An Analysis of Historic Materials Salvaged from the Glenwood Quarters

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Abstract

Cultural Resource Analysts, Inc. of Hurricane, West Virginia, was contracted to analyze an assemblage of historic artifacts recovered beneath the floor of the Glenwood Quarters. Glenwood was constructed between 1850 and 1852 for James Madison Laidley. George W. Summers purchased Glenwood in 1857, and his descendants lived in the house until the 1970s. The artifact assemblage was collected from two features identified during renovations of the Glenwood Quarters. The assemblage primarily consisted of mid-nineteenth century ceramics and animal bone. Based on the age of the ceramic assemblage, the deposits date from the mid-nineteenth century utilization of the building as a kitchen and slave quarter.

Introduction

In 2006 the Humanities Department of the Marshall University Graduate College received a grant from the West Virginia Humanities Council to begin a multi-disciplinary research project focused on Glenwood, an antebellum Charleston, West Virginia residence. As part of this research, Cultural Resource Analysts, Inc., of Hurricane, West Virginia, was contracted to analyze an assemblage of historic artifacts recovered beneath the floor of the Quarters during renovations in 1980. The following article presents information on the history of Glenwood, the previous archeological investigation of the Quarters, and the results of the analysis of the artifacts recovered from the Quarters.

History of Glenwood

The following provides a brief history and description of Glenwood as it is currently understood. It is anticipated that concurrent and future historical research into the lives of the residents of Glenwood and pertinent contexts of antebellum and early city life will enhance the information provided in this article.

Glenwood was constructed from 1850 to 1852 for James Madison Laidley (1809-1896). Madison Laidley, as he was known, was originally from Parkersburg. He arrived in Charleston as a young man, founding a newspaper, *The Western Register i*n 1829. In 1831-32 he studied law in Staunton, Virginia, under Judge Baldwin. Laidley was heavily invested in the burgeoning Kanawha Valley salt industry during the early nineteenth century, and served in the Virginia Legislature in 1848 and 1849 (Anonymous n.d.; Atkinson 1876; Collins 1978)

In 1850 Laidley purchased 366 acres one mile west of the mouth of the Elk River for $7000. Shortly after acquiring the property, Laidley procured the services of William Preston, an English-born builder and stone mason, who erected Glenwood by 1852. Glenwood is a two-story, gable-roofed brick residence of the vernacular Greek Revival style (Figures 1 and 2). Preston constructed the residence on a prominence overlooking the Kanawha River valley. To the rear (north) of the main house is a contemporaneous gable-roofed, two-story, single-pile brick

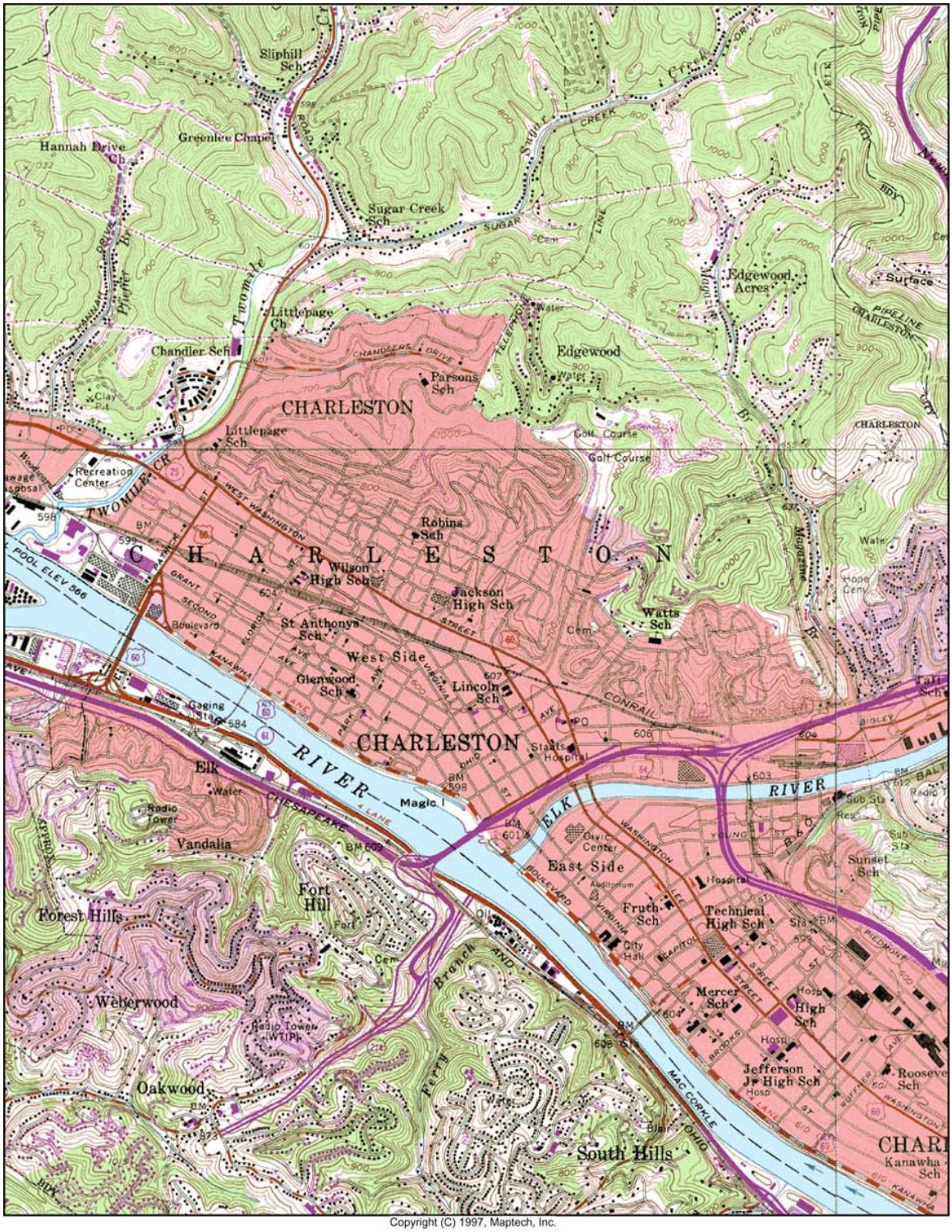

Figure 1. Glenwood. 1958 USGS 7.5' Charleston West Quadrangle, revised 1976).

Figure 2. Glenwood, January 2007, view to the northwest.

structure. This four room structure is known as the Quarters and reportedly served as a slave/servants quarters, kitchen, and weaving shed (Anonymous n.d.; Collins 1978)(Figure 3).

The Laidley family lived at Glenwood until 1857, when "business entanglements" presumably related to the decline of the Kanawha Valley salt industry necessitated the sale of Glenwood and the surrounding acreage. George W. Summers purchased Glenwood and the 366 acres (Anonymous n.d.; Collins 1978).

George W. Summers (1804-1868) was a member of the prominent Summers family. Summers County, West Virginia, is named in his honor. Summers served in the Virginia Legislature in 1830-1831, and 1834-1835. Summers was elected as the U.S. Representative from Virginia from 1841 to 1845 (19th District 1841-43, 14th District 1843-45). Summers further served in the Virginia Convention of 1850 where his oratory skills won acclaim in debating taxation and representation as viewed by western Virginians in opposition to Tidewater Virginia. In 1851 Summers was unsuccessful in an election for Governor of Virginia, largely due to his being labeled as an abolitionist. Summers won election as Judge in 1852, serving in that capacity until 1858. In 1861, while living at Glenwood, Summers served in the Washington Peace Conference of 1861, in attempt to avoid the imminent dissolution of the union. Summers additionally represented Kanawha County in the Virginia succession convention, where he voted against succession (Collins 1978; Ratliff 2006).

During and immediately after the Civil War, Summers continued his legal practice while managing his farm. Upon his death in 1868, Glenwood and the surrounding 366-acre farm passed to Lewis Summers II, George's only surviving son. Lewis was not interested in managing the farm; rather he sold all but two acres including the house to developers creating the West Side of Charleston. Descendants of the Summers family continued to reside at Glenwood until the

Figure 3. Glenwood Quarters, January 2007, view to the west.

1970s, when Lucy Quarrier deeded the house and grounds to the West Virginia College of Graduate Studies Foundation (Anonymous n.d).

Archeological Investigations of the Quarters

As described above, the Quarters is a two-story brick structure located to the rear (north) of Glenwood. The structure has gable-end chimneys and contains four interior rooms with a central stair hall. In 1980 the quarters was renovated with the goal of transforming the structure into offices for the West Virginia College of Graduate Studies.

Paul D. Marshall Associates, Inc. conducted the archeological investigations. During the course of renovations, which involved placing heating and cooling ductwork beneath the first floor, a number of historic period artifacts were observed. Once these artifacts were discovered, all soil removed was screened through ¼-inch hardware cloth. According to the report on these excavations prepared by an unidentified author, two areas of "subsoil" were encountered containing artifacts. These features, denoted Feature 1 and Feature 2, were described as follows: "Feature 1 is a subrectangular shaped pit with a flat basin…" Dimensions for Feature 1 were listed as 4 feet long, 3 feet wide, 2 inches thick, and 10 inches below ground surface. Feature 2 was described as "an elongated oval shaped pit with a flat basin." Dimensions listed for Feature 2 were 18 feet long, 6 feet wide, 4 inches deep, and 8 inches below surface (Paul D. Marshall n.d.) (Figure 4).

Unfortunately, a specific breakdown of the artifacts recovered from each feature was not completed in the Paul Marshall report; however, the report notes that Feature 1 contained "marbles, buttons, ceramic arms or legs from a ceramic doll, and some animal bone." The report

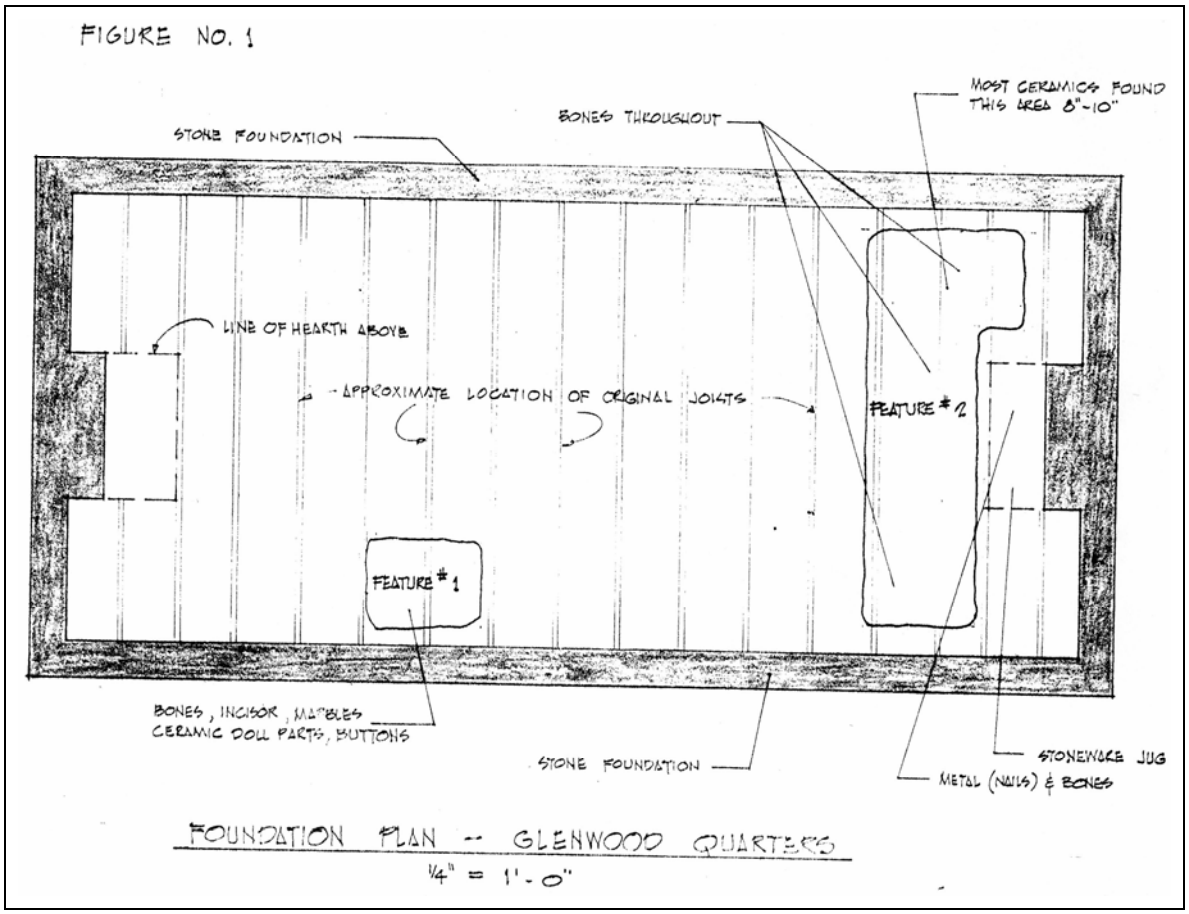

Figure 4. Excavation Plan, Glenwood Quarters (Paul D. Marshall n.d.)

further notes, "[t]his feature was directly below the common room where families would gather, children played and household tasks such as sewing were performed." Feature 2 was noted as containing: "ceramics, glass, considerable bone, silver, etc." The feature "was located directly below the kitchen to the left of the fireplace" (Paul D. Marshall n.d.).

2007 Artifact Analysis

In January 2007, Cultural Resource Analysts undertook an analysis of the artifacts recovered during the 1980 excavations. In the Paul Marshall report of the excavations the artifact assemblage was identified; however, the identifications made in 1980 were largely incorrect, or in the case of ferrous metal artifacts and faunal, remains were unidentified.

The collection was stored in numerous plastic bags contained in two cardboard boxes in the Glenwood Quarters. The assemblage was sorted into gross categories of like items. Unfortunately, only one bag contained minimal provenience information. Therefore, it is unknown which artifacts derive from the features.

In general, ceramic and glass artifacts had been washed, and necessitated no further cleaning prior to analysis. Faunal remains were cleaned prior to analysis. The analyst then assessed the materials, creating a record for each item, and grouping the individual items into a modified version of a scheme originally developed by Stanley South (1977).

The classification scheme that was developed by South (1977) has subsequently been revised by numerous authors including Orser (1988), Stewart-Abernathy (1986), and Wagner and McCorvie (1992). The scheme used for this report groups artifacts into the following categories: Domestic, Architecture, Furnishings, Clothing, Personal, Maintenance and Subsistence, Floral and Faunal, and Unidentified. Grouping artifacts into these specific categories makes it more efficient to associate artifact assemblages with historic activities or site types. Each one of these groups, and the associated artifacts, are discussed in turn.

Temporal information for the artifacts is derived from a wide range of sources, which are cited below. However, the citations for beginning and ending dates need some clarification. Usually, an artifact has specific attributes that represent a technological change, an invention in the manufacturing process, or simple stylistic changes in decoration. These attribute changes usually have associated dates derived from historical and archeological research. For example, bottles may have seams that indicate a specific manufacturing process patented in a certain year. The bottle can then be assigned a "beginning date" for the same year of the patent. New technology may eliminate the need for the same patent and the bottle would no longer be produced. The "ending date" will be the approximate time when the new technology takes hold and the old technology is abandoned.

With regard to ceramics, specific styles of decoration are known to have changed through time. Researchers have defined beginning and ending dates for their manufacture. South's (1977) mean ceramic dating technique uses this information. However, the dates presented in this report should not be considered absolute, although they are the best available estimates for age. The rationale for presenting dates is to allow for a more precise estimation for the duration of occupation, rather than the mean date for occupation.

Archeological specimens recovered from the excavations were analyzed using an Access-based data entry program, *Cultural Resource Analysts Material Management System.* Created by CRAI staff, the program has two main functions. The first is a data entry function whereby an individual record is created for each artifact. Each record includes fields for provenience, functional group, and artifact type and class. Other attributes, such as window glass thickness, nail pennyweight, and ceramic decoration, are entered into the system. The database program also maintains a dating function, drawing from a reference list to provide a minimum and maximum date for the artifact when applicable.

Once data for the artifacts are entered into the system, the analyst can then query the database to provide a wide range of information for specific types or classes of artifacts, or the assemblage as a whole. The query function allows for information on the quantities and percentages of artifact types by provenience or functional group to be quickly tabulated and presented to the analyst. These tabulations can then be exported to *Excel*, *Word*, or *Surfer* programs to generate data tables or distribution maps for the assemblage.

The excavation of the two features resulted in the recovery of 1,020 historic artifacts (Table 1). These historic artifacts are comprised primarily of artifacts from the Faunal Remains Group (52.06 percent), the Domestic Group (34.22 percent), and the Architecture Group (7.35 percent).

Architecture Group (n=75)

The Architecture Group is comprised of artifacts directly related to the built environment, as well as those artifacts used to enhance the interior or exterior of structures. These artifacts consisted of window glass, nails, and construction materials, such as plaster. Architecture Group items are discussed below.

Table 1. Frequency of Artifacts from the Glenwood Quarters by Group.

Group	Frequency	Percent	Weight (g)
Architecture	75	7.35	592.9
Clothing	5	0.49	3.2
Domestic	349	34.22	6067.1
Faunal Remains	531	52.06	4517.94
Furnishings	8	0.78	83
Maintenance/Subsistence	11	1.08	435.8
Miscellaneous	19	1.86	985.9
Personal	22	2.16	234.2
Grand Total	1020	100	12920.04

Construction Materials (n=1)

Construction Materials refer to all elements of building construction. For this analysis, this category was represented by a single fragment of plaster. The fragment, weighing 3.5 g has both the brown coat and the finish coat. A small fragment of paint, having a very pale brown (10YR8/4) color, was observed on the surface of the plaster.

Nails (n=57)

Three technological stages are recognized in the chronology of nails: wrought, cut, and wiredrawn. The cut nail, which was introduced in approximately 1790, originally had a machine-cut body with a handmade head. It was not until technological advancements around 1815 that completely machine-made cut nails began to replace wrought nails in the construction industry. At this point, crude machine-made heads replaced the handmade heads on cut nails. These nails also exhibit a "rounded shank under the head" (Nelson 1968:8). By the late 1830s these "early" cut nails were replaced with "late" (or modern) machine-cut nails.

The first wiredrawn nails were introduced into the United States from Europe by the mid-nineteenth century. Early wire nails were primarily used for box construction and were not well adapted for the building industry until the 1870s. Although the cut nail can still be purchased today, it was nearly universally replaced by the wire nail around the turn of the century (Nelson 1968:8).

The vast majority of nails from the Glenwood Quarters are late cut nails and fragments (n=56) postdating 1830. Nail pennyweights suggest framing of medium to large timbers (7d-60d). Smaller nails common to lath or shingles were not recovered. Nail condition revealed that only two were pulled, while the rest were straight, suggestive of nails dropped during construction of the building. Only one wire nail was identified in the assemblage.

Window and Door Hardware (n=2)

This category includes items related to the operation or decoration of doors and windows. Typical items include hinges, knobs, locks and latches. Two ceramic door knobs, one whole, and one fragment, were recovered from the Glenwood Quarters. Both of these are a type known as "mineral." Mineral knobs are made of mixed clays giving a variegated pattern in the finished knob. The knobs were given a clear lead glaze to give the knobs a shiny appearance. The exact date of manufacture for this type of knob is unknown, but a similar glass knob was patented in 1849 and improved in 1851. The first patent for ceramic mineral knobs was made in 1867 as an improvement, suggesting that the type was known prior to that date. Typically, mineral knobs

were for utility and were commonly found in less important rooms, or structures, such as the Quarters (Eastwood 2007).

Window Glass (n=15)

Each fragment of flat glass was measured for thickness and recorded to the nearest hundredth of a millimeter. Window glass measurements were made with Fowler Scientific Sylvac Ultra-Cal IV calipers. The difference between window glass and plate glass (used as shelving) was in part determined by the thickness and wear of the pane. Any glass thicker than 3.0 mm (0.12 in) was considered plate glass.

Window glass has been shown to gradually increase in thickness through time and can be a useful tool for dating historic sites. Several dating schemes and formulas have been devised that use average glass thickness to calculate occupation dates. These include Ball (1984), Roenke (1978), Chance and Chance (1976), McKelway (1992) and Moir (1987). Moir's (1987) formula, ***Average Date = thickness in mm*84.22+1712.7***, was used in this study to calculate the average date of window glass.

Moir (1987) stated that this regression formula was accurate to plus or minus seven years in 60 percent of the cases studied. Moir also stated that sample sizes had to be reasonable, collected from more than one or two points of a site, and the length of occupation needed to be less than sixty years. Further, Moir noted that structural additions needed to be sampled separately, and that upper-class dwellings, urban dwellings, and specialized structures were less likely to produce useful results. This is because Moir's formula was basically designed to calculate one date based on the mean thickness of all the window glass recovered. So factors such as long occupations, or the building of additions, add later dates to the sample due to the replacement and/or addition of new windows. Such late dates would bias the mean date when calculating the initial construction date.

To move beyond the typical calculation of an initial construction date (using an average of the entire assemblage), Moir's formula can be used to create a histogram based on every individual piece of window glass recovered from a site (Day 2002, Pullins 2004). Chance and Chance (1976), Roenke (1978), and McKelway (1992, 1994) conducted similar analyses by creating histograms from groups or classes of window glass based on relative thicknesses of the fragments. Each class was then assigned a range of dates according to their thicknesses. McKelway (1994) suggested that the earliest significant increase or rise of the histogram was most closely associated with the initial construction date of the structure being analyzed. However, by graphing each fragment individually, instead of by groups or classes, it is possible to obtain a much finer degree of resolution with regard to estimated dates. Instead of observing a peak that represents a ten or twenty-year span, a peak that represents a single year is observed. Furthermore, later peaks or rises in the histogram may indicate an episode of remodeling or the building of an addition.

Although Moir (1987) warns that analysis of structures built prior to 1810 or later than 1915 has shown poor results, documented evidence shows that thinner window glass generally equals an earlier date of manufacture, and all research in this area shows the regression line extending back beyond 1810 (Inashima 1981; Moir 1987; Roenke 1978). So, although calculated dates earlier than 1810 are considered less reliable, they are not completely invalid. However, we cannot have infinitely thin window glass, so a line of effectiveness needs to be drawn.

Window glass from the Glenwood Quarters (n=15) has an average thickness of 1.87 mm, which by the Moir formula calculates to a date of 1870. While 15 sherds is far too small an assemblage to make an adequate chronometric assessment, creating a histogram reveals that the

most common date range for window glass fragments falls in the 1860-1869 period (n=4) (Figure 5).

Clothing Group (n=5)

The clothing group includes buttons, clothing fasteners, footwear, and other clothing-related items such as belts, hats, hosiery, and fabric. All five artifacts from this group were buttons. Of the button assemblage, one was porcelain, one was shell, and three were white glass. Temporally, the buttons date from the 1840s through the 1920s. Functionally, these types of buttons are commonly found on shirts and undergarments (South 1964).

Domestic Group (n=349)

Artifacts included in the Domestic Group consisted of ceramics, glass containers, glass tableware, and utensils. The ceramic inventory consisted of a variety of refined earthenwares dating from the mid-to-late nineteenth century. A full description of the ceramic types from the site is listed below, followed by descriptions of other Domestic Group artifacts.

Ceramics (n=294)

The ceramics recovered were grouped into five major ware types, which included: ironstone, porcelain, stoneware, whiteware, and yellowware. Ceramics within each of these ware groups were separated into decorative types that have temporal significance. Each of these ware groups is reviewed below, followed by discussions of associated decorative types and vessel forms.

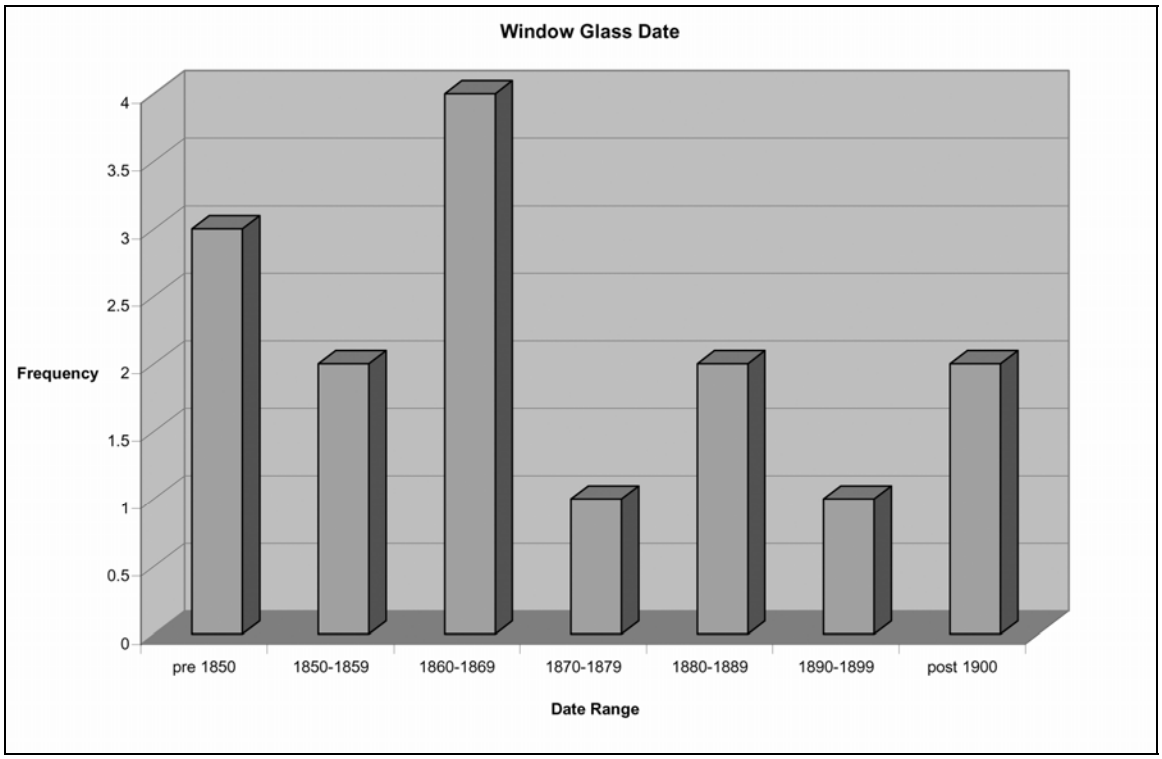

Figure 5. Window glass dates from Glenwood Quarters.

Ironstone (n=227)

Ironstone, a highly refined, vitreous, opaque earthenware with a clear glaze, is often indistinguishable from whiteware. Ironstone differs from whiteware in that the body is more vitreous and dense, and a bluish-tinge or a pale blue-gray cast covers the body. In some cases, a fine crackle can be seen in the glaze (Denker and Denker 1982:138), although this condition is not restricted to ironstones. Confusion in the classification of white-bodied earthenwares is further compounded by the use of the term as a ware type or trade name in advertising of the nineteenth century. Both ironstones and whitewares were marketed with names such as "Patent Stone China," "Pearl Stone China," "White English Stone," "Royal Ironstone," "Imperial Ironstone," "Genuine Ironstone," "White Granite," and "Granite Ware" (Cameron 1986:170; Gates and Ormerod 1982:8). These names do not imply that true ironstone was being manufactured. Some investigators avoid the distinctions entirely by including ironstones as a variety of whiteware, while Wetherbee (1980) adopted the opposite course, referring to all nineteenth-century, white-bodied earthenwares as ironstone. For this analysis, the primary determining factor in classification of a sherd as ironstone was the hardness and porosity of the ceramic paste. Sherds with a hard vitreous paste were classified as ironstone (Tables 2 and 3).

Charles James Mason is usually credited with the introduction of ironstone (referred to as Mason's Ironstone China) in 1813 (Dodd 1964:176), although others, including the Turners and Josiah Spode, produced similar wares as early as 1800 (Godden 1965:xxiii). This early phase of ironstone production was instigated by British potters as a competitive response to the highly popular oriental porcelain. The ironstone of this early phase bears a faint blue-gray tint and oriental motifs much like Chinese porcelain.

Table 2. Ironstone Sherds from the Glenwood Quarters by Decoration Type and Vessel Form.

Decoration Type	Bowl	Cover	Cup	Flatware	Hollowware	Indeterminate	Pitcher	Plate	Platter	Saucer	Soup Plate	Total
Annular	5	-	-	-	-	-	-	-	-	-	-	5
Hand painted	-	-	-	-	1	-	-	-	-	-	-	1
Molded Body	-	6	2	-	4	-	-	29	-	7	1	49
Molded Florals	-	-	1	-	-	-	-	-	-	2	-	3
Molded Relief	-	-	-	-	-	1	-	-	-	-	-	1
Plain	29	-	13	22	32	1	2	19	8	10	-	136
Edge Decorated	-	-	-	-	-	-	-	15	7	-	-	22
Sponge/Splatter	-	-	-	-	1	-	-	-	-	-	-	1
Transfer	-	-	-	1	-	-	-	7	-	1	-	9
Total	34	6	16	23	38	2	2	70	15	20	1	227

A second phase of ironstone production was prompted after 1850, in response to the popularity of hard paste porcelain being produced in France. This variety of ironstone had a harder paste and reflected the gray-white color of French porcelains.

While some ironstones saw continued use of oriental design motifs, the general trend was toward undecorated or molded ironstones (Collard 1967:125-130; Lofstram et al. 1982:10 in Majewski and O'Brien 1987). Ironstone continued to be produced in England, and after 1870 it was manufactured by numerous American companies. Majewski and O'Brien (1987) reported that by the late 1800s, thick, heavy ironstones were losing popularity and began to be equated with lower status (Collard 1967:135 in Majewski and O'Brien 1987). Its production all but ceased by the second decade of the twentieth century (Lehner 1980:11).

Table 3. Minimum Number of Ironstone Vessels Recovered from the Glenwood Quarters.

Vessel Number	Description	Ware Type
Vessel 1	Plain 6 inch bowl	Ironstone, Thin
Vessel 2	Plain 6 inch bowl	Ironstone, Thin
Vessel 3	Plain 6 inch saucer	Ironstone, Thin
Vessel 4	Plain 6 inch saucer. Impressed Wedgewood mark	Ironstone, Thin
Vessel 5	Plain 6 inch saucer	Ironstone, Thin
Vessel 6	Molded Body 10 inch octagonal soup plate	Ironstone
Vessel 7	Molded Body 8 inch octagonal plate	Ironstone
Vessel 8	Molded Body 8 inch octagonal plate	Ironstone
Vessel 9	Molded Body 8 inch octagonal plate	Ironstone
Vessel 10	Molded Body 8 inch octagonal plate	Ironstone
Vessel 11	Molded Body 8 inch octagonal plate	Ironstone
Vessel 12	Molded Body 8 inch octagonal plate	Ironstone
Vessel 13	Molded Body 8 inch plate	Ironstone
Vessel 14	Molded Body 10 inch octagonal plate	Ironstone
Vessel 15	Molded Body 8 inch octagonal plate	Ironstone
Vessel 16	Molded Body 8 inch octagonal plate	Ironstone, Thin
Vessel 17	Molded Body 8 inch plate	Ironstone, Thin
Vessel 18	Molded Body 10 inch plate	Ironstone
Vessel 19	Molded Body 8 inch saucer	Ironstone
Vessel 20	Molded Body 6 inch saucer w/unidentified mark	Ironstone
Vessel 21	Molded Body small oval cover	Ironstone
Vessel 22	Plain 6 inch saucer w/unidentified mark	Ironstone
Vessel 23	Plain large platter	Ironstone
Vessel 24	Plain platter	Ironstone
Vessel 25	Plain cup	Ironstone
Vessel 26	Molded Body cup	Ironstone
Vessel 27	Plain cup	Ironstone
Vessel 28	Molded Body saucer	Ironstone
Vessel 29	Plain 8 inch plate	Ironstone
Vessel 30	Plain 10 inch plate	Ironstone
Vessel 31	Molded Body 6 inch saucer	Ironstone
Vessel 32	Molded Body 6 inch saucer	Ironstone
Vessel 33	Plain cup	Ironstone, Thin
Vessel 34	Plain 6 inch saucer	Ironstone, Thin
Vessel 35	Molded Body saucer	Ironstone
Vessel 36	Molded Body plate	Ironstone
Vessel 37	Plain bowl	Ironstone
Vessel 38	Plain pitcher	Ironstone
Vessel 39	Molded Body cup	Ironstone
Vessel 40	Edge Decorated, Blue 8 inch plate	Ironstone
Vessel 41	Edge Decorated, Blue 8 inch plate	Ironstone
Vessel 46	Edge Decorated, Blue 10 inch plate	Ironstone, Thin
Vessel 47	Edge Decorated, Blue platter	Ironstone
Vessel 48	Transfer print, Brown plate	Ironstone
Vessel 49	Sponge/Spatter Hollowware	Ironstone
Vessel 50	Hand painted sponge/floral hollowware	Ironstone

Table 3. Minimum Number of Ironstone Vessels Recovered from the Glenwood Quarters.

