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CONTENTS

SMALL WONDER, THERE'S DIVERSITY! : CURRENT HISTORICAL ARCHAEOLOGY IN DELAWARE Wade P. Catts and David J. Grettler	3
"ENTERTAINED...AT YE TAVERN CLOSE BY": HISTORICAL ARCHAEOLOGICAL INQUIRY AT THOMAS OGLE'S TAVERN, OGLETOWN Ellis Coleman, Wade P. Catts and Angela Hoseth	5
EXCAVATION OF THE OLD SWEDE'S CHURCH PARSONAGE, BLOCK 1184, WILMINGTON, DELAWARE Charles H. LeeDecker	17
LANDSCAPE AND POST-OCCUPATIONAL CHANGES AT THE PATTERSON TENANT HOUSE (7NC-E-100), NEW CASTLE COUNTY, DELAWARE Douglas C. Kellogg	25
CAUSE AND (ADVERSE) EFFECT: LANDSCAPE CHANGE AT THE BUCHANAN-SAVIN FARMSTEAD CIRCA 1840-1991 Michael D. Scholl	33
CAN SIZES AND WASTE AT THE LEBANON CANNERY SITE: UNSCREWING THE INSCRUTABLE Edward F. Heite	43

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**SMALL WONDER, THERE'S DIVERSITY!
CURRENT HISTORICAL ARCHAEOLOGY IN DELAWARE**

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The following papers represent the range of archaeological investigations that have been undertaken in Delaware since 1986. They were first presented at the 1991 Annual Meeting of the Council for Northeast Historical Archaeology held in Newark, Delaware. As will be seen, Delaware has diverse historical archaeological resources spanning a period of about 350 years. Delaware sites range from urban to rural, domestic to industrial, and military to maritime. Archaeologists have forged strong connections with resources administered by both the public and private sector. The presentations provide an overview of historical archaeology in Delaware, and suggest some of the areas of research that have been particularly fruitful and substantive, and also the areas where more can be learned.

The inhabitants of Delaware have been interested in their historic past for centuries. The first documented case of historical archaeological research in Delaware occurred in 1748, when Peter Kalm wrote that, during the construction of a redoubt on the Christina River outside of Wilmington, an "old Swedish coin of Queen Christina's reign, not quite so big as a shilling, was found among some other things at the depth of a yard ... At the same time a number of old iron tools, such as axes, shovels, and the like, were discovered" (Benson 1937:83).

Since that time, Delawareans have been actively excavating and interpreting their more recent past. Work by both avocational and professional archaeologists at historical archaeological sites has been conducted in the state since the 1930s. With the advent of Federal regulations and cultural resource management in the 1970s, considerably more archaeological surveys and excavations were carried out. Today, archaeological research in the First State is conducted in a variety of public and private offices, such as the University of Delaware, Center for Archaeological Research, the Bureau of Archaeology and Historic Preservation, the Division of Parks and Recreation, and several engineering and contracting firms, including Louis Berger, Associates, MAAR Associates, Heite Consulting, CHRS, Inc., and John Milner Associates.

There are currently over 480 known historical archaeological sites listed in Delaware's Bureau of Archaeology and Historic Preservation's files - a significant number, considering Delaware is the second smallest state (De Cunzo and Catts 1990). Most of these sites have been identified through archaeological surveys conducted under the auspices of cultural resource management, particularly for the Delaware Department of Transportation. Unfortunately, many of these sites no longer exist, having fallen prey to the ever-increasing pressures of suburban development and road construction. Five of the following presentations are the result of CRM data recovery projects, reflecting the large, but vitally necessary, number of contract archaeology investigations in Delaware. A seventh paper, concerning the recent salvage of six nineteenth century gun carriages from Fort Delaware in the Delaware River, was not available for publication.

Delaware's location on the Delmarva Peninsula bridges both north and south. Its location between the New England, Middle Atlantic, and Chesapeake regions provides a unique and potentially revealing environment for historical archaeology. Social, economic, and cultural influences from Maryland, Virginia, Pennsylvania, and New Jersey are reflected in the history and archaeology of the state.

Despite these regional influences, Delaware remained primarily rural and agricultural into the twentieth century. Throughout the eighteenth and nineteenth centuries, widespread tenancy and commercial farming, both traditional elements of the Chesapeake, operated within a prosperous city-based hinterland economy typical of New England and the Middle Atlantic. The papers presented here underscore the importance of placing local and site-specific data within a dynamic understanding of regional social and economic change.

In 1986, it was written in volume 15 of *Northeastern Historical Archaeology* that several states, including Delaware, had produced few publications in historical archaeology. Delaware, it concluded, "lacks any type of ongoing research program in historical archaeology" (Starbuck 1986: 19). One goal of this session is to correct this erroneous accusation. On the contrary, Delaware is actively engaged in historical archaeology inquiry and is not the moribund archaeological backwater described in this Council's journal.

The following papers were chosen because they represent the broad range of research issues, field methods, and site interpretations presently being applied within the Diamond State. They are not intended to be represent every aspect of historical archaeological research in Delaware. Most of the papers discuss in detail archaeological investigations that have been or will be published as part of the Delaware Department of Transportation's wide-ranging *Archaeology Series*, edited by Kevin Cunningham. This year, the Delaware Department of Transportation will publish its 100th volume in this series. This anniversary volume will be an annotated bibliography to the series.

The first paper by Angie Hoseth of the University of Delaware describes recent investigations of the John Ruth Inn Site, a mid- to late-eighteenth century tavern in northern Delaware (Coleman et al. 1990). The next paper by Charles LeeDecker of Louis Berger Associates discusses excavations at the Old Swedes Church Parsonage in Wilmington (LeeDecker et al. 1990). The third paper by Doug Kellogg of the University of Delaware concerns the environmental history of landscape change at a eighteenth and nineteenth century rural tenancy in northern Delaware (Catts, Kellogg, and Scholl n.d.). The fourth paper by Mike Scholl reconstructs landscape changes at the Buchanan-Savin Site, a large nineteenth and early twentieth century owner-occupied dairy farm in central Delaware (Scholl et al., in press). Manufacturing sites are represented by the fifth paper by Ned Heite of Heite Consulting. Ned will discuss a late nineteenth century cannery in central Delaware and the phrenology of trash piles (Heite 1990).

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"ENTERTAINED...AT YE TAVERN CLOSE BY": HISTORICAL ARCHAEOLOGICAL INQUIRY AT THOMAS OGLE'S TAVERN, OGLETOWN

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INTRODUCTION

The Thomas Ogle Tavern site was located in Ogletown, White Clay Creek Hundred, north-central New Castle County, Delaware on the northwest corner of the intersection of Red Mill Road and Routes 4/273 (Figure 1). The Phase I and II excavations were undertaken by the University of Delaware Center for Archaeological Research (UDCAR) and funded by the Delaware Department of Transportation (DelDOT) and the Federal Highway Administration (FHA). The excavation of the site of Thomas Ogle's tavern in Ogletown, Delaware provided the opportunity to examine in detail the material culture of an eighteenth century Middle Atlantic tavern. A large assemblage of tavern-related artifacts, ranging in date from circa 1730 to 1780, was recovered from the sealed stratigraphic context of an infilled cellar at the site, allowing in-depth artifact analysis and vessel reconstruction. Through the use of historic records, in particular probate documents and tavernkeepers' account books, the Ogletown tavern's artifact assemblage was compared with the documentary record, providing a fuller understanding of tavern life in colonial Delaware. Several inter-site analyses at both the sherd and vessel levels of investigation were conducted, comparing the Ogletown assemblage with other tavern sites from Massachusetts to South Carolina. The results of these comparisons suggest that artifact assemblages recovered from tavern sites cross-cut regional boundaries. A detailed report of the investigations at Thomas Ogle's Tavern can be found in Coleman et al. 1990.

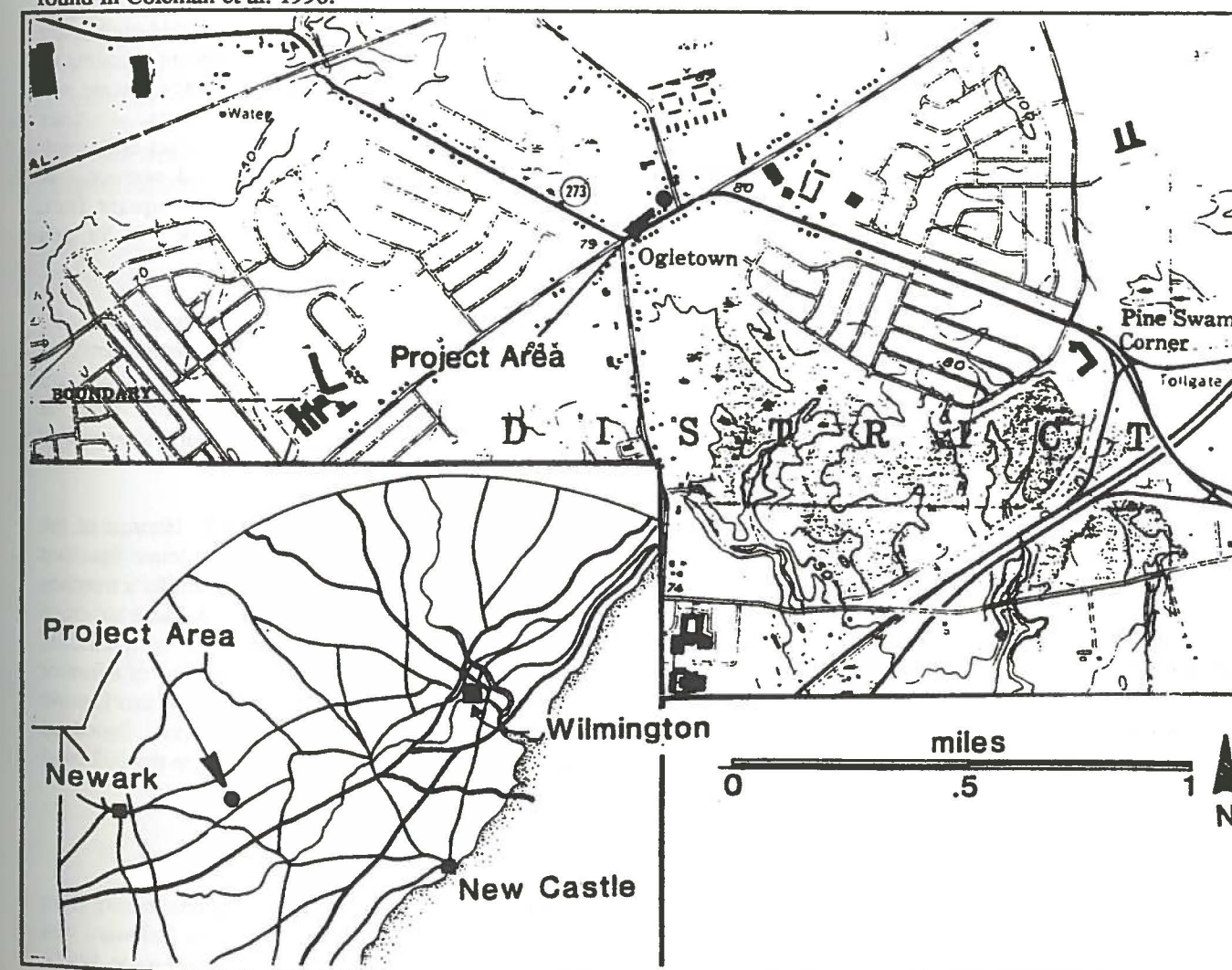


Figure 1. Project Area and Regional Location

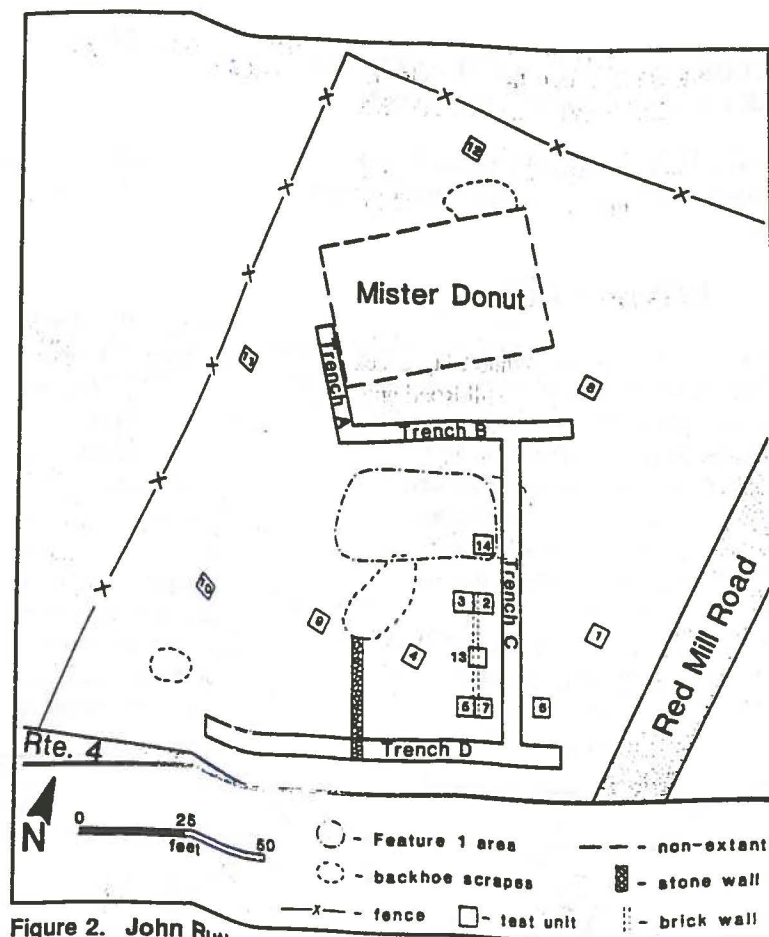


Figure 2. John Ruth Inn Site, Phase I and Preliminary Phase II Testing

units, was excavated in the main area of the site containing the feature.

The archaeological features identified by the archaeological investigations of the site included the remains of a stone-lined 18' X 15' X 4' deep cellar hole with a un-lined 10' X 7' addition, infilled with mid-eighteenth century artifact-bearing soils. Within this cellar hole were located the unsalvaged stone foundation course forming one of the gable end walls, the stair system excavated into subsoil related to a 3' x 3' bulkhead entrance to the cellar, an intermixed deposit be builder's trenches that encircled the cellar hole, and a series of trench features at the wall base of the cellar that appear to be builder's trenches for the foundation wall within the infilled cellar (Figure 3).

Based on the archaeological evidence and consultation with architectural historian Bernard L. Herman of the University of Delaware Center for Architecture and Engineering, the Ogletown Tavern was probably a frame structure erected upon a stone foundation wall. The trenches located by the excavation would have functioned as builder's trenches consisting of horizontally placed planks would have been constructed on this wall (Figure 4). Based on this interpretation, the stone found along the western wall of the cellar (Feature 4) represented the unsalvaged lowermost portion of a former continuous foundation wall. When the location of the bulkhead entrance was also considered, it was likely that Feature 4 represented the unlotted remains of the chimney pile that formed a major portion of the western wall. Based on architectural comparisons of extant and non-extant eighteenth century structures, it was common to have the bulkhead entrance placed against the hearth wall (Bernard L. Herman, personal communication, 1987).

HISTORICAL ANALYSIS

Historically, Thomas Ogle's tavern served as a social and economic center for the surrounding community from the early to mid-eighteenth century until the late nineteenth century. A similar social role for taverns in Delaware was provided by research on other taverns within the Route 7 corridor (Catts et al. 1986), 4 Mile Tavern (Thompson 1987), and other tavern sites in the eastern United States (Rockman and Rothschild 1984).

ARCHAEOLOGICAL INVESTIGATIONS

Phase I testing at the site consisted of the excavation of thirteen test units below the stripped macadam of the Mister Donut parking lot. These units determined that approximately 60% of the site had suffered disturbance during the parking lot construction and subsequent removal of all the pre-existing topsoil and approximately 1' of sterile sandy subsoil.

In order to further determine the integrity of archaeological deposits within the site, four backhoe trenches were excavated (Figure 2). One of these, Trench C, located a deep trough-shaped midden feature extending approximately 15' north-south along the western wall of the trench (Figure 3). The midden fill soil contained artifacts dating from the mid-eighteenth century, including significant amounts of faunal remains, a 1723 George I penny, and other diagnostic artifacts. Further excavation revealed an intact eighteenth century feature and land surface. A contiguous area of 1250 square feet, consisting of 37 (5' X 5' or 3' X 5') test

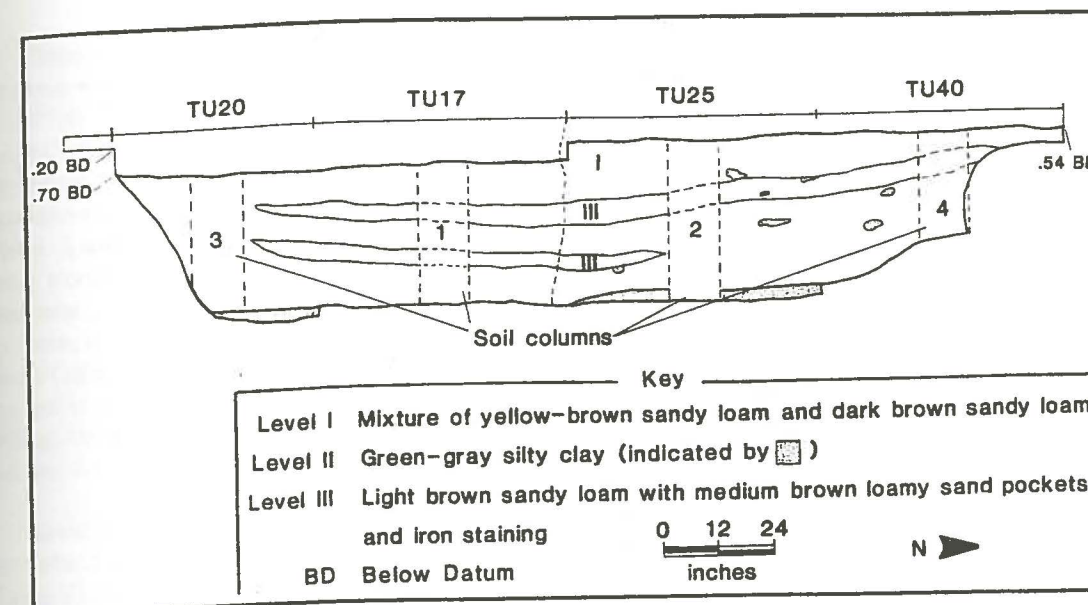


Figure 3. Feature 1 Profile - West Wall of Pipe Trench

Historians and geographers in nearby areas, specifically James Lemon (1972) in his study of southeastern Pennsylvania, identified taverns along with mills, ferries, and crossroads as an integral part of the formation of hamlets, or unplanned communities. Ogletown, one of those unplanned hamlets, was founded by Thomas Ogle, and it appeared that he also acted as a landlord, leasing and renting small properties in order to establish a commercial base for his community. The operation of a tavern would have been important to the success of this community and it was probable that Ogle established the tavern shortly after his purchase of the property in 1739. The following fragmentary documentary evidence indicated that the Ogletown Tavern site was occupied by circa 1740, and that during a majority of the 1740-1780 occupation, the tavern was under the ownership and possibly the tenure of Thomas Ogle.

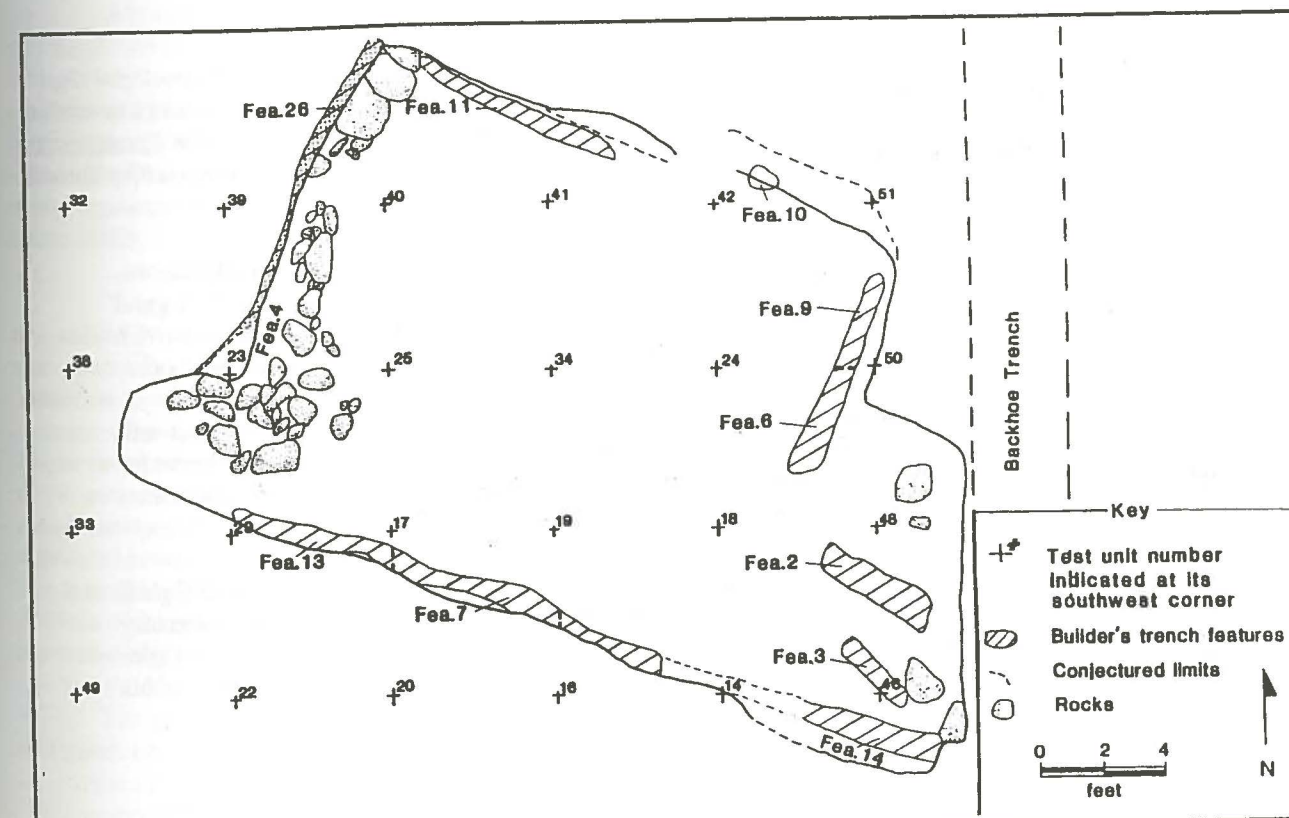


Figure 4. Plan View - Bottom of Feature 1

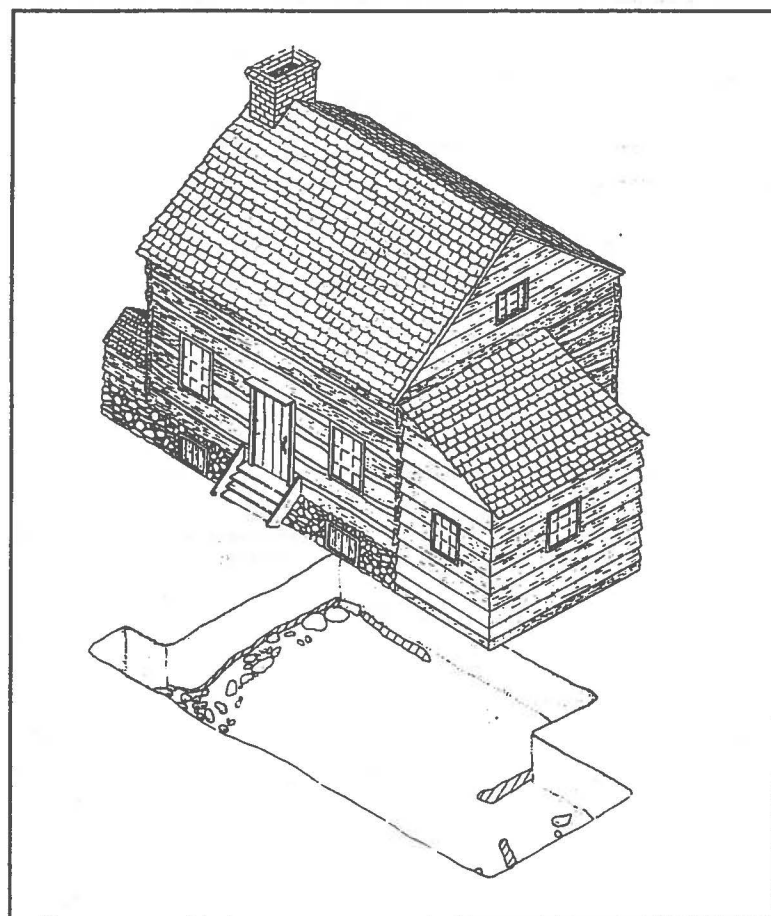


Figure 5. John Ruth Inn Site, 7NC-D-126

From 1739 until his death in 1771, Thomas Ogle established himself as an entrepreneur and developed Ogle's Town into an eighteenth century village complete with a grist and saw mill, storehouses, artisan's shops, and a tavern/inn (Figure 5). A newspaper advertisement placed by Thomas Ogle in the October 10, 1751 issue of the *Pennsylvania Gazette* reflected both the mid-eighteenth century environment of Ogetown and the financial success enjoyed by Thomas Ogle.

To be sold or lett, by Thomas Ogle, at Ogle-town, in Newcastle County, sundry plantations, viz One plantation in White-clay Creek Hundred, containing about 300 acres of land, with a good dwelling house, barn, stables, and sundry convenient outhouses; about 400 fine bearing apple trees, a fine meadow, about 25 acres, and about 130 acres of corn land, formerly the plantation he lived on.

Likewise two plantations more near Ogle-town, containing 500 acres each; also a grist-mill and saw-mill, within two miles of Christine-Bridge, where there is timber very plentiful, convenient for the mill. And 20 acres of land in Cecil County, Maryland, within 6 miles of navigable water, that comes to Philadelphia, with a set of grist-mills thereon, and in exceeding good wheat country.

And also 11 Negroes, men, women, