 1 button, bone 1-hole
- 1 button, iron, 4-hole
- 1 glass marble, cat's eye
- 1 hard rubber ball
- 1 pipe bowl fragment
- 2 large lumps sulphur
- 1 lump lead
- 1 wire nail
- 2 sections iron pipe
- 1 bedspring

Feature 2, level 8

- 1 whiteware plate, round, undecorated (7 fragments)
- 4 whiteware saucers (13 fragments)
- 3 whiteware cups, with handles (12 fragments)
- 1 whiteware cream jar and lid
- 1 whiteware pitcher (9 fragments)
- 5 whiteware fragments, cup
- 26 whiteware fragments, body
- 1 whiteware handle, chamber pot
- 2 yellow ware fragments
- 1 blue-sponged whiteware fragment
- 1 hand-painted whiteware fragment
- 1 transfer-print whiteware fragment, blue
- 1 creamware fragment
- 1 clear glass soda water bottle, "C.L. Kornahrens, Charleston, SC)
- 1 clear glass bottle, square pickle
- 1 clear glass bottle, rectangular panel
- 1 clear glass bottle, paneled on 3 sides
- 1 clear glass jar, Vaseline, screw top
- 1 ink bottle, round, hand-applied lip "T. Davids &Co, Pat. Nov 7, 76"
- 1 ink bottle, igloo, "J&IEM"
- 1 brown glass bottle, pharmaceutical, small, "McKesson& Robbins"
- 1 dark olive green bottle, bulbous neck (mend from 14 fragments)
- 1 clear glass bottle, oval, bottom half
- 1 clear glass bottle, round, bottom portion
- 1 clear glass bottle, base
- 1 clear glass bottle, neck, hand-applied lip
- 1 clear glass bottle, neck, sheared with extra ring
- 61 clear glass fragments
- 5 olive green glass fragments
- 1 small goblet bowl, paneled
- 1 large goblet, paneled from base to bowl
- 1 goblet bowl, hexagonal faceted
- 1 glass mug/stein, handle and base
- 1 glass tumbler, paneled sides, small
- 108 fragments misc. table glass
- 1 fragment red painted glass
- 14 fragments white frosted glass

- 3 bone buttons, 4-hole
- 3 prosser buttons, 4-hole, large
- 4 prosser button, 4-hole, medium
- 5 prosser button, 4-hole, small
- 2 prosser button, half
- 1 prosser button, 2-hole, medium
- 3 prosser button, 4-hole, decorated
- 1 shell button, 4-hole
- 1 molded glass button
- 1 moonstone jewel set in brass
- 1 jet, rectangular, set in brass
- 1 faceted glass bead, top to hat pin
- 1 brass buckle fragment
- 1 collar stud, gold
- 2 slate pencils
- 2 bone die, small
- 2 hard rubber combs
- 4 fragments of hard rubber
- 5 toothbrushes, bone
- 2 kerosene lamp tops, straight
- 2 kerosene lamp tops, crimped
- 127 fragments kerosene lamp chimneys
- 1 fragment porcelain figurine, unglazed
- 1 pipe bowl, stub-stemmed, white clay, ribbed surface
- 1 pipe bowl, short curved stem oval in cross-section
- 6 pipe bowl fragments
- 2 flower pot fragments
- 2 spherical brass objects, unknown function
- 1 fragments 18th century ceramic, water-washed

Feature 2, levels 4-7*	Level 4	5	6	7
South Carolina Dispensary bottle Pint (liquor) bottle Panel bottle Clear bottle, crown cap Brown bottle, crown cap (beer)	1 1	1	1 2 2 1 1	1
Small pharmaceutical Perfume Mason jar, quart	1	1	3	1
Clear bottle glass Aqua bottle glass	176	1	183	70
Clear bottle neck Brown bottle glass Blue glass	19 1	11 11	2 10	34 45
Olive green glass	1		6	1
Tumbler Table glass	1	2 3	2	4
Carnival glass Milk glass Molded glass	1 1	3	2 4 4	1
Red glass Green, yellow glass	1 5	35	18	1
Undecorated whiteware Annular whiteware Shell edge whiteware Polychrome hand-painted whiteware Transfer printed whiteware Polychrome hand painted pearlware Transfer printed pearlware Yellow ware 19 th century stoneware White porcelain Glazed brown 'majolica' Luster ware Whiteware chamber pot Chinese export porcelain Colono ware	14 2 1 1 1 2 1	27 2 1 1 1 1	18 1 2 1 4 1 2 8 3	2 1 2
Tin can Crown cap	25			166 5

Clear flat glass Nails, u.d. Wire Hardware	101 111 5 3	62	21	37 45 3
Black glass button	1		1	
Hard rubber button	1			
Prosser button		2	2	3
Prosser button, decorated				1
Shell button		1	1	3
Glass button setting				1
Collar stud, porcelain			1	2
Collar stud, bone			1	
Straight pin			1	4
Scissors				1
Hard rubber comb	2		1	2
Glass marble	1		1	1
Clay marble	1			
Tooth brush		1	1	
Doll part		2		
Eyeglass lens			1	
Wood pencil				1
TV 1 1	2		1	1
Pipe bowl	3		1	1
Brass ring	-		1	
Flower pot	7	4	10	1
Human tooth with caries				1

 $[\]boldsymbol{*}$ metal retained only from levels 4 and 7

Test Unit 1	Zone 2	builder's trench
Undecorated whiteware Transfer printed whiteware Hand painted whiteware	2	2 7 2
Shell edged whiteware Annular whiteware Undecorated pearlware	1	1 2
Annular pearlware Lusterware Yellow ware Colono ware	1	2 1 1
Olive green glass Clear glass Brown glass Table glass	1	12 12 9
Clear flat glass Nail	2	8 7
Prosser button Pipe bowl Pipe stem Shovel blade Fossil shark tooth		1 1 1 1

References Cited

Primary Sources

American Poultry Association

1874 American Standard of Excellence.

Bridgens and Allen

1852 An Original Map of the City of Charleston. South Carolina Historical Society, Charleston.

Charleston City Directories

1809, 1822, 1831, 1849, 1852, 1859, 1869-70. Charleston Library Society.

Charleston County Register Mesne Conveyance (CCRMCO) Charleston, South Carolina.

City of Charleston

1991 Community Development Division Newsletter.

Dawson, J.L. and H. W. Desaussure

1848 Census of the City of Charleston, South Carolina. J.B. Nixon, Charleston

Drie, C.

1872 Birds Eye View of the City of Charleston. Library of Congress.

Ford, Frederick A.

1861 Census of the City of Charleston, South Carolina. Evans and Cogswell, Charleston.

Keenan, W.

1844 Plan of the City and Neck of Charleston, South Carolina. Copy on file, South Carolina Historical Society.

List of Tax Payers for the City of Charleston

1860 Evans and Cogswell, Charleston.

Population Schedules, United States

1860 Eighth Census of the United States, Charleston, Wards 5 and 7.

1870 Ninth Census of the United States, Charleston, Wards 5 and 7.

Premium List of the South Carolina Institute

1870 Walker, Evans, and Cogsell, Charleston.

Real Property Assessments in City Wards (Ward Books) 1853, 1864 South Carolina Historical Society.

Rules and Regulations for Charleston Neck, to which are annexed the Acts of Legislature which relate exclusively to Charleston Neck.

1848 Burges, James and Baxton, Charleston.

Sanborn Fire Insurance Maps
Charleston Library Society, Charleston.

South Carolina Department of Archives and History Architectural Survey, #c-459-9-2:107

South Carolina

Tax Book – Free Persons of Color 1861 South Carolina Historical Society 1862-1863 Charleston Library Society 1864 Charleston City Archives.

Secondary Sources

Anderson, Elaine

1968 Fauna of the Little Box Elder Cave, Converse County, Wyoming: the Carnivora. University of Colorado Study Series, Earth Sciences 6:1-59.

Armitage, Philip L., Barbara West, and Ken Steedman 1984 New Evidence of Black Rat in Roman London. *The London Archaeologist* 4(14):375-383.

Bastain, Beverly

1987 Historical and Archaeological Investigations at the United States Post Office/Courthouse Annex Site (38Ch838), Charleston, South Carolina. Gilbert/Commonwealth, Inc., of Michigan. Submitted to the National Park Service Southeast Regional Office, Atlanta, Contract No. CX-5000-6-0010.

Calhoun, Jeanne A., Elizabeth J. Reitz, Michael B. Trinkley, and Martha A. Zierden 1984 Meat in Due Season: Preliminary Investigations of Marketing Practices in Colonial Charleston. Archaeological Contributions 9, The Charleston Museum, Charleston, SC.

Casteel, Richard W.

1978 Faunal Assemblages and the "Wiegemethode" or Weight Method. *Journal of Field Archaeology* 5:72-77.

Curry, Leonard

1981 *The Free Black in Urban America 1800-1850: The Shadow of the Dream.* University of Chicago Press, Chicago, IL.

Deagan, Kathleen A.

1980 Spanish St. Augustine: America's First "Melting Pot". Archaeology 33(5):22-30.

1983 Spanish St. Augustine: the Archaeology of a Colonial Creole Community. Academic Press, New York, NY.

Dreisch, Angela von den

1976 A Guide to the Measurements of Animal Bones from Archaeological Sites. *Peabody Museum bulletin* No. 1.

Ferguson, Leland L.

1999 "The Cross is a Magic Sign": Marks on Eighteenth-Century Bowls from South Carolina. In "*I, too, Am America*", edited by Theresa Singleton, pp. 116-131, University Press of Virginia, Charlottesville, VA.

Gilbert, B. Miles

1980 Mammalian Osteology. Modern Printing Company, Laramie, WY.

Guilday, John E. and A.D. McGrady

1969 The Pleistocene Vertebrate Fauna of Robinson Cave, Overton County, Tennessee. *Paleovertebrate* 2:25-75.

Hirschfeld, S.E.

1968 Vertebrate Fauna of Nichol's Hammock, A Natural Trap. *Quarterly Journal of the Florida Academy of Science* 31:177-189.

Honerkamp, Nicholas, R. Bruce Council and M. Elizabeth Will

1982 An Archaeological Investigation of the Charleston Convention Center Site, Charleston, South Carolina. Jeffrey L. Brown Institute of Archaeology, University of Tennessee, Chattanooga. Submitted to National Park Service Southeast Regional Office, Atlanta. Contract No. C-54060(81).

Hudgins, Carter L., Carl R. Lounsbury, Louis P. Nelson, and Jonathan H. Poston 1994 The Vernacular Architecture of Charleston and the Lowcountry 1670-1990: A Field Guide. Vernacular Architecture Forum and Historic Charleston Foundation, Charleston, SC.

Johnson, Michael P. and James L. Roark

1984 No Chariot Let Down: Charleston's Free People of Color on the Eve of the Civil War. University of North Carolina Press, Chapel Hill, NC.

Koger, Larry

1985 Black Slaveowners: Free Black Masters in South Carolina, 1790-1860. McFarland & Company, Jefferson, NC.

Miller, George L., Patricia Samford, Ellen Shlasko, and Andrew Masden 2000 Telling Time for Archaeologists. *Northeastern Historical Archaeology* 29:1-22.

Pease, William H. and Jane H. Pease

1985 The Web of Progress: Private Values and Public Styles in Boston and Charleston, 1828-1843. Oxford University Press, New York, NY.

Perry, Warren and Robert Paynter

1999 Artifacts, Ethnicity, and the Archaeology of African Americans. In "*I, too, Am America*", edited by Theresa Singleton, pp. 299-310, University Press of Virginia, Charlottesville, VA.

Reitz, Elizabeth J.

1984 Vertebrate Fauna from Atlantic Wharf, Charleston, South Carolina. Ms. on file, Zooarchaeology Laboratory, Georgia Museum of Natural History, University of Georgia, Athens, GA.

1986 Urban/Rural Contrasts in Vertebrate Fauna from the Southern Atlantic Coastal Plain. *Historical Archaeology* 20(2):47-58.

1987 Urban/Rural Contrasts in Vertebrate Fauna from the Southern Atlantic Coastal Plain. *Historical Archaeology* 20(2)47-58.

1988 Vertebrate Fauna from the Charleston Exchange Building. Ms. on file, Zooarchaeology Laboratory, Georgia Museum of Natural History, University of Georgia, Athens, GA.

1990a Vertebrate Fauna from the Brewton House, Charleston, South Carolina. In Archaeology at the Miles Brewton House, 27 King Street, by Martha Zierden, pp. 127-196, Archaeological Contributions 29, The Charleston Museum, Charleston, SC, 2001.

1991 The Wells of St. Augustine and Santa Elena. Ms. on file, Zooarchaeology Laboratory, Georgia Museum of Natural History, Athens, GA.

Reitz, Elizabeth J. and Dan Cordier

1983 Use of Allometry in Zooarchaeological Analysis. In *Animals in Archaeology 2: Shell Middens, Fishes, and Birds*, edited by C. Grigson and J. Clutton-Brock, pp. 2370252. BAR International Series 183, London.

Reitz, Elizabeth J. and Stephen L. Cumbaa

1983 Diet and Foodways of Eighteenth-Century Spanish St. Augustine. In *Spanish St. Augustine: the Archaeology of a Colonial Creole Community*, by Kathleen A. Deagan, pp. 152-185, Academic Press, New York, NY.

Reitz, Elizabeth J. and C. Margaret Scarry

1985 Reconstructing Historic Subsistence with an Example from Sixteenth-Century Spanish Florida. Society for Historical Archaeology Special Publication No. 3.

Reitz, Elizabeth J. and Martha A. Zierden

1991 Cattle bones and Status from Charleston, South Carolina. In *Beamers, Bobwhites, and Blue-points: Tributes to the Career of Paul W. Parmalee*, edited by J.R. Purdue, W.E. Klippel, and B.W. Styles, pp 395-407. Illinois State Museum, Springfield, IL.

Reitz, Elizabeth J., I.R. Quitmyer, H.S. Hale, S. J. Scudder, and E.S. Wing Application of Allometry to Zooarchaeology. *American Antiquity* 52(2):304-317.

Rick, Ann

1975 Bird Medullary Bone: A Seasonal Dating Technique for Faunal Analysis. *Canadian Archaeological Association Bulletin* 7: 183-190.

Rosengarten, Dale, Martha Zierden, Kimberly Grimes, Ziyadah Owusu, Elizabeth Alston, and Will Williams III

1987 Between the Tracks: Charleston's East Side during the Nineteenth Century. Archaeological Contributions 17, The Charleston Museum, Charleston, SC

Schiffer, Michael B.

1977 Toward a Unified Science of the Cultural Past. In *Research Strategies in Historical Archaeology*, edited by Stanley South, pp. 13-40, Academic Press, New York, NY.

1983 Toward the Identification of Formation Processes. *American Antiquity* 48(4):675-706.

Schmid, Elizabeth

1972 Atlas of Animal Bones for Prehistorians, Archaeologists, and Quarternary Geologists. Elsevier Publishing, Amsterdam.

Shipman, Pat and J. Rose

1983 Evidence of Butchery and Hominid Activities at Torralba and Ambrona: An Evaluation Using Microscopic Techniques. *Journal of Archaeological Science* 10(5):465-474.

Silver, I.A.

1963 The Ageing of Domestic Animals. In *Science in Archaeology*, D. Brothwell and E. Higgs, eds, pp. 250-268, Praeger, New York, NY.

Simpson, George G., A. Roe, and R.C. Lewontin

1960 Quantitative Zoology. Harcourt, Brace, and Co., New York, NY.

Singleton, Theresa A.

1999 An Introduction to African American Archaeology. In "*I, too, Am America*", edited by Theresa Singleton, pp. 1-20, University Press of Virginia, Charlottesville, VA.

Thomas, David Hurst

1971 On Distinguishing Natural from Cultural Bone in Archaeological Sites. *American Antiquity* 36:366-371.

Vlach, John M.

1978 *The Afro-American Tradition in Decorative Arts.* Cleveland Museum of Art, Cleveland, OH.

Wade, Richard C.

1964 Slavery in the Cities: the South, 1820-1860. Oxford University Press, New York, NY.

Watson, J.P.N.

1978 The Interpretation of Ephyseal Fusion Data. In *Research Problems in Zooarchaeology*, edited by D.R. Brothwell, J.D. Thomas, and J. Clutton-Brock, pp. 97-102. University of London Institute of Archaeology Occasional Publication No. 3.

White, T.E.

1953 A Method of Calculating the Dietary Percentages of Various Food Animals Utilized by Aboriginal Peoples. *American Antiquity* 19(2):396-398.

White, John A., H.G. McDonald, E. Anderson, and J.M. Soiset

1984 Lava Blisters as Carnivore Traps. In Contributions in *Quarternary Vertebrate Paleontology: A Volume in Memorial to John E. Quilday*, edited by H.H. Genoways and M. Dawson, pp. 245-256, Carnegie Museum of Natural History Special Publication 8, Pittsburgh, PA.

Whyte, Thomas R.

1988 An Experimental Study of Small Animal Remains in Archaeological Pit Features. Ph.D. Dissertation, University of Tennessee, University Microfilms, Ann Arbor, MI.

Wing, Elizabeth S. and Antoinette B. Brown

1979 Paleonutrition: Method and Theory in Prehistoric Foodways. Academic Press, New York, NY.

Wood, Karen G. and Elizabeth J. Reitz

1986 Zooarchaeological analysis of the Vertebrate Fauna from the Historic Lesesne and Fairbank Plantations, Daniel's Island (38Bk202), Berkeley County, South Carolina. IN

Home Upriver: Rural Life on Daniel's Island, Berkeley County, SC, by Martha Zierden, Lesley M. Drucker, and Jeanne Calhoun, pp. D1-59. South Carolina Department of Transportation, Columbia, SC.

Wood, Peter H.

1975 Black Majority: Negroes in Colonial South Carolina from 1670 through the Stono Rebellion. Alfred A. Knopf, New York, NY.

Zierden, Martha

1996 Big House/Back Lot: An Archaeological Study of the Nathaniel Russell House. Archaeological Contributions 25, The Charleston Museum, Charleston, SC.

2001 Archaeology at the Miles Brewton House, 27 King Street. Archaeological Contributions 29, The Charleston Museum, Charleston, SC.

Zierden, Martha A. and Jeanne A. Calhoun

1986 Urban Adaptation in Charleston, South Carolina, 1730-1820. *Historical Archaeology* 20(1):29-43.

1990 An Archaeological Interpretation of Elite Townhouse Sites in Charleston, South Carolina, 1770-1850. *Southeastern Archaeology* 9(2):79-92.

Zierden, Martha and Debi Hacker

1987 Charleston Place: Archaeological Investigations of the Commercial Landscape. Archaeological Contributions 16, The Charleston Museum, Charleston, SC.

Zierden, Martha A. and Kimberly Grimes

1989 Investigating Elite Lifeways through Archaeology: The John Rutledge House. Archaeological Contributions 21, The Charleston Museum, Charleston, SC.

Zierden, Martha, Jeanne A. Calhoun and Debi Hacker

1986 Outside of Town: Preliminary Investigation of the Aiken-Rhett House. Archaeological Contributions 11, The Charleston Museum, Charleston, SC.

Zierden, Martha A, Jeanne A. Calhoun, and Elizabeth Pinckney

1983 An Archaeological Study of the First Trident Site. Archaeological Contributions 6, The Charleston Museum, Charleston, SC.

Zierden, Martha, S. Buckley, J.A. Calhoun, and D. Hacker

1987 Georgian Opulence: Archaeological Investigations of the Gibbes House. Archaeological Contributions 12, The Charleston Museum, Charleston, SC.

Zierden, Martha A., Kimberly Grimes, David Hudgens, and Cherie Black 1988 Charleston's First Suburb: Excavations at 66 Society Street. Archaeological Contributions 20, The Charleston Museum, Charleston, SC.