Vessel Number	Description	Ware Type
Vessel 60	Annular 5 inch bowl	Ironstone, Thin
Vessel 61	Annular bowl	Ironstone, Thin
Vessel 62	Transfer print, Blue Willow 12 inch plate	Ironstone
Vessel 63	Transfer print, Blue Willow 12 inch plate	Ironstone
Vessel 64	Transfer print, Blue Willow 12 inch plate	Ironstone
Vessel 65	Transfer print, Blue Willow saucer	Ironstone

There was a shift to thinner, lighter weight ironstone between 1870 and 1880. This ironstone was popular in American homes during most of the twentieth century (Majewski and O'Brien 1987:124-125). Heavy ironstone remained on the market, however, and was popular in both hotel/restaurant service and domestic household use.

Annular (n=5)

Annular, also known as dipped, banded, or slip banded is a handpainting decoration of applied horizontal bands of color around the vessel exterior. Unlike border line handpainting that is flat, annular banding exhibits a slight relief. It can be found on creamware and pearlware as well as whiteware. Banding was often utilized in conjunction with colored glazes and decorative motifs such as "cat's eye," "earthworm" (finger-painted), and mocha. The latter was incorporated into earlier styles (Van Rensselear 1978:240).

English potters who immigrated to the United States in the 1830s and 1840s continued to manufacture banded or annular ware; however, stoneware and yellowware were the common paste types. In particular, production of American yellowware incorporated many of these designs and banding; "cat's eye," "earthworm," and mocha (dendrites) motifs were utilized, often with more than one motif on the same vessel.

Annular ironstone sherds from the Glenwood Quarters (n=5) represent a minimum of two vessels. Vessel 60 is a 5-in diameter bowl with painted blue bands parallel to the rim. Vessel 61 is a bowl of indeterminate size with painted blue bands parallel to the rim.

Hand Painted (n=1)

Hand-painted (underglaze) decorations were applied to ironstones immediately after their introduction. Handpainting on ceramics is still practiced today. In the early nineteenth century, blue was the most frequently used color. Again, only colors capable of withstanding the heat of the glost firing could be applied. Greaser and Greaser (1967) reported that children were utilized by some Staffordshire potteries to produce hand painting on ceramics.

Colors of pink, green, yellow, and red were commonly used from about 1840 through the mid-nineteenth century. The dominant motifs were banding or border lines usually surrounding the rim and floral designs. Without the complete vessel, it is impossible to determine if the banding or border line sherds date to the nineteenth century or represent the ceramics that became popular in the early twentieth century (Majewski and O'Brien 1987:160).

The term "polychrome" refers to the use of more than one color in hand painting. Price (1981) suggested a ca. 1830-1860 time frame for hand-painted whiteware ceramics recovered in Missouri (in Garrow and Wheaton 1986:Appendix 2, page 6) utilized an 1830 - 1875 manufacturing age range. When only one color was utilized, blue was typically selected.

One hand-painted sherd was recovered from the Glenwood Quarters. This sherd, representing Vessel 49, is a hollowware form with a floral and sponge decorated motif (see below for discussion of sponge/spatter decorative motifs).

Molded (n=53)

Molded designs were simplified on pearlware as transfer printing became popular. It was revived with the introduction of whiteware in the late 1830s, but did not attain the elaborateness of previous forms. Specialized moldings for whiteware were common in the 1840s, when the ware had a more limited and generally more affluent market (Wetherbee 1980).

By the late 1840s, a stylistic change in popular British earthenwares had begun. The change entailed a decline in the popularity of transfer-printed and other colorfully decorated earthenwares which had predominated since the late eighteenth century, and a shift to molded relief patterns rather than colored decorations. Molded ironstone patterns fall into distinct periods. The earliest, known as "gothic" or "primary," date from 1840-1860 and comprise paneled hexagonal or octagonal shapes. More rounded forms emerged in the 1860s, including harvest patterns decorated with relief-molded berries or sheaves of wheat. After 1860, bulbous, highly ornamental designs combined ribs with leaves and flowers, and from 1880 on, ironstone reverted to plainer forms, often unadorned except for the handles or finials (Wetherbee 1980, 1996).

Vessels of this style were sold at high prices when first introduced, although it seems probable that their manufacture was cheaper than that of the more labor-intensive, colored decorative styles. Perhaps this shift to less labor-intensive modes of decoration in the late 1840s and 1850s was in part a response by British manufacturers to the growth of labor organizations and legislation that limited work hours and child labor (IMACS 1992).

Molded sherds (n=53) were the most common decorative ironstone recovered from the Glenwood Quarters. Of these, 49 exhibited molded angular bodies, which date from the 1840-1860 period. Three sherds exhibited molded floral designs, and one sherd exhibited a molded relief decoration. These four sherds date from 1860-1880. Molded sherds represented a minimum of 23 vessels. Vessel forms included 8-inch octagonal plates (n=8), 10-inch octagonal plates (n=2), and a 10-inch soup plate. Other molded body vessels included 8-inch plates (n=3), 6-inch saucers (n=3), cups (n=2), and unidentified size saucers (n=2), plate (n=1), and a cover for a small serving vessel.

Edge Decorated (n=22)

This decorative type is a continuation of the edge decoration most prevalent on pearlware plates and first appeared circa 1779 (Noël-Hume 1978:45). The age range suggested by Majewski and O'Brien (1987) for whiteware with this decoration, with colors of green or blue, is between 1830 and 1860. Edge decorations can occur with or without other decorations, such as hand painting or spatter decorations, and usually occur on plate bottoms (Greaser and Greaser 1967). Later ironstone plates generally exhibit only the edge decoration. According to a study of shell edged ceramics, which combines the ware types of pearlware and whiteware by Miller and Hunter (1990), edge decoration was common between 1795 and 1845. The authors suggest a mean date of 1817 for this rim treatment. Underglaze painted edge decoration was commonly available on pearlwares through the 1830s in either blue or green. By 1840, green became uncommon while blue remained popular into the 1860s. Edge-decorated wares become less popular after 1860; however, they were manufactured into the 1890s (Miller 1991).

Examining edge-decorated types more closely reveals that edge decoration changed through time from a highly-molded Rococo form having uneven scallops dating from the 1780-1812 period, to an even scalloped type with impressed straight or curved lines dating from 1808-1832.

Figure 6. Molded Ironstone.

By the mid-nineteenth century, edge-decorated vessels bore unscalloped rims with impressed patterns (Miller and Hunter 1990).

Edge-decorated vessel forms are usually limited to flatwares, sauce boats, tureens, and butter boats, which are generally best described as tablewares. As a general note, edge-decorated wares were the least expensive decorated tableware available during most of the nineteenth century (Miller 1991).

Edge-decorated sherds are the second most common decorative type in the assemblage (n=22). All of the sherds are unscalloped with molded repetitive patterns and blue paint. These sherds date from 1841-1857 (Miller and Hunter 1990). The sherds represent four vessels, including two 8-inch plates (Vessels 40-41), a 10-inch plate (Vessel 46), and a platter (Vessel 47).

Sponge/Spattered (n=1)

The terms sponge decorated and spatter decorated are used interchangeably by many. Wares with spatter decoration were produced by the Staffordshire potteries in great quantities throughout the nineteenth century and in the United States after ca. 1850 (Majewski and O'Brien 1984:44). On earlier pieces, the spatter decoration was produced using a full brush of paint to tap against the vessel or a stencil. By 1845, a cut-sponge technique was in use.

Sponges were cut to produce various shapes. Occasionally, the spatter effect was created through transfer printing (Majewski and O'Brien 1984:44). This pattern is most commonly found on plates or platters but was also used on cups, saucers, coffee pots, pitchers, and serving dishes. Spatter decoration can involve many underglaze colors. Colors that are associated with the spatter effect include red, pink, green, light blue, brown, orange, yellow, and black.

Figure 7. Edge Decorated Ironstone

One sponge/spatter ironstone sherd was recovered from the Glenwood Quarters. This sherd represents Vessel 49, and is an unidentified hollowware form.

Transfer Print (n=9)

By the late 1780s, transfer printing was being developed among England's Staffordshire potteries as a fast and inexpensive method of mass-producing decorated pearlware and whiteware. It was originally perfected circa 1756 for use on porcelains. However, transfer printing was not used on earthenwares until around 1780, when Thomas Minton designed his Blue Willow pattern, which instigated a wider commercial use (Little 1969:15-17 in Majewski and O'Brien 1987; Norman-Wilcox 1978). The transfer-printing process is described as follows:

The required pattern is first engraved by hand on a copper plate, from which a tissue paper print, called a "pull" or "proof," is taken. Then, by pressing the tissue against a piece of undecorated ware, the design is deposited or transferred to the surface of the article. Glazing and baking complete the process (Norman-Wilcox 1978:167).

According to Hughes and Hughes (1968:150), blue was the dominant color of transfer-printed wares prior to the 1830s. With advances in ceramic technology, brown and black prints appeared after 1825, and by 1830, green, red, pink, mulberry, and light blue were being produced (Bemrose 1952:23; Little 1969:13-22; Wetherbee 1980:15). By the late 1840s, a technique for transferring more than one primary color to a vessel was perfected (Godden 1965:xx).

Early patterns include the willow and other Chinese design motifs. Although some Chinese-style motifs were still being used, the use of classical and romantic scenic themes became popular in the early nineteenth century. These patterns included country scenes, floral motifs, and travel scenes. Patterns depicting American buildings and scenery were popular after 1812 (Little 1969:25-26 in Majewski and O'Brien 1987). Patterns on these sherds are suggestive of early nineteenth-century prints (Price 1981). The transfer-printed designs use country scenes and floral motifs.

Eight of the transfer print sherds collected from the Glenwood Quarters are blue and are the willow pattern. These sherds represent three 12-inch plates and one saucer (Vessels 62-65). An additional transfer print sherd is brown and represents a plate of unknown size (Vessel 48).

Figure 8. Blue Willow Transfer Print Ironstone.

Plain (n=136)

This ware type includes dishes with no colored decoration or solid glaze. While some researchers (Lofstrom et al. 1982:10; Wetherbee 1980) include molded designs with "plain" ironstone or whiteware, we agree with Majewski and O'Brien (1987:153) that molded vessels should be grouped on their own.

One-hundred-thirty-six plain sherds were recovered from the Glenwood Quarters. These sherds represent 16 vessels, and include 6-inch saucers (n=5), cups (n=3), 6-inch bowls (n=2), an 8-inch plate (n=1), a 10-inch plate (n=1), platters (n=2), an unknown size bowl, and a pitcher.

Porcelain (n=28)

Porcelain is the name given to the high temperature fired, translucent Chinese ware introduced to Europe by Portuguese sailors in the sixteenth century. The formula for true, or feldspathic, porcelain was not discovered in Europe until 1708, and not marketed until 1713 (Boger 1971:266). The production of true porcelain was limited to three factories in England; all other products were softer porcelains made with glass, bone ash, or soapstone. Bone china became the preferred product after 1800 since it was harder and cheaper to produce than the other formulas (Mankowitz and Hagger 1957:179). Among the more affluent households, porcelain was common tableware used during the eighteenth and nineteenth centuries (Fay 1986:69) (Tables 4 and 5).

Table 4. Porcelain Sherds from the Glenwood Quarters by Decoration and Vessel Form.

Decoration Type	Bowl	Creamer	Cup	Flatware	Hollowware	Other Tableware	Pitcher	Platter	Teapot	Total
Gilt	-	-	-	-	-	-	1	-	-	1
Molded body	1	1	-	-	-	-	-	-	-	2
Molded body lined parallel to rim, gilt	5	-	1	-	-	-	1	-	-	7
Molded body w/gilt	-	-	-	-	-	2	-	-	-	2
Plain	-	-	1	6	4	-	-	3	2	16
Total	6	1	2	6	4	2	1	3	2	28

Table 5. Porcelain Vessel Forms from the Glenwood Quarters.

Vessel Number	Description	Ware Type
Vessel 52	Molded Body gilt edge cup	Porcelain, English H.P.
Vessel 53	Molded Body gilt edge pitcher	Porcelain, English H.P.
Vessel 54	Molded Body gilt edge bowl	Porcelain, English H.P.
Vessel 55	Plain 16 inch platter	Porcelain, English H.P.
Vessel 56	Gilt Accent pitcher	Porcelain, English S.P.
Vessel 57	Molded Body gilt edge creamer	Porcelain, English H.P.
Vessel 58	Plain teapot	Porcelain, English H.P.
Vessel 59	Molded w/ Gilt Accent serving vessel	Porcelain, English H.P.

Porcelain production in America was not successful until 1826, and the number of porcelain factories in the United States remained small through the nineteenth century. Bone china, which may contain as much as 40 percent bone ash, was also the most common porcelain manufactured in America (Mankowitz and Hagger 1957:27). In the lab, bone china can be differentiated from hard paste porcelain by placing it under ultraviolet light. Bone china fluoresces blue-white while hard paste porcelain fluoresces magenta (Majewski and O'Brien 1987:128).

Most of the porcelain sherds were plain (n=16), while two were molded. It is likely that these eighteen sherds are portions of gilt-edge vessels described below. Only one vessel, a 16-inch platter (Vessel 55), was plain. The interior of a tea pot spout was also identified within the assemblage.

Gilt (n=10)

Gold gilding on porcelain was perfected in Europe by 1723 (Hunt 1979). This process involved grinding gold by hand, mixing it with another medium such as honey, and applying the gilt on the surface of the glaze. After firing, the gilt had to be burnished. This process was expensive, and was mostly associated with porcelain and finely fired earthernwares (Miller 1991).

In 1836, "Liquid Bright Gold" was developed in Germany (Hunt 1979). In this process, gold was dissolved in acids and mixed with chemicals so that when it was removed from the muffle kiln, the gold was bright and did not require additional burnishing (Hunt 1979; Miller 1991). Gilt decorations were observed on 10 sherds. These sherds represented six of the eight identified porcelain vessels. Gilt porcelain vessel forms included two pitchers, a cup, a bowl, a creamer, and a serving vessel.

Stoneware (n=15)

Stoneware served as the "daily use" pottery of America, particularly rural America, after its introduction during the last decade of the eighteenth century. Stoneware is a vitreous, opaque ware manufactured of naturally vitrifying, fine dense clay. The pottery was fired longer, and to a higher temperature, than earthenwares; a kiln temperature of at least 1200 to 1250 degrees centigrade must be obtained (Cameron 1986:319; Dodd 1964:274-275). As a result, stoneware exhibits a hard body and a very homogeneous texture. Its body is nonporous and well suited to liquid storage. Stoneware is not refined and was typically used for utilitarian purposes. Stoneware vessels include jars, churns, crocks, tubs, jugs, mugs, pots, and pans. The paste may vary from grays to browns depending on the clay source and length and intensity of the firing. Vessels were typically glazed, with salt and slip glazing the most common.

Although salt glazing was practiced in England during the eighteenth century, it was not introduced to the United States until the early nineteenth century. Salt glazing was accomplished by introducing sodium chloride into the kiln, where it quickly volatilized. The vapor reacted with the clay to form a sodium aluminum silicate glaze (see Billington 1962:210; Dodd 1964:239). The surface of this glaze type is usually pitted. All 15 sherds of stoneware recovered from the Glenwood Quarters are salt glazed. The sherds represent one vessel, a large jug (Figure 9).

Whiteware (n=7)

As a ware group, whiteware includes all refined earthenware exhibiting a dense, relatively non-porous, white to grayish-white clay body. Undecorated areas on dishes exhibit a white finish under clear glaze. This glaze is usually a variant combination of feldspar, borax, sand, nitre, soda, and china clay (Wetherbee 1980:32). Small amounts of cobalt were added to some glazes, particularly during the period of transition from pearlware to whiteware and during early ironstone manufacture. Some areas of thick glaze on whiteware may therefore exhibit bluish or greenish-blue tinting. Weathered paste surfaces are often buff or off-white, and vary considerably in color from freshly exposed paste.

Most whiteware produced before 1840 exhibited colored decorations. These decorations are often used to designate ware groups, i.e., edge decorated, polychrome and colored transfer print. Most of the decorative types are not, however, confined to whiteware and, taken alone, are not particularly accurate temporal indicators or actual ware group designators (cf., Price 1981).

Figure 9. Salt Glazed Stoneware.

Decorative types observed on the whiteware sherds recovered at Glenwood are defined in the preceding ironstone discussion.

Whiteware sherds from Glenwood include edge decorated, blue (n=4), plain (n=2), and black transfer printed and painted (n=1). Vessel forms included edge decorated, blue eight-inch plate (n=1), unknown size edge decorated plate (n=3), plain flatware (n=2), and black transfer print and painted flatware (n=1)

Yellowware (n=17)

Ramsay (1939:148) stated that yellowware represents the transition from "pottery" to earthenware. The paste is finer than the coarse earthenwares but coarser than more refined earthenwares, such as whiteware and ironstone. Prior to the glost firing, the paste is a buff or cream color; however, the addition of an alkaline glaze creates a deep yellow upon firing. Yellowware was universally a utilitarian ware from which chamber pots, slop jars, urinals, mugs, pitchers, bowls, cuspidors, pie plates, and food molds were produced.

For the purposes of this study, yellowware is assumed to be American in origin, although it is realized that the wares were generally of English inspiration and that some English yellowware was imported into this country. James Bennett, an English immigrant who left Cincinnati in 1839, is generally credited with the introduction of American yellowware to East Liverpool in 1840 (Stout 1923:16; Gates 1984:47). Vodrey and Frost of Pittsburgh were the first to produce yellowware in the United States, perhaps as early as 1827 (Ramsay 1939:74). Yellowware, produced in molds, was very susceptible to mass production, and other potters in Ohio, Vermont, and New Jersey opened factories in the 1840s. Ohio was one center of yellowware manufacture,

Figure 10. Yellowware.

and it is estimated that in 1850, half of all U.S. yellowware was manufactured in East Liverpool (Gates 1984:47). Yellowware is rarely marked, although William Bromley, who operated potteries in Cincinnati and Covington during the mid-nineteenth century, included an elaborate molded mark on some of his finer Cincinnati pieces (Genheimer 1987). One decorative treatment of yellowware, called Rockingham, is simply a mottled, brown-glazed yellowware. Another prominent decorative treatment for yellowware includes the application of blue, brown, or white bands.

Yellowware recovered from Glenwood includes 12 sherds of annular, including bands of blue, brown, and white (n=8). These sherds represent four mixing bowls (Vessels 69-72). Two sherds exhibited annular bands and a copper glaze, and represent a mixing bowl (Vessel 73). One sherd represented a combination of annular bands and dendritic mocha decoration, and represents a mixing bowl (Vessel 75).

Glass Containers (n=55)

A small number of glass container fragments were recovered from the Glenwood Quarters (n=55). Of these, 51 percent (n=28) were undiagnostic, aqua-colored body fragments. Research by Baugher-Perlin (1982), Jones and Sullivan (1985), and Toulouse (1972) was used to date glass containers. The manufacturing process of recovered bottles included molded (BIM) vessels (Baugher-Perlin 1982:262-265).

Blown in Mold (BIM) (n=11)

Most molded bottles were constructed in pieces and had distinctive seams dependent on placement on the vessel. The dip mold was used from the late seventeenth through the mid-nineteenth century (Baugher-Perlin 1982:262) and left no seams, unless glass adhered to the edges of the bottle mold as it was attached to the free blown shoulder and bottleneck. The turn paste mold was used from about 1870 to the early twentieth century, and did not contain seams because the glass was blown into a container that was spun. The glass conformed to the mold from the centrifugal force produced. Vessels formed from this process usually had faint horizontal lines from the spinning process. The three-part mold had seams running around the shoulder of the vessel and partially up the neck of the vessel. This style of mold lost popularity around 1870.

Glass beverage containers from the Glenwood Quarters (n=7) include glass empontiled vessels (n=5). This manufacturing technique, known from the 1700s involves blowing the bottle in a mold, then once the base, body, and shoulder of the bottle are formed attaching a pontil, a long iron rod, to the base of the bottle in order to hold it while the neck and lip, or finish, is formed. Glass-tipped pontils generally date from the 1700s through the 1870s (Jones 1971). The remaining two sherds are of a lip/neck of a bottle exhibiting a sheared or ground lip. Ground lips date from 1810-1840 (Kendrick 1964). Glass storage containers from Glenwood include four sherds of storage jars with tie-over lips.

Glass Tableware (n=11)

Press molding of glass was first conducted, although at a very small scale, in England during the late seventeenth century to make small solid glass objects such as watch faces and imitation precious stones (Buckley 1934). By the end of the eighteenth century, decanter stoppers and glass feet for objects were being produced (Jones and Sullivan 1985). It was not until the late 1820s, that innovations in press-molded techniques in the United States allowed for the production of complete hollowware glass objects (Watkins 1930). Mass production of press-molded glassware was well established by the 1830s (Watkins 1930).

Figure 11. Glass Storage Jar

The earlier press-molded glass objects were predominantly made of colorless lead glass (Jones and Sullivan 1985). William Leighton of the Hobbs-Brockunier Glass Works in Wheeling, West Virginia, invented lime glass, a type of glass which looked like lead glass that had superior pressing attributes and was considerably less expensive than lead glass (Revi 1964).

Advancements in mold technology in the 1860s and 1870s led to the application of steam-powered mold operation, which in turn led to increased production and reduced cost (Revi 1964). Modern press molding is done entirely by machine (Jones and Sullivan 1985).

Press-molded table glass was made by dropping hot pieces of glass into a mold. A plunger was forced into the mold, pressing the hot glass against the mold. The outer surface of the glass took on the form of the mold, while the inner surface of the glass was shaped by the plunger. The plunger was withdrawn and the glass object removed from the mold. The surface of the glass was often fire polished to restore the brilliance that was lost where the glass came into contact with the mold (Jones and Sullivan 1985).

Press-molded glass may be recognized by several characteristics. Usually the glass object must be open-topped in order for the plunger to be withdrawn from the mold. Narrow-mouthed vessels were produced; however, additional manipulation of the glass was necessary after the plunger was removed from the mold. Evidence of this manipulation should be present on the vessel (Jones and Sullivan 1985). There is no relationship between the exterior shape and design of a press-molded vessel and the interior shape and design because the interior of the object is shaped by the plunger. This differs from earlier glass vessel production techniques, where interior shape was related to the exterior shape and design (Jones and Sullivan 1985).

Another characteristic of press-molded containers was that mold seams were generally present. The seams were sharp and distinct, unless steps had been taken to intentionally remove them. The texture of the surface of press-molded glass was disturbed and often disguised by an all-over stipple design. The edges of the designs on press-molded glass had a predisposition toward rounded edges. The bases of press-molded objects were usually polished. The quality of designs on press-molded glassware was precise, and design motifs were numerous (Jones and Sullivan 1985).

In contrast to press-molded glass, cut glass generally had a polished, smooth, and glossy surface texture. The design edges were sharp and distinct. Cut glass designs consisted mostly of panels, flutes, and miters. The designs were often slightly uneven and asymmetrical. Mold seams were usually absent, as they were polished off prior to cutting (Jones and Sullivan 1985).

All of the glass tableware recovered from the Glenwood Quarters were colorless, clear, and represent stemware (n=6) and tumblers (n=5). All glass tableware was molded in unidentified molds.

Utensils (n=5)

Utensils represent tools utilized in the preparation and consumption of food. Two utensils were handle fragments of either iron forks or spoons with bone handles. This type of utensil was common to the 1800-1900 period (Dunning 2000). The other eating utensil was a silver-plated soup spoon bowl (Figure 12). Silver plating was well established by the 1740s, and continues today (Light 2000). The final two utensils were iron handles of forks or spoons utilized in food preparation.

The investigation of this material was undertaken in order to provide insights into the diet of the historic period occupants of this site. This goal was achieved primarily through taxonomic identification of the faunal remains and the analysis of taphonomic processes affecting the assemblage. In the following sections, a description of methods is followed by the results of the analysis and a summary interpretation of the faunal assemblage for each site.

Methods

The first step in the analysis was the identification of each faunal specimen to the lowest possible taxonomic level. This step began with sorting each excavation lot into general categories of material, such as specimens containing identifiable landmarks, or unidentifiable long bone fragments, flat bone fragments, and compact bone fragments. Unidentifiable specimens were also sorted into burned and unburned groups.

Identification to taxonomic level began with class and skeletal element. Where identification was not possible, specimens were described as “unidentifiable.” At other times, specimens could be identified to class based on bone morphology, but the skeletal element was unrecognizable or could only be determined to general form, as noted above in the general sorting categories of long bone fragments, etc. These general groups were refined by assignment to class where possible (e.g., mammal long bone, bird long bone, etc.). Identifications were made to the generic or species level whenever possible. Identifications were made by comparison with modern specimens and with the aid of reference texts (Eddy and Hodson 1982; Gilbert 1980; Gilbert, Martin, and Savage 1981; Hillson 1986; Klein and Cruz-Uribe 1984; Olsen 1980, 1968; Schmid 1972; Sisson 1953). Taxonomic nomenclature was adapted from these references.

Figure 12. Plated Spoon.

Faunal Remains (n=531)

All specimens were counted and weighed. Age and sex criteria were recorded whenever possible. Aging may be accomplished by dentition (presence of deciduous or permanent teeth; wear of teeth) or bone fusion (Reitz and Wing 1999). Sex criteria were recorded whenever these could be identified. Taphonomic modifications to skeletal elements, such as cutmarks, burning, and gnawing also were recorded.

Measures of relative abundance were constructed which included the number of identified specimens (NISP) by taxa (identified to at least the class level), the weight of identified specimens per taxon, and the minimum number of individuals (MNI). MNI was estimated for the lowest possible taxonomic level and was established by counting the maximum number of right or left skeletal elements for each taxon and taking into account such factors as age, body size, and archeological context (Purdue et al. 1989; Reitz and Wing 1999; White 1953).

Results

The analysis of faunal remains from archeological investigations at Glenwood documented a total of 531 faunal specimens (Table 6). The results of the analysis are described below.

At least four birds, six mammals, and one fish were identified to the level of family or genus. Mammals account for over three-quarters (79.8 percent) of the assemblage, followed by birds at slightly less than one-fifth of all specimens (18.5 percent). Fish and unknown vertebrate material make up less than two percent. In order of prominence, identified genera/species include swine and probable swine (33.7 percent), domestic chicken and probable chicken (9.2 percent), and cattle and probable cattle (6.6 percent). Other identified genera/species consist of duck, dove/pigeon, domestic turkey, sheep/goat, opossum, rodent, Eastern cottontail rabbit, and catfish. The faunal assemblage from this site is described below by class.

Avian

Anatidae. Four specimens with a weight of 4.95 g were assigned to this family of birds which includes ducks, geese, and swans. The specimens consisted of one right and one left complete coracoid, one complete left scapula, and one nearly complete right scapula. MNI = one individual. In addition, one nearly complete left humerus was tentatively identified to this family. Based on size, the material most likely represents a duck. The humerus had been gnawed by rodents.

Columbidae. A single specimen was identified to the family of birds consisting of doves and pigeons. This specimen was a complete sternum weighing 1.52 g. MNI = one individual. Based on morphology, the specimen was not mourning dove and may represent a common pigeon.

Gallus gallus. Domestic chicken remains consisted of 43 specimens with a weight of 142.8 g (Table 2). MNI = 10 individuals, based on the left humerus. Based on the presence or absence of a metatarsal spur, at least three adult roosters and two adult hens are represented by the remains. In addition, at least four poults were present, based on the size and texture of the humerus shafts. Modifications consisted of rodent gnawing (Table 7).

Additionally, six specimens were tentatively assigned to this species. These specimens consisted of one left femur shaft, one right femur shaft, one left radius, one right radius, and one crista sterni fragment. The femur shafts had been gnawed by rodents.

Table 6. Glenwood Faunal Summary By Taxa and NISP.

Taxon	NISP	Weight (g)	Burned (n)	Modified (n)
Aves				
Anatidae	4	4.95	--	--
cf. Anatidae	1	2.68	--	1
Columbidae	1	1.52	--	--
Gallus gallus	43	142.8	--	15
cf. *Gallus gallus*	6	8.55	--	2
Meleagris gallopavo	7	64.45	--	5
Aves (Large)	34	59.27	5	13
Aves (Medium)	2	1.27	--	--
Mammalia				
Bos taurus	34	930.92	--	30
cf. *Bos taurus*	1	2.93	--	--
Didelphis virginiana	4	8.8	--	--
Ovis/Capra	6	100.78	1	3
cf. *Ovis* sp.	1	13.85	--	1
cf. Ovis/Capra	1	8.18	--	1
Rodentia	3	1.24	--	--
Sus scrofa	132	1524.60	3	60
cf. *Sus scrofa*	47	250.15	8	26
Sylvilagus floridanus	3	6.3	--	--
Mammal (Very Large)	21	462.85	1	18
Mammal (Large)	165	891.14	23	78
Mammal (Medium)	6	27.33	--	--
Osteichthyes				
Ictalurus punctatus	1	.51	--	--
Osteichthyes (Large)	1	.56	--	--
Vertebrata			--	--
Unidentified Vertebrate	7	2.31	--	--
Total	531	4517.94	41	253

Meleagris gallopavo. The domestic turkey is represented by seven specimens with a weight of 64.45 g (Table 1). Specimens identified in the assemblage from Glenwood include one complete left humerus shaft, one left proximal radius, one left tibiotarsus shaft, one left distal tibiotarsus, one left ulna shaft, one right humerus, and one right proximal radius. MNI = two individuals, based on the left tibiotarsus. Five specimens exhibited evidence of rodent gnawing.

Unidentified Avian. An additional 36 specimens (Tables 1 and 3) were classified as unidentified large (NISP = 34) and unidentified medium (NISP = 2) bird, weighing 59.27 g and 1.27 g, respectively. This material lacked sufficient identifying markers to assign to family or genus. As described above, at least one duck, a dove/pigeon, and two galliforms were identified in the assemblage. Five long bone fragments—probably fragments of the same element—were burned, while 13 specimens were rodent gnawed (Table 8).

Table 7. Summary of Gallus gallus Specimens.

Specimen	NISP	Weight (g)	Modified (n)
Left carpometacarpus fragment	3	6.79	2
Left complete coracoid	1	1.33	--
Left complete humerus	4	12.61	--
Left humerus shaft	6	7.36	2
Left pelvis fragment	1	1.64	--
Left tarsometatarsus	3	10.06	--
Left distal tarsometatarsus	2	17.16	--
Left tibiotarsus shaft	1	5.94	1
Left distal tibiotarsus shaft	1	1.53	--
Left ulna	1	2.52	--
Right carpometacarpus fragment	3	5.37	2
Right complete coracoid	1	2.09	--
Right complete femur	1	5.05	1
Right complete humerus	2	6.41	--
Right humerus shaft	2	4.55	2
Right proximal humerus	1	2.34	--
Right tarsometatarsus	3	19.73	1
Right tarsometatarsus shaft	2	15.06	2
Right tibiotarsus shaft	2	7.51	1
Right ulna	1	2.04	--
Manubrium sterni	1	2.1	--
Occiput fragment	1	3.61	1

Figure 13. Tarsometarsals of *Gallus gallus* roosters one right side, two left.

Table 8. Summary of Unidentified Avian Material.

Unidentified Large Bird	NISP	Weight (g)	Burned (n)	Modified (n)
Compact bone fragment	1	1.07		
Femur shaft	1	1.27		1
Humerus shaft	3	2.69		3
Long bone shaft	5	6.85		4
Long bone fragment	10	21.53	5	
Distal tarsometatarsus	2	1.48		
Left scapula blade portion	1	0.49		
Left tarsometatarsus shaft	3	10.7		2
Left ulna shaft	1	1.58		
Right radius shaft	1	1.3		1
Right scapula	3	2.43		
Right tarsometatarsus shaft	1	2.62		1
Right distal tibiotarsus	1	4.32		1
Fused thoracic vertebra	1	0.94		
Unidentified Medium Bird				
Left radius shaft	2	1.27		

Mammals

Bos taurus. Thirty-four specimens with a weight of 930.92 g were identified as domestic cattle material (Table 1). MNI = two individuals; based on fused and unfused specimens; these include one subadult and one adult. Cattle remains consisted of one compact bone fragment, one proximal femur end fragment, and two proximal femur shaft fragments, one long bone proximal epiphysis fragment, 26 rib shaft fragments, one left first phalange, one left proximal lateral tibia end fragment, and one right nearly complete patella. Additionally, one tooth enamel fragment was tentatively identified as *Bos taurus*. Thirty specimens were modified, including 24 cut fragments and six rodent gnawed fragments.

Didelphis virginiana.The opossum was identified on the basis of four specimens—a left mandible with M2, M3, and M4. Weight was 8.8 g. The wear on the teeth indicated an adult. MNI = one individual.

Ovis/Capra. Six specimens with a weight of 100.78 g were identified as domestic sheep/goat. This material consisted of one burned proximal left femur, one left scapula, three left distal tibia ends, and one right distal tibia. MNI = three individuals, based on the tibia. The femur, scapula, and one left distal tibia all exhibited evidence of rodent gnawing, while the right distal tibia had been butchered. Tentatively assigned to the genus of domestic sheep/goats was a right astragalus, also rodent-gnawed. Finally, one pelvic fragment, consisting of a portion of the acetabulum with part of the ischium and pubis, was tentatively assigned to domestic sheep (cf. *Ovis* sp.). This specimen had also been butchered.

Rodentia. Rodents are represented in the assemblage by three specimens weighing 1.24 g. These consist of one left proximal ulna, one right femur, and a sacrum. MNI = one individual. Based on size, the material is probably a rat.

Figure 14. Large mammal rib cut across one end and heavily gnawed by rodents.

Sus scrofa. Domestic swine are represented in the site assemblage by 132 specimens with a weight of 1524.6 g. MNI = seven individuals: six adults, based on right and left tibias, and one subadult ≤ three months, based on teeth. Three specimens (2.2 percent) were burned, while 45.5 percent was modified either culturally or naturally. Cultural modifications consisted of butchering marks on four specimens, while natural modifications consisted of carnivore or rodent gnawing. Some 40.9 percent of all pig specimens had evidence of rodent gnawing, while only two had evidence of carnivore gnawing (Table 9).

Material tentatively identified as *Sus scrofa* included 47 specimens with a weight of 250.15 g. Eight of these specimens were burned, 10 had butchering marks, and 16 were rodent gnawed. This material included four cranial fragments, four long bone shaft fragments, one metapodial shaft, 36 rib shaft fragments, one left distal anterior humerus shaft fragment, and one right humerus shaft.

Sylvilagus floridanus. Three specimens weighing 6.3 g were identified as Eastern cottontail rabbit. MNI = two individuals (one subadult and one adult). The specimens included one complete left tibia minus the proximal epiphysis, one proximal tibia, and one right scapula. None of this material had been modified.

Unidentified Mammal. Unidentified mammalian material in the assemblage was separated into the categories of very large (12.2 percent), large (84.9 percent), and medium (2.9 percent) mammals (Table 1). This material could not be identified to genera or species. Unidentifiable material was assigned when possible to this category based on similarity of thickness, bone morphology, and other characteristics which, while precluding classification to a particular taxon, could be used to identify the specimens as probably mammalian.

Table 9. *Sus scrofa* Specimens.

Specimen	NISP	Wt. (g)	Burned (n)	Modified (n)
Deciduous incisor	1	<.1	--	--
Deciduous lower cheek tooth	1	.6	--	--
Permanent canine	1	2.11	--	--
Proximal metapodial end	1	5.33	--	1
Mandible fragment	2	26.5	--	2
Left deciduous lower PM2	1	*	--	--
Left deciduous lower PM3	1	*	--	--
Left deciduous lower PM4	1	*	--	--
Left deciduous upper PM4	1	*	--	--
Left permanent lower M1	4	*	--	1
Left permanent lower M2	4	*	--	--
Left permanent lower M3	4	*	--	--
Left permanent lower PM3	2	*	--	--
Left permanent lower PM4	3	*	--	--
Left permanent upper I2	1	*	--	--
Left permanent upper M1	2	*	--	--
Left permanent upper M2	2	*	--	--
Left permanent upper PM4	1	*	--	--
Left permanent lower I1	1	.3	--	--
Left permanent lower I2	1	.3	--	--
Left permanent upper PM3	1	1.8	--	--
Left permanent upper PM3	1	1.9	--	--
Left occipital condyle	1	2.04	--	--
Left premaxilla	2	11.21	--	--
Left permanent lower canine	1	4	--	--
Left scapula neck	1	4.25	1	--
Left calcaneus fragment	1	4.7	--	1
Left fibula shaft	2	6.9	--	--
Left ulna shaft fragment	1	8.65	--	1
Left proximal metatarsal 4	1	9.77	--	--
Left proximal femur shaft	1	11.08	--	1
Left metatarsal 4	1	11.97	--	--
Left distal femur shaft	1	12.23	--	1
Left proximal metacarpal 3	2	13.45	--	2
Left distal posterior humerus shaft	1	13.46	--	1
Left proximal ulna	3	45.53	--	3
Left proximal metatarsal 3	2	13.73	--	2
Left proximal radius	2	29.83	--	--
Left zygomatic	2	14.97	--	--
Left zygomatic process	1	16.25	--	--
Left scapula glenoid fossa & incom. blade	1	18.93	--	1
Left humerus shaft fragment	1	20.7	--	1
Left mandible horizontal ramus portion	5	268.19	--	6
Left maxilla	2	43.83	--	--
Left calcaneus minus prox. epiphysis	2	21.44	--	1
Left temporal	1	22.68	--	--

Table 9. *Sus scrofa* Specimens.

Specimen	NISP	Wt. (g)	Burned (n)	Modified (n)
Left tibia shaft fragment	1	22.85	--	1
Left proximal humerus	1	26.35	--	--
Left proximal tibia shaft	1	33.18	--	2
Left distal humerus	1	41.87	--	1
Left mandible ang. process & mand. condyle	4	53.07	--	2
Left tibia shaft	4	82.27	--	4
Right deciduous lower PM2	1	*	--	--
Right deciduous lower PM3	1	*	--	--
Right deciduous lower PM4	2	1.3	--	--
Right permanent lower M1	1	*	--	--
Right permanent lower M2	3	7.88	--	1
Right permanent lower PM4	1	*	--	--
Right deciduous upper I3	1	.79	1	--
Right permanent lower I3	1	1.35	--	--
Right permanent lower I1	1	1.79	--	--
Right permanent lower I2	1	2.31	--	--
Right fibula shaft	1	3.29	--	--
Right proximal metatarsal 3	1	5.78	--	1
Right proximal metacarpal 3	1	6.08	--	--
Right metatarsal 4 shaft	1	6.22	--	1
Right distal radius shaft	1	6.42	--	1
Right calcaneus minus prox. epiphysis	1	6.43	1	--
Right proximal metatarsal 4	1	6.48	--	1
Right maxilla	1	6.7	--	--
Right calcaneus fragment	1	8.08	--	1
Right proximal radius shaft	1	8.55	--	1
Right proximal ulna	1	9.74	--	1
Right humerus shaft fragment	1	14.26	--	1
Right proximal ulna shaft	1	14.76	--	1
Right proximal femur shaft	1	15.5	--	1
Right distal femur shaft	1	15.7	--	1
Right radius shaft	1	15.91	--	1
Right mandible ang. process & mand. condyle	2	19.8	--	1
Right distal tibia shaft	1	22.05	--	1
Right proximal humerus shaft	1	23.56	--	--
Right mandible horizontal ramus portion	1	39.1	--	1
Right humerus shaft	2	43.71	--	2
Right femur shaft	1	53.45	--	--
Right distal humerus shaft	2	83.38	--	2
Right tibia shaft	5	138.82	--	5
Mandible horiz.ramus w/incisor alveolus	1	7.2	--	--
*Intact, weighed w/jaw.				

Figure 15. Selection of *Sus scrofa* mandibles: (L-R): 3 months old, 12-16 months old, 16 months old, 22 months old.

The only very large mammal in the assemblage was *Bos taurus*. Very large mammal remains consisted of 21 faunal specimens with a weight of 462.85 g. These specimens included seven rib shaft fragments, four vertebral fragments, one proximal scapula fragment, seven long bone fragments, and two flat bone fragments. One specimen was burned, 12 had butchering marks, and six were rodent-gnawed.

Large mammals in the site assemblage include domestic swine and sheep/goat. Large mammal remains consisted of 49 compact bone fragments, 8 flat bone fragments, 23 long bone fragments, 13 cranial fragments, 1 tooth root fragment, 37 rib shaft fragments, 5 pelvic fragments, 4 scapula fragments, one ulna shaft fragment, and 23 vertebral fragments. Modified large mammal remains consist of 23 burned specimens, 32 specimens with butchering marks, and 46 specimens with evidence of rodent gnawing.

Medium mammal remains consisted of five rib shaft fragments with a weight of 26.93 g. These were the size of a medium dog or large raccoon. They could not be identified further, and may belong to the opossum identified in the assemblage.

Osteichthyes

Ictalurus punctatus. Channel catfish is represented in the assemblage by a single pectoral spine with a weight of .51 g. MNI = one individual.

Additionally, one large indeterminate specimen with a weight of .56 g was identified as belonging to a large fish, but no other assessment of this material could be made.

Vertebrata

Unidentified vertebrate. Seven faunal fragments with a combined weight of 2.31 g could not be classified further than unknown vertebrate material; this consists of two flat bone fragments, one cranial fragment, and four flat bone fragments. None of this material was burned or otherwise modified.

Furnishings Group (n=8)

The Furnishings Group includes artifacts that are usually associated with the home, but not elements of construction. Examples of furnishings include decorative pieces, furniture, heating, and lighting (Table 10).

Table 10. Frequency of Furnishings Group Artifacts from the Glenwood Quarters.

Class	Type	Attribute 1	Attribute 2	Frequency	Weight (g)
Decorative Items	Decorative Item	Colorless, Clear Glass	Glass foot	1	8.30
Decorative Items	Decorative Item	Porcelain	Porcelain Vase with a Grecian Figure	1	7.30
Decorative Items	Decorative Item	Porcelain	Porcelain - green painted, gilt	3	43.10
Decorative Items	Vase	Opaque White Glass		1	4.40
Lighting	Lamp Chimney	Colorless, Clear Glass	Ground lip	1	12.40
Lighting	Oil Lamp Hardware	Burner	Brass	1	7.50
Total				8.00	83.00

Maintenance and Subsistence Group (n=11)

The Maintenance and Subsistence Group contains artifacts related to general maintenance activities. These artifacts were grouped into classes of farming and gardening, hunting and fishing, stable and barn activities, and fuels such as coal. General hardware items are included in this category (Table 11).

Table 11. Maintenance and Subsistence Group Artifacts from the Glenwood Quarters.

Class	Type	Frequency	Weight (g)
Farming/Gardening	Flower Pot, Red-Clay	7	197.30
Hardware	Ferrous Metal Bolt, Indeterminate	2	91.90
Hardware	Ferrous Metal Harness Ring	1	32.00
Stable/Barn	Ferrous Metal Harness Fitting	1	114.60
Total		11	435.8

Miscellaneous Group (n=19)

This category contains artifacts that could not be identified beyond the material from which the artifact was made. Artifacts from this group included 2 fragments of burned glass, and 17 fragmentary iron artifacts weighing 974.1g.

Personal Group (n=22)

The Personal Group includes artifacts assumed to have belonged to individuals. This category of artifacts includes jewelry and beads, coinage, and toys and games. Tobacco products are included in this category as well (Table 12).

Table 12. Personal Group Artifacts Recovered from the Glenwood Quarters.

Class	Type	Attribute 1	Frequency	Weight (g)
Personal Items	Pocket Knife Components	Ferrous Metal	3	23.80
Pharmaceutical	Patent Medicine Bottle: Body	Aquamarine Glass	6	102.10
Pharmaceutical	Patent Medicine Bottle: Finish, Neck, Shoulder	Aquamarine Glass	1	55.60
Toys/Games	Doll Arms	Ceramic	3	9.90
Toys/Games	Marble	Stone, hand painted	3	15.20
Toys/Games	Marble	Stone	2	8.00
Toys/Games	Toy Tea Set Vessels	Ceramic	4	19.60
Total			22	234.2

Temporally diagnostic artifacts from this group include a BIM pharmaceutical bottle. This bottle was embossed with the name of the company and product. Embossing on bottles was possible by engraving the mold the glass was blown into. This was done during the mid-eighteenth century and long after. The panel bottle came into existence around 1860 and was useful because the name of the commodity or the manufacturing company could be changed on the bottle form by substituting a different "slug-plate" into the mold. This process can be identified through the distinctive seams, as they follow the rectangular shape of the nameplate. Of course the date of the manufacturer's patent on the bottle and the name of the company, when present, can be utilized to determine a date of manufacture for the container. The pharmaceutical bottle from the Glenwood Quarters contained Ayers Cherry Pectoral, manufactured in Lowell, Massachusetts. This product was a cough remedy and was manufactured after 1847 (Fike 1987).

Discussion

The Glenwood Quarters assemblage derives from two features: Feature 1, a small depression, and Feature 2, a considerably larger depression. Both of these features were identified beneath the floor of the Quarters during renovations in the 1970s (Anonymous n.d.). The lack of excavation data hampers the analysis and interpretation of the assemblage. Despite this, basic information and some interpretation can be made.

Chronology

Artifacts recovered from the Glenwood Quarters date from the mid-nineteenth century. This is not surprising, given that Glenwood was constructed in 1852. Artifacts from the Architecture Group include a predominance of late cut nails dating from 1830-1880. Window glass from the Quarters (n=15) had an average thickness of 1.87 mm, and calculates to a date of 1870 utilizing the Moir formula (1987); however 15 sherds is far too small a sample to make and adequate chronometric assessment. The first patent for mineral door knobs was made in 1867; however, it should be noted that this was an “improvement,” suggesting that the type was in existence prior to that date. Clothing buttons are glass and porcelain examples, common after 1840. The Domestic Group includes ceramics (n=294) and glass containers (n=50).

Ceramics are among the most temporally diagnostic artifacts collected from historic archeological sites. Examination of the assemblage revealed several with manufacturer’s marks. Marks included two examples with impressed Wedgwood marks of the Josiah Wedgwood Pottery

Figure 16. Ayers Cherry Pectoral Bottle.

Figure 17. Marbles and Doll Parts.

of Burselem, England. This mark has been in use since 1759, and as such, is not a good temporal marker (Kovel and Kovel 1986). Two of the marks were impressed but highly fragmentary, precluding their identification. The anonymous author of the archeological report identified a Ridgeway and Marley (sic) mark, an English pottery, dating from 1842-1844 within the assemblage; however this could not be confirmed by the author. Nevertheless, the date for Ridgeway and Morley is consistent with the other artifacts within the assemblage. The final mark was a partial English Coat of Arms mark, a motif commonly utilized by both English and American potters during the mid-nineteenth century.

One method of examining the age of the ceramic assemblage is mean ceramic dating (South 1972, 1977). This method involves multiplying the mean date of manufacture for a ceramic type by the number of sherds of that type, calculating a total, and dividing this sum by the total number of sherds in the assemblage. The mean ceramic date for the Glenwood Quarters is 1859.87 (Table 13). The most common decorative motifs included "gothic" molded sherds (n=49) and blue edge decorated (n=22). The mean dates of manufacture for these types are 1850 and 1849, respectively. Relatively few examples of earlier nineteenth-century decorative types (e.g. transfer prints) are represented in the assemblage, and no examples of earlier ware types (e.g. creamware or pearlware) were represented in the assemblage. Additionally, no examples of late nineteenth to early twentieth-century flow-blue, gilt, or decalcomania decorated sherds were recovered in the assemblage, further suggesting the mid-nineteenth century age of the ceramic assemblage.

Glass artifacts from the Domestic Group (n=50) further suggest that the deposits date from the mid-nineteenth century. All examples of identifiable container glass were BIM, a manufacturing process dating from the early-to-mid nineteenth century. No examples of late nineteenth-century semi-automatic or early twentieth-century automatic bottle machine glass were recovered. Additionally, no examples of amethyst (1880-1920) were recovered, further

Table 13. Mean Ceramic Date for the Glenwood Quarters.

Ironstone	Number of Sherds	Date Range	Mean	Product	Mean Ceramic Date
Annular	5	1840-1900	1865	9325	
Hand painted	1	1840-1900	1865	1865	
Molded Body	49	1840-1860	1850	90650	
Molded Florals	3	1860-1880	1870	5610	
Molded Relief	1	1860-1880	1870	1870	
Plain	136	1840-1900	1865	253640	
Edge Decorated	22	1841-1857	1849	40678	
Sponge/Splatter	1	1845-1900	1872.5	1872.5	
Transfer	9	1840-1900	1865	16785	
Total	227			422295.5	1860.333
Whiteware	Number of Sherds	Date Range	Mean	Product	Mean Ceramic Date
Plain	2	1830-1900	1865	3730	
Edge Decorated	4	1841-1957	1849	7396	
Transfer print	1	1830-1870	1850	1850	
	7			12976	1853.714
Stoneware	Number of Sherds	Date Range	Mean	Product	Mean Ceramic Date
Salt Glaze Stoneware	15	1800-1900	1850	27750	1850
Yellowware	Number of Sherds	Date Range	Mean	Product	Mean Ceramic Date
Yellowware	17	1840-1900	1865	31705	1865
	Number of Sherds in Calculation			Product	Mean Ceramic Date for Assemblage
Total	266			494726.5	1859.874

Sources: Adams 1980; Loftstrom et al. 1982; Mansburger 1986; Price 1979.

suggesting a mid-nineteenth-century date for the assemblage. Other datable glass artifacts from the assemblage include lamp chimney glass postdating 1840, and a Ayers Cherry Pectoral patent medicine bottle post-dating 1847 (Fike 1987).

Looking at the assemblage as a whole, temporally diagnostic artifacts recovered from the Glenwood Quarters suggest manufacturing ranges from the 1830s to 1900. Combining this data with archival information suggests that the deposits could not have been made prior to 1852, when the site was first occupied. The lack of early nineteenth-century historic artifacts further suggests that the site was not occupied prior to the mid-nineteenth century. At the other end of the temporal spectrum, artifacts common to sites dating from the latter quarter of the nineteenth century, such as decalcomania ceramics and amethyst glass, are absent, as are twentieth-century artifacts, suggesting that deposition under the floor ceased prior to 1880, and quite possibly as early as the 1860s.

Ceramic Cost Analysis

The method commonly utilized to estimate the economic value of historic ceramics is Miller's (1991) cost indices. These indices provide a scale of the cost of ceramics manufactured

in the nineteenth century using the consistently most inexpensive ceramics- plain creamware-as a baseline. The use of the cost indices requires the calculation of the minimum number of vessels from the archeological assemblage.

Cost indices were first developed by George Miller in 1980, and refined in 1991, to account for the various tariffs and economic incentives for the sale of ceramics in the Unite States through the nineteenth century. The method utilized a scaling index of "cost index" to estimate the relative value of a vessel based on decoration, vessel form, and size, as well as the date of manufacture.

As stated previously, the use of the cost indices begins with the calculation of the minimum number of vessels. The analysis then includes the decoration of each vessel, the vessel form, the vessel size, and the approximate date of manufacture.

There are limitations to this technique; for example, the degree of documentation of cost varies through time and across geographic regions. The most critical difficulty lies in breaking the site assemblage into meaningful time units. Miller (1980, 1991) states that "generating average CC Index values for lumped assemblages representing over 20 years of occupation seem to be a meaningless exercise."

For the Glenwood assemblage, a total of 46 vessels were identified that retained sufficient information to calculate an average CC Index. These included 36 plates, five cups, and five bowls. The sealed nature of the archeological contexts from which the assemblage derives, and its limited time span covering fewer than 20 years, seem to make it ideal for CC Index analysis. The assemblage does, however, retain two limitations: its temporal placement and the lack of contextual information. Based on historical information, the assemblage dates no earlier than 1852, when the Glenwood Quarter was initially occupied. Furthermore, calculating a mean ceramic date for the assemblage dates it to 1859. The difficulty in utilizing the cost indices for an assemblage from this time period is that cost data are sporadically known for this period. This necessitates using multiple years for the calculation, which makes the analysis less meaningful. Table 14 presents the calculated cost index for the Glenwood Quarter.

Values for individual vessel types were calculated with plates having an average value of 2.12, with information cost information utilized from the years 1855 (n=4, 2.42), 1858 (n=28, 2.23), and 1859 (n=4, 1.05). The cost index for cups were calculated from one year, 1846, the closest year that information was available. The five cups had an average value of 2.17. Similar to the majority of plates, the cost index for bowls was calculated based on the year 1858. The five bowls had an average value of 1.93. The average CC Index value for the assemblage is 2.11. However, this value is perhaps not as valid due to the multiple years from which it was calculated. Values from the year 1858 (n=33) including 28 plates and 5 bowls provide a CC Index value of 2.18. As values for 71 percent of the assemblage derive from this year, and it closely matches the mean ceramic date of 1859, this is likely a more valid calculation of the ceramic value.

Table 14. CC Index Values from the Glenwood Quarter.

Description	Ware Type	CC Index Year				Sum	CC Index Value
		1846	1855	1858	1859		
Vessel 62 Transfer print, Blue 12 inch willow plate	Ironstone	-	2.67	-	-	-	
Vessel 63 Transfer print, Blue 12 inch willow plate	Ironstone	-	2.67	-	-	-	
Vessel 64 Transfer print, Blue 12 inch willow plate	Ironstone	-	2.67	-	-	-	

Table 14. CC Index Values from the Glenwood Quarter.

Description	Ware Type	CC Index Year				Sum	CC Index Value
		1846	1855	1858	1859		
Vessel 65 Transfer print, Blue willow saucer	Ironstone	-	1.67	-	-	-	
Vessel 23 Plain large platter	Ironstone	-	-	3.27	-	-	
Vessel 6 Molded Body 10 inch octagonal soup plate	Ironstone	-	-	3.09	-	-	
Vessel 14 Molded Body 10 inch octagonal plate	Ironstone	-	-	3.09	-	-	
Vessel 18 Molded Body 10 inch plate	Ironstone	-	-	3.09	-	-	
Vessel 30 Plain 10 inch plate	Ironstone	-	-	3.09	-	-	
Vessel 46 Shell Edge Blue 10 inch plate	Ironstone, Thin	-	-	3.09	-	-	
Vessel 7 Molded Body 8 inch octagonal plate	Ironstone	-	-	2	-	-	
Vessel 8 Molded Body 8 inch octagonal plate	Ironstone	-	-	2	-	-	
Vessel 9 Molded Body 8 inch octagonal plate	Ironstone	-	-	2	-	-	
Vessel 10 Molded Body 8 inch octagonal plate	Ironstone	-	-	2	-	-	
Vessel 11 Molded Body 8 inch octagonal plate	Ironstone	-	-	2	-	-	
Vessel 12 Molded Body 8 inch octagonal plate	Ironstone	-	-	2	-	-	
Vessel 13 Molded Body 8 inch plate	Ironstone	-	-	2	-	-	
Vessel 15 Molded Body 8 inch octagonal plate	Ironstone	-	-	2	-	-	
Vessel 16 Molded Body 8 inch octagonal plate	Ironstone, Thin	-	-	2	-	-	
Vessel 17 Molded Body 8 inch plate	Ironstone, Thin	-	-	2	-	-	
Vessel 29 Plain 8 inch plate	Ironstone	-	-	2	-	-	
Vessel 40 Shell Edge Blue decorated 8 inch plate	Ironstone	-	-	2	-	-	
Vessel 41 Shell Edge Blue decorated 8 inch plate	Ironstone	-	-	2	-	-	
Vessel 3 Plain 6 inch saucer	Ironstone, Thin	-	-	1.98	-	-	
Vessel 4 Plain 6 inch saucer. Impressed Wedgwood mark	Ironstone, Thin	-	-	1.98	-	-	-

Table 14. CC Index Values from the Glenwood Quarter.

Description	Ware Type	CC Index Year				Sum	CC Index Value
		1846	1855	1858	1859		
Vessel 5 Plain 6 inch saucer	Ironstone, Thin	-	-	1.98	-	-	-
Vessel 19 Molded Body 8 inch saucer	Ironstone	-	-	1.98	-	-	-
Vessel 20 Molded Body 6 inch saucer w/unidentified mark	Ironstone	-	-	1.98	-	-	-
Vessel 22 Plain 6 inch saucer w/unidentified mark	Ironstone	-	-	1.98	-	-	-
Vessel 31 Molded Body 6 inch saucer	Ironstone	-	-	1.98	-	-	-
Vessel 32 Molded Body 6 inch saucer	Ironstone	-	-	1.98	-	-	-
Vessel 34 Plain 6 inch saucer	Ironstone, Thin	-	-	1.98	-	-	-
Vessel 42 Shell Edge Blue decorated 8 inch plate	Whiteware	-	-	-	1.05	-	-
Vessel 43 Shell Edge Blue decorated plate	Whiteware	-	-	-	1.05	-	-
Vessel 44 Shell Edge Blue decorated plate	Whiteware	-	-	-	1.05	-	-
Vessel 45 Shell Edge Blue decorated plate	Whiteware	-	-	-	1.05	-	-
Plate Total		0.00	9.68	62.54	4.20	76.42	2.12
Vessel 25 Plain cup	Ironstone	2.08	-	-	-		
Vessel 26 Molded Body cup	Ironstone	2.31	-	-	-	-	
Vessel 27 Plain cup	Ironstone	2.08	-	-	-	-	
Vessel 33 Plain cup	Ironstone, Thin	2.08	-	-	-	-	
Vessel 39 Molded Body cup	Ironstone	2.31	-	-	-	-	
Cup Total		10.86	0.00	0.00	0.00	10.86	2.17

An examination of comparable sites from the 1845-1860 period places the Glenwood assemblage near the top in CC Index values (Table 15). As the home of a prominent politician, landowner, and judge this is not surprising. For a more local comparison, tenants residing at the Burning Springs Branch site (46Ka142) had a much lower value (1.59) than did the more socially prominent residents of Glenwood. Interestingly, these higher cost ceramics were recovered from beneath the floor of a structure that was utilized as a kitchen and slave/servant quarters. The lack of excavation data hampers this interpretation. It is unclear if these ceramics were in use by the slaves, or if these were the ceramics of the Laidley or Summers family and were broken during meal preparation/serving or cleanup activities, or a combination of the two.

Table 15. CC Index Values for Sites from the 1845-1860 Period.

Site	Location	CC Index Year	Mean	Status
Diaz	Monterey CA.	1846	2.69	Merchant
Walker Tavern	Detroit MI	1846	2.37	Tavern
Glenwood	Charleston WV	1858	2.18	Politician
Gowan	Davidson TN	1850	2.1	Planter
Mabry	Knox TN	1850	1.9	Small Farmer
Mabry Slaves	Knox TN	1850	1.78	Slave
Burning Springs Branch	Kanawha WV	1859	1.59	Tenants
Moses Tabs	St. Marys MD	1846	1.42	Tenant Farmer

Sources: Adams and Boling 1991; McKelway 1994; Updike 2002

Faunal Remains Discussion and Interpretation

Faunal remains from the Glenwood Quarters accounted for 52 percent of the site assemblage. The analysis of this material identified a total assemblage of 531 faunal specimens. Six mammals, four birds, and one fish were identified to the level of class/genus. Mammals predominantly consisted of domestic species. Domestic mammals included cattle, swine, and sheep/goat. Wild species included Eastern cottontail rabbit and unidentified rodent, probably rat. Domestic chicken, turkey, and duck also were identified, as was dove/pigeon. Channel catfish was represented by a single faunal specimen. This material was deposited beneath a structure which has been determined to represent both an outside kitchen for the main household and residential quarters for servants/slaves.

Taphonomic Factors Affecting the Assemblage

Various factors may affect the character of a faunal assemblage, including root-etching, breakage, gnawing, burning, and cutting. Modifications such as cutting were described for specimens above. No specimens were root-etched. This suggests that the bones were deposited in areas of the site that were free from root-encroachment. Breakage was a significant factor in the analysis of the assemblages. Nearly half (46 percent) of all specimens could only be identified as avian, fish, mammalian, or vertebrate—largely because specimens lacked diagnostic criteria due to the degree of breakage. Breakage was especially responsible for the relatively high frequency of unidentified large mammal remains in the assemblage (31.1 percent). Breakage can occur at any point in the development of the faunal assemblage—from butchering, food preparation, cooking, consumption, disposal, post-depositionally in the form of trampling or similar disturbances, and during recovery, transport, and analysis.

Carnivore and rodent gnawing was identified on 32 percent of all faunal material. Of this percentage, by far the majority of gnawed specimens had evidence of rodent gnawing (97.6 percent). This indicates that faunal remains were not sealed upon deposition. The over-all representation of faunal remains in the assemblage in general may indicate that alternate means of disposal away from the structure was utilized for this type of material, such as burning. The two features from which faunal remains were recovered were located beneath an outbuilding at Glenwood; this structure most likely served as both kitchen for the main house and residential space for servants/slaves. There is no indication that the largest feature represents a formal cellar. No entrance is present from within or outside of the structure. Therefore, it would appear that food refuse, including animal bones, were deposited directly beneath the floor of the structure. This situation has been documented at other, similar structures (Kelso 1997). The discard of

other artifacts, such as ceramics, indicates that the faunal remains were deposited as part of routine household refuse.

The frequency of rodent-gnawed remains suggests that the site was highly attractive and regularly available to vermin. The general lack of rodent remains in the assemblage (only three specimens) indicates that rodents could come and go freely among the remains once these were deposited. If killed as nuisance vermin, rodent carcasses were disposed of elsewhere. While no dog remains were present in the assemblage, four specimens exhibited slight evidence of carnivore gnawing. The relatively low frequency of carnivore gnawing supports the interpretation that the features were not accessible from the outside.

Burned elements (n = 41) accounted for only 8.7 percent of the total sample. Burning clearly was not a major factor in the fragmentary nature of the faunal assemblage. However, burning was a factor in the assignment of specimens to either probable swine (17 percent) or large mammal (15.8 percent).

Butchering marks were present on 83 specimens or 15.6 percent of the assemblage. These were identified as sawn or cut ends of specimens, for the most part, and all were identified on large or very large mammals. Specifically, 38.6 percent of such marks were present on large mammal remains, 14.5 percent on very large mammal remains, 4.8 percent on swine specimens, 12.1 percent on probable swine remains, 28.9 percent on cattle remains, and 1.2 percent on sheep.

Dietary Contributions

Concerning dietary contributions represented by the faunal remains from the site, several observations may be made. Generally, contributions to the diet of the occupants of an archeological site can be approached in several ways (Hesse and Wapnish 1985). First, the identified taxa can be examined to determine whether all species may have contributed to the diet, or whether some taxa may be incidental to the site. Second, biomass estimates can be constructed to investigate the relative importance of each taxon to the diet. However, due to the limited sample sizes, estimated biomass values were not calculated. Third, an examination of meat cuts may indicate socioeconomic status of site occupants, i.e., whether they were consuming high-end meat cuts or poorer quality cuts. This latter question is of importance at Glenwood as the faunal remains were recovered beneath a building which functioned both as servants' quarters and as kitchen for the main house. Thus, the faunal remains could potentially be associated with two distinct occupant groups.

Domestic species from Glenwood included cattle, swine, sheep/goat, turkey, duck, and chicken. Thus, it seems likely that the large mammal material (n=165 or 31.1 percent of the site assemblage) can most likely be attributed to domestic swine and/or sheep/goat. By MNI, swine occur at a ratio of 2:1 to sheep/goat and at a ratio of 3:1 to cattle, indicating that swine resources are more commonly consumed by the household. The relatively low presence of sheep/goat suggests that this resource was not a mainstay of subsistence. Very large mammal remains most likely represent cattle. Cattle may have been kept primarily for milk production and secondarily for beef.

As noted above, butchering marks were present on all large domestic species present in the assemblage, including cattle, swine, and sheep. An examination of the data for *Sus scrofa* in Table 9 reveals that all butchering units are represented by the faunal remains: cranial, shoulder, foreleg, hindleg, and back. This suggests that pigs were being raised and butchered for consumption on site. One *Sus* tibia shaft was cut distally, while a small t-bone on a large mammal vertebra may represent a pork loin chop (Rahn 1977). The situation is not as clear for cattle. Cattle remains are represented in the assemblage by the hindleg (femur, patella, and tibia), as well as ribs, a toe, and a tooth. Two very large mammal long bone specimens were long bone rings,

one cut near the end of the shaft; these may represent beef round steaks. The cattle sample may be indicative of off-site purchase of particular cuts of meat, portions of a carcass, or it may be that cattle were also raised on-site and butchered there, with an alternate place of deposition for most of the remains. Cattle may have been valued more for dairy and other products, rather than primarily as a source of meat. Butter, cheese, milk, and hides are some of the secondary products provided by cattle. Based on skeletal representation, sheep remains represent a shoulder or hindleg cut. It is possible that sheep/goat meat was purchased for special occasions, although the lack of other skeletal elements may have resulted from the distribution of butchered carcasses among different households, animal waste into different disposal locations, and/or food remains being deposited into a variety of disposal areas.

An examination of the distribution of skeletal specimens by butchering units (Figure 18) indicates that all units are represented in the assemblage, except for axial. While axial is under-represented in Figure 1 for *Sus*, it is likely that the large mammal vertebral fragments are pig. A meat utility index, in which the percentage of high versus low utility units is measured, indicates that high utility pork units account for 68 percent of domesticated meat units.

Butchering information is not as clear for cattle, as these are presented largely by ribs, possibly some vertebrae, and hindleg elements only. All are high utility meat units with a utility index of 25.4 percent. Sheep/goat is represented by a single forelimb specimen and five hindlimb specimens, also representing high utility meat cuts.

Domestic fowl are represented by chicken, turkey, and duck. By MNI, chickens are present at a ratio of 10:1 to duck and 5:1 for turkey. Chickens are also represented in the assemblage by adult males, females, and poults. This suggests that a flock was kept. The relatively fewer numbers of turkeys and ducks indicate that these were probably not kept in flocks, but that they were occasional additions to the diet. It is probable that chickens were kept both for meat and eggs, although no eggshell was present in the assemblage. This may have been due to a number of factors, such as recovery methods or recycling of eggshell on compost heaps or as part of pig swill.

This site also produced small samples of faunal specimens identified as channel catfish and large fish, dove/pigeon, rabbit, opossum, and small and large bird. The channel catfish most likely represents an irregular dietary contribution, and the single large fish specimen may well be channel catfish. The dove/pigeon may also represent an irregular contribution to the diet, although this material could equally likely represent a fortuitous deposition of material unrelated to subsistence. The rabbit is represented by two individuals, and like the dove/pigeon, may or may not represent part of the subsistence remains of the site. If rabbit was consumed, clearly it was not a regular part of the diet. The opossum is represented by a single jawbone that was later gnawed by rodents. Again, it may or may not have represented a part of the diet. The small and medium bird remains may be parts of the duck, the chickens, or the dove/pigeon. In terms of size, these did not seem likely to be domestic turkey. However, wild bird species are common to the area, including a variety of songbirds, raptors, and owls, etc. It is not possible to determine whether the presence of the indeterminate avian specimens results from the human occupation or not.

As noted earlier in this section, one question raised by the nature of the site is whether the faunal remains can provide any insights into the diet of the site occupants based on their socioeconomic status. Typically, meat cuts are assigned a value based on desirability, price, or other cost factors. Desirability refers to some combination of factors that indicate highly sought after meat cuts—those with the most meat, flavor, tenderness, etc. Opposed to these would be those cuts that are tougher and have less meat and flavor. The ability to procure the choicer meat cuts has been used as an indication of higher status individuals or households (e.g., Allgood 2003;

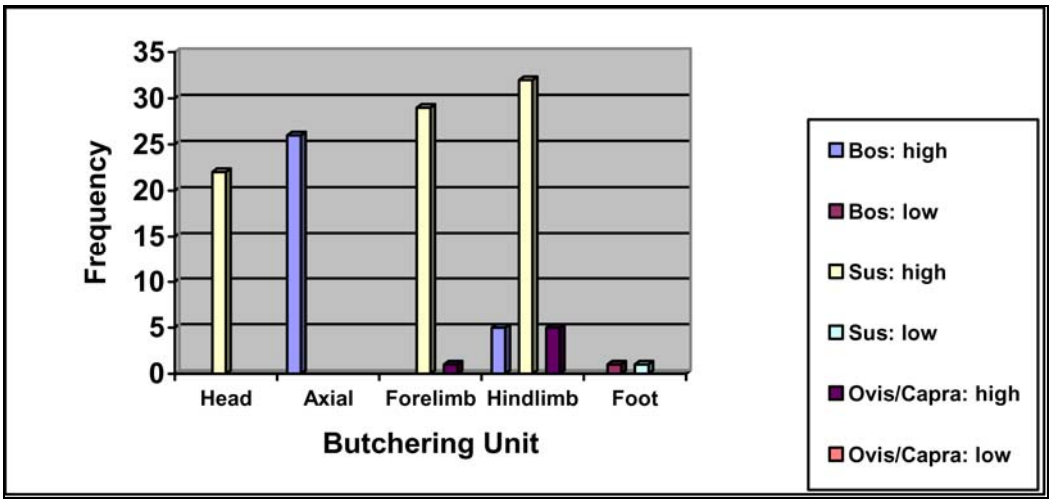

Figure 18. Frequency of Butchering Units for Meat Utility Index.

Church 2002; Otter 1993). However, as noted in Reitz et al. 2006, the association of status with meat cut is not as clear cut or as promising an avenue of inquiry as previously hoped. The assignment of value to meat cuts, for example, may be biased by modern preferences. Heads, for example, are not often seen in modern supermarkets, yet these might well have featured on a high status table, based on recipes from cookbooks of earlier eras. Another point Reitz et al. (2006) make is that human behavior does not always meet our expectations. High status households may be economically able to purchase high-priced meat cuts, but may choose to consume lower price cuts, and vice versa—low income families may use resources to purchase high quality meat cuts.

For this sample, it is clear that high utility meat cuts, such as hams and less frequently, beef roasts, were being utilized by site occupants. It is not possible, at this point, based upon the limited nature of the excavations, to determine more precisely how the faunal remains may reflect the diet of the occupants of the main house as opposed to the servants' or slave quarters.

Site Function

From the minimal archival information, the Glenwood Quarters served a variety of functions including kitchen, slave/servant quarters, and weaving shed. Based on the limited excavation data, and the artifact assemblage, it is quite possible that some of these functions occurred in the structure.

Based on the feature descriptions and the artifact assemblage, Features 1 and 2 are best classified as subfloor pits. These pits are commonly found in structures dating from the eighteenth and nineteenth centuries, and frequently occupied and utilized by African-American slaves in Virginia, Kentucky, South Carolina, and Tennessee (Heath 1999; Stottman and Watts-Roy 2000). Additionally, subfloor pits have been found in log cabins and outbuildings occupied by Europeans of all economic strata in Appalachia (Faulkner 1986; Thomas 1993). Subfloor pits can measure anywhere from 2-x-2 ft to 6-x-9 ft (Faulkner 1986; Samford 1999). Faulkner describes two types of subfloor pit. With the first type, the dimension of the cellar conforms to the room above it, can be either lined or unlined, and has an entryway from the exterior of the structure (bulkhead) and frequently a trap door. The second type is a small square or rectangular pit excavated beneath the floor, sometimes lined with wood or brick, and accessed from the room above (Faulkner 1986). Depth of subfloor pits is highly variable. Frequently, the pits are located immediately in front of a hearth, or are located along the walls of the structure (Heath 1999; Kelso 1984, 1997; Pullins et al. 2003; Stottman and Watts-Roy 2000). Typically, the artifact

assemblages recovered from these features include personal items, ceramics, container glass, tools, and faunal remains (Pullins et al 2003).

Subfloor pits have received a fair amount of attention in archeological literature. The function of subfloor pits in African-American slave contexts range from root cellar or food storage to storage of personal items and ancestor shrines. It is most likely that these pits served a variety of functions including refuse disposal (Heath 1999; Higgins et al. 2000; Kelso 1984, 1997; Neiman 1997; Pullins et al. 2003).

To date, the subfloor pits under the Glenwood Quarters are the only examples excavated in the Kanawha Valley. Examples of larger cellars have been identified in the Kanawha Valley. The first was an approximately 6-x-6 ft bulkhead entrance cellar located beneath the John Reynolds mansion (46Ka142) dating ca. 1811-1910 (Updike 2003). The second was a large trash-filled cellar identified at the Willow Bluff site (46Ka352) an African-American slave cabin and possible barn site associated with the Reynolds Family (Updike 2002).

Feature 1 appears to be a fairly classic example of the subfloor pit. The feature was not located immediately in front of the hearth; however, subfloor pits associated with African-American slave quarters are frequently found lining the exterior walls. Dimensions for Feature 1 were listed as four feet long, three feet wide, and two inches thick (Paul Marshall n.d.). This size is consistent with examples of this feature type excavated across the south. In regards to the artifact assemblage, according to the Paul Marshall report, Feature 1 contained "marbles, buttons, ceramic arms or legs from a ceramic doll, and some animal bone." The report further notes "[t]his feature was directly below the common room where families would gather, children played and household tasks such as sewing were performed." Based on excavations of similar site and feature types, smaller subfloor pits are considered almost a type of "safe deposit box" or in nineteenth century parlance, "hidey holes" where slaves kept personal items, and perhaps hid items from their masters (Nieman 1997).

Feature 2 was encountered beneath the floor of the southern room, interpreted as the kitchen for Glenwood. This feature was described as an elongated oval-shaped pit with a flat basin, 18 feet long, six feet wide, four inches deep, and eight inches below surface. In the Paul Marshall report, it was noted that Feature 2 contained "ceramics, glass, considerable bone, silver, etc." The feature "was located directly below the kitchen to the left of the fireplace" (Paul Marshall n.d.). If the interpretation of this room as a kitchen is correct, then the recovery of broken ceramics and faunal remains from this feature is not surprising.

Combining the chronology of the assemblage with the feature types, it is possible to suggest that the subfloor pits were excavated and utilized by slaves or servants working for either the Laidley or Summers family. As the assemblage does not contain artifacts from the later quarter of the nineteenth century, deposition ended very near the time slavery ended in the Kanawha Valley in 1863.

Despite the poor quality of the excavation report and the near total lack of provenience information, the analysis of the artifacts and faunal remains from the Glenwood Quarters provides an entry point for future archeological and historical research. Questions that this analysis raises include: Who were the Glenwood slaves? Why did deposition under the floor of the quarters cease? Given the age of the deposits, slaves/servants of Laidley or Summers could have made the deposits. Did Summers end the practice once his family moved to Glenwood? Was it that Summers' slaves/servants left Glenwood at the end of slavery and therefore no one was living in the quarter after the 1860s? Was the Summers family knowledgeable about the then-current thought on sanitation and refuse disposal and ceased the practice of waste disposal in close proximity to their home? Answers for these questions may lie in archival information housed at Glenwood, or in archeological investigations of yard areas, or a combination of both.

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References

Adams, William Hampton

1980 *Waverly Plantation: Ethnoarchaeology of a Tenant Farming Community.* Resource Analysts, Bloomington, Indiana.

Adams, William Hampton, and Sarah Jane Boling

1991 Status and Ceramics for Planters and Slaves on Three Georgia Coastal Plantations. In *Approaches to Materials Culture Research for Historical Archaeologists,* compiled by George Miller, Olive Jones, Lester Ross, and Teresita Majewski, pp. 59-8. Society for Historical Archaeology.

Allgood, Jessica

2003 Faunal Analysis. In *Speculation, Boom and Bust on the Great Kanawha: Phase II Testing and Archaeological Data Recovery for the Historic Component of the Burning Spring Branch Site (46Ka142), Kanawha County, West Virginia*, by William D. Updike. Contract Publication Series WV03-16, Appendix D. Cultural Resource Analysts, Inc., Hurricane, West Virginia.

Anonymous

n.d. Welcome to Glenwood. Pamphlet provided to Glenwood Visitors by Marshall University Graduate College Foundation.

Atkinson, George W.

1876 *History of Kanawha County, from its Organization in 1789 until the Present Time.* Charleston, West Virginia.

Ball, Donald B.

1984 *Historic Artifact Patterning in the Ohio Valley.* Proceedings of the Second Annual Symposium on Ohio Valley Urban and Historic Archaeology 2:24-36. Indianapolis.

Baugher -Perlin, Sherene.

1982 Analyzing Glass Bottles for Chronology, Function, and Trade Networks. In *Archeology of Urban America*, edited by Roy Dickens pp. 250-291. Academic Press, New York.

Bemrose, Geoffery

1952 *Nineteenth Century English Pottery and Porcelain.* Pitman Publishing Corporation, New York, New York

Billington, Dora M.

1962 *The Technique of Pottery*. Hearthside Press Inc., New York, New York.

Boger, Louise Ade

1971 *The Dictionary of World Pottery and Porcelain.* Charles Schribner and Sons, New York.

Buckley, Francis

1934 *Old English Glass.* The Birmingham Glass Pinchers, *Glass* 11 (May):187-188.

Cameron, Elizabeth
1986 *Encyclopedia of Pottery and Porcelain, 1800-1960*. Facts on File Publications, New York, New York.

Chance, David H., and Jennifer V. Chance
1976 *Kanaka Village, Vancouver Barracks 1974.* Reports in Highway Archaeology, No. 3.

Church, Flora
2002 Faunal Analysis. In *Archaeological Data Recovery of a Historic African-American Slave Component at the Willow Bluff Site (46Ka352) in Kanawha County, West Virginia,* by William D. Updike. Contract Publication Series WV02-19. Cultural Resource Analysts, Inc., Hurricane, West Virginia.

Collard, Elizabeth
1967 *Nineteenth-Century Pottery and Porcelain in Canada.* MsGill University Press, Montreal.

Collins, Rodney
1978 National Register of Historic Places Inventory Nomination Form. Laidley-Summers-Quarrier House, Glenwood. Ms on file at West Virginia Division of Culture and History, Charleston.

Day, Grant L.
2002 *A Phase III Excavation of the McConnell's Homestead (15Bb75), Bourbon County, Kentucky*. Contract Publication Series 00-117. Cultural Resource Analysts, Inc., Lexington, Kentucky.

Denker, Ellen, and Bert Denker
1982 *The Warner Collector's Guide to North American Pottery and Porcelain*. Warner Books, New York.

Dodd, Arthur E.
1964 *Dictionary of Ceramics.* Philosophical Library Inc., New York, New York.

Dunning, Phil
2000 Composite Table Cutlery from 1700 to 1930. In *Studies in Material Culture Research. Society for Historical Archaeology*. Copyright Her Majesty the Queen in Right of Parks Canada.

Eastwood, Maude
2007 *Mineral Doorknobs.* Antique Doorknob Collectors of America. Chatham New Jersey.

Eddy, Samuel, and A.C. Hodson
1982 *Taxonomic Keys to the Common Animals of the North Central States.* Burgers, Minneapolis.

Faulkner, Charles H.
1986 The Pit Cellar: A Nineteenth Century Storage Facility. Proceedings of the Symposium on Ohio Valley Urban and Historical Archaeology IV: 54-65.

Fay Robert P.
1986 *Archaeological Investigations at Liberty Hall, Frankfort, Kentucky.* Kentucky Heritage Council, Frankfort.

Fike, Richard E.
1987 *The Bottle Book: A Comprehensive Guide to Historic Embossed Medicine Bottles.* Pergerine Smith Books, Salt Lake City.

Garrow, Patrick H., and Thomas R. Wheaton, Jr. (editors)
1986 *Oxon Hill Manor Archaeological Site Mitigation Project.* Prepared by Garrow and Associates, Inc., Atlanta, Georgia. Prepared for Maryland State Highway Administration, Baltimore

Gates, William C., Jr.
1984 *The City of Hills and Kilns: Life and Work in East Liverpool, Ohio.* The East Liverpool Historical Society, East Liverpool.

Gates, William C., Jr., and Dana E. Ormerod
1982 The East Liverpool Pottery District: Identification of Manufacturers and Marks. *Historical Archaeology* 16(1-2):1-358.

Genheimer, Robert A.
1987 *Archaeological Testing, Evaluation, and Final Mitigation Excavations at Covington's Riverfront Redevelopment Phase II Site, Kenton County, Kentucky.* Prepared by R.B. Archaeological Services, Covington, Kentucky and Cultural Resource Analysts, Inc., Lexington, Kentucky. Submitted to the City of Covington, Kentucky.

Gilbert, B. Miles.
1980 *Mammalian Osteology.* Modern Printing Co., Laramie, Wyoming.

Gilbert, B. Miles, L.D. Martin, H.G. Savage
1981 *Avian Osteology.* Modern Printing Co., Laramie, Wyoming.

Godden, Geoffrey A.
1965 *An Illustrated Encyclopedia of British Pottery and Porcelain.* Bonanza Books, New York.

Greaser, Arlene and Paul H. Greaser
1967 *Homespun Ceramics: A Study of Spatter Ware*, 3rd Edition. A.B.E. Company, Allentown, Pennsylvania.

Heath, Barbara J.
1999 *Hidden Lives: The Archaeology of Slave Life at Thomas Jefferson's Poplar Forest.* University Press of Virginia, Charlottesville.

Hesse, Brian, and Paul Wapnish
1985 *Animal Bone Archaeology.* Taraxacum Press, Washington, D.C.

Higgins, Thomas F. III, Verona L. Deitrick, Charles M. Downing, Benjamin Ford, Stevan C. Pullins, Justine W. McKnight, Gregory J. Brown, and Heather A. Lapham
2000 *Wilton Speaks: Archaeology at an Eighteenth and Nineteenth-Century Plantation, Data Recovery at Site 44He493, Associated with the Proposed Route 895 Project, Henrico County, Virginia.* William and Mary Center for Archaeological Research, Williamsburg, Virginia. Submitted to Virginia Department of Transportation, Richmond.

Hillson, S.
1986 *Teeth.* Cambridge Manuals in Archaeology. Cambridge University Press, Cambridge.

Hughes, G. Bernard, and Therle Hughes
1968 *The Collector's Encyclopedia of English Ceramics*. Abbey Library, London.

Hunt, L.B.
1979 Gold in the Pottery Industry. *Gold Bulletin* 13(3):116-127.

IMACS (Intermountain Antiquities Computer System)Users Guide
1984 Intermountain Antiquities Computer System (IMACS) Users Guide prepared by the University of Utah BLM, U.S. Forest Service, revised 1990. Ms. on file with Cultural Resource Analysts, Hurricane, West Virginia.

1992 Intermountain Antiquities Computer System Users Guide. Revised. University of Utah, Bureau of Land Management, U.S. Forest Service. Originally published 1982.

Inashima, Paul Y.
1981 Regression for Flat Glass. In *Square 22 in Washington, D.C.: An Archaeological Investigation of the Historical Past.* Potomac River Archaeology Survey.

Jones, Olive R.
1971 Glass Bottle Push-Ups and Pontil Marks. *Historical Archaeology* 5: 62-73.

Jones, Olive, and C. Sullivan
1985 *The Parks Canada Glass Glossary for the Description of Containers, Tableware, Flat Glass, and Closures.* Studies in Archaeology, Architecture, and History. National Historic Parks and Sites Branch, Parks Canada.

Kelso, William M.
1984 *Kingsmill Plantations 1619-1800: Archaeology of Country Life in Colonial Virginia*. Academic Press, San Diego, California.

1997 *Archaeology at Monticello: Artifacts of Everyday Life in the Plantation Community.* Monticello Monograph Series. Thomas Jefferson Memorial Foundation.

Kendrick, Grace
1964 *The Antique Bottle Collector.* Western Printing and Publishing Company, Sparks, Nevada.

1968 *The Mouth Blown Bottle.* Edwards Bros., Inc., Ann Arbor, Michigan.

Klein, Richard G., and Kathryn Cruz-Uribe
1984 *The Analysis of Animal Bones from Archaeological Sites.* University of Chicago Press, Chicago.

Kovel, Ralph, and Terry Kovel
1986 *New Dictionary of Marks, Pottery and Porcelain 1850 to the Present.* Crown Publishers, New York.

Lehner, Lois
1980 *Complete Book of American Kitchen and Dinner Wares.* Wallace-Homestead Books, Des Moines, Iowa.

Light, John D.
2000 A Field Guide to the Identification of Metal. In *Studies in Material Culture Research.* Society for Historical Archaeology, Copyright Her Majesty the Queen in Right of Parks Canada.

Little, Wilfred L.
1969 *Staffordshire Blue: Underglaze Blue Transfer-Printed Earthenware.* Crown Publishers, Inc. New York, New York

Lofstrom, Edward U.
1976 An Analysis of Temporal Change in a Nineteenth Century Ceramic Assemblage from Fort Snelling, Minnesota. *Minnesota Archaeologist* 36(1):16-47.

Lofstrom, Elizabeth U., Judith P. Tordoff, and D.C. George
1982 A Seriation of Historic Earthenwares in the Midwest, 1780-1870. *Minnesota Archaeologist* 41(1):3-29.

Majewski, Teresita, and Michael J. O'Brien
1984 *An Analysis of Historical Ceramics from the Central Salt River Valley of Northeast Missouri.* Publications in Archaeology, Number 3. American Archaeology Division, Department of Anthropology, University of Missouri, Columbia.

1987 The Use and Misuse of Nineteenth-Century English and American Ceramics in Archaeological Analysis. In *Advances in Archaeological Method and Theory*, Volume 11, pp 97-209. Edited by Michael J. Shiffer. Academic Press, New York.

Mankowitz, Wolf, and Reginald George Haggar
1957 *The Concise Encyclopedia of English Pottery and Porcelain.* Hawthorne Books, New York.

Mansburger, Floyd
1986 Changing Patterns in Nineteenth Century Ceramics. In *Nineteenth Century Historic Archaeology in Illinois,* compiled by Thomas E. Emerson and Charles L. Rohrbaugh, pp. 131-179. Illinois Cultural Resources Study No. 2. Illinois Historic Preservation Agency, Springfield Illinois.

McKelway, Henry S.
1992 Architectural Change and Window Glass at the Matt Russell House. In *Proceedings of the Tenth Symposium on Ohio Valley Urban and Historic Archaeology*, edited by Amy Young and Charles Faulkner, pp. 92-105. Tennessee Anthropological Association Miscellaneous Paper No. 16.

1994 Slave and Master in the Upland South. Archeological Investigations at the Mabry Site 40KN86. Unpublished PhD. Dissertation, Department of Anthropology, University or Tennessee, Knoxville.

Miller, George
1991 A Revised Set of CC Index Values for English Ceramics. *Historical Archaeology* 25(1):1-25.

Miller, George, and Robert Hunter
1990 *English Shell Edged Earthenware: Alias Leeds, Alias Feather Edge.* Thirty-Fifth Wedgwood International Seminar 201-232.

Moir, Randall W.
1987 Socioeconomic and Chronometric Patterning of Window Glass. In *Historic Buildings, Material Culture, and People of the Prairie Margin*, edited by David H. Jurney and Randall W. Moir, pp. 73-81. Richland Creek Technical Series vol. V. Southern Methodist University, Dallas Texas

Neiman, Fraser D.
1997 Sub-Floor Pits and Slavery in 18th and Early 19th Century Virginia. Paper presented at the 1997 Conference of the Society for Historical Archaeology, Corpus Christi, Texas.

Nelson, Lee. H.
1968 *Nail Chronology as an Aid to Dating Old Buildings*. American Association for State and Local History, Technical Leaflet 15.

Noël Hume, Ivor
1978 Pearlware: Forgotten Milestone of English Ceramic History. In *English Pottery and Porcelain*, edited by P. Atterby, pp. 166-170. Universe Books, New York.

Norman-Wilcox, George.
1978 Staffordshire in a Nutshell. In *English Pottery and Porcelain*, edited by P. Atterbury, pp.166-170. Universe Books, New York.

Olsen, Stanley J.
1968 *Fish, Amphibian and Reptile Remains from Archaeological Sites.* Papers of the Peabody Museum of Archaeology and Ethnology, Vol. 56, No. 2. Harvard University, Cambridge.

1980 *Mammal Remains from Archaeological Sites.* Papers of the Peabody Museum of Archaeology and Ethnology, Vol. 56, No. 1, 3rd Edition. Harvard University, Cambridge.

Orser, Charles E.
1988 *The Material Basis of the Postbellum Tenant Plantation.* The University of Georgia Press, Athens.

Otter, Edward
1993 Faunal Remains. In *Phase III Excavations at 46Ja72, Mill Creek Dam Site 10, Jackson County, West Virginia,* by S.C. Anderson, W.M. Gardner, and K.A. Snyder. Thunderbird Archeological Associates, Inc. Woodstock, Virginia.

Paul D. Marshall Associates, Inc.
n.d. Laidley-Summers-Quarrier House. Project #54-10770 Archaeological Report. Paul D. Marshall Associates, Inc. Charleston, West Virginia.

Price, Cynthia R.
1979 *Nineteenth Century Ceramics in the Eastern Ozark Border Region*. Southwest Missouri State University, Center for Archaeological Research, Monograph Series Number 1.

1981 Early to Mid-Nineteenth Century Refined Earthenwares. In *A Guide for Historical Archaeology in Illinois*, edited by C.E. Orser, Jr., pp. 24-48. Mid-American Research Center Research Paper Number 1. Loyola University of Chicago.

Pullins, Stevan C., Joe B. Jones, John R. Underwood, Kimberlye A. Ettinger, David E Lewis, Justine W. McKnight, and Gregory J. Brown
2003 *Southall's Quarter: Archaeology at an Eighteenth Century Slave Quarter in James City County.* Report Prepared for Virginia Department of Transportation by William and Mary Center for Archaeological Research, College of William and Mary, Williamsburg, Virginia.

Pullins, Stevan C.
2004 *A Phase III Excavation at the Duckworth Farm Site (15Bh212) in Bath County, Kentucky* (Item No. 9-121.20). Cultural Resource Analysts, Inc. Contract Publication Series WV04-31. Submitted to T.H.E. Engineers, Inc. Copies available from Cultural Resource Analysts, Inc., Hurricane, West Virginia.

Purdue, J.R., B.W. Styles, and M.C. Masulis
1989 Faunal Remains and White-tailed Deer Exploitation from a Late Woodland Upland Encampment: the Boschert Site (23 SC 609), St. Charles County, Missouri. *Midcontinental Journal of Archaeology* 14(2):146-163.

Rahn, Joan Elma
1977 *Grocery Store Zoology, Bones and Muscles.* Atheneum, New York.

Ramsey, John
1939 *American Potters and Pottery.* Tudor, New York.

Ratliff, Gerald S.
2006 George William Summers. In *The West Virginia Encyclopedia*, edited by Ken Sullivan, pp. 691-692. West Virginia Humanities Council, Charleston.

Reitz, Elizabeth J., Barbara L. Ruff, and Martha A. Zierden
2006 Pigs in Charleston, South Carolina: Using Specimen Counts to Consider Status. *Historical Archaeology* 40(4):104-124.

Reitz, Elizabeth J., and Elizabeth S. Wing
1999 *Zooarchaeology.* Cambridge Manuals in Archaeology, Cambridge University Press, Cambridge.

Revi, Albert C.
1964 *American Pressed Glass and Figure Bottles*. Thomas Nelson and Dons, New York.

Roenke, Karl G.
1978 *Flat Glass, Its Use as a Dating Tool for Nineteenth Century Archeological Sites in the Pacific Northwest and Elsewhere.* Northwest Anthropological Research Notes, Memoir No.4. Moscow, Idaho.

Samford, Patricia
1999 Strong is the Bond of Kinship: West African-Style Ancestor Shrines and Subfloor Pits on African-American Quarters. In *Historical Archaeology, Identity Formation, and the Interpretation of Ethnicity*, edited by Maria Franklin and Garrett Fesler, pp. 71-91. Colonial Williamsburg Research Publications, Colonial Williamsburg Foundation, Williamsburg, Virginia.

Schmid, E.
1972 *Atlas of Animal Bones.* Elsevier, New York.

Sisson, S. (rev. by J.D. Grossman)
1953 *The Anatomy of Domestic Animals* (4th ed.). W.B. Saunders Company, Philadelphia.

South, Stanley
1964 Analysis of the Buttons from Bruswick Town and Fort Fisher. *Florida Anthropologist* 17(2):113-133.

1972 *Evolution and Horizon as Revealed in Ceramic Analysis in Historical Archaeology.* The Conference on Historic Site Archaeology Papers Number 6, pp. 71-106.

1977 *Method and Theory in Historical Archaeology*. Academic Press, New York South

Stewart-Abernathy, Leslie C., and B.L. Ruff
1989 A Good Man in Israel: Zooarchaeology and Assimilation in Antebellum Washington, Washington, Arkansas. *Historical Archaeology* 23(2):96-112.

Stottman, M. Jay, and Jeffery L. Watts-Roy
2000 *Archaeological Research of the Riverside Detached Kitchen.* Research Report No. 4. Kentucky Archaeological Survey, Lexington.

Stout, William
1923 History of the Clay Industry in Ohio. In *Coal Formation Clays of Ohio,* by Wilber Stout, R.T. Stull, William J. McCaughey, and D.J. Demorest, pp. 28-43. Ohio Geological Survey, 4th Series, Bulletin 26, Columbus

Sullivan, Ken (Editor)
2006 *The West Virginia Encyclopedia.* West Virginia Humanities Council, Charleston.

Thomas, Judith E.
1993 *The Kelly Historic Site (33LE160) Investigation of an Early 19th Century Homestead on the Ohio River.* Mercyhurst Archaeological Institute, Mercyhurst College, Erie, Pennsylvania.

Toulouse, Julian
1972 *Bottle Makers and their Marks.* Thomas Nelson, New York

Updike, William D.
2002 *Archaeological Data Recovery of a Historic African-American Slave Component at the Willow Bluff Site (46Ka352) in Kanawha County, West Virginia*. Contract Publication Series WV02-19. Cultural Resource Analysts, Inc., Hurricane, West Virginia.

2003 *Speculation, Boom and Bust on the Great Kanawha: Phase II Testing and Archaeological Data Recovery for the Historic Component of the Burning Spring Branch Site (46Ka142), Kanawha County, West Virginia.* Cultural Resources Analysts, Inc., Contract Publication Series WV03-16.

Van Rensselear, S.
1978 Banded Creamware. In *English Pottery and Porcelain*, edited by P. Atterbury, pp. 240-244. Universe Books, New York

Wagner, M., and M. McCorvie
1992 The Archeology of the Old Landmark. Nineteenth Century Taverns Along the St. Louis Vincennes Trace in Southern Illinois. Illinois Department of Transportation and the Center for American Archeology, Kampsville.

Watkins, Lura Woodside
1930 Cambridge Glass 1818-1888: The Story of the New England Glass Company. Bramhill House, New York.

Wetherbee, Jean
1980 *A Look at White Ironstone.* Wallace-Jomestead Book Company, Des Moines.

1996 *White Ironstone: A Collectors Guide.* Antique Trader Books. Dubuque, Iowa.

White, Theodore E.
1953 A Method of Calculating the Dietary Percentage of Various Food Animals Utilized by Aboriginal Peoples. *American Antiquity* 18(4):396-398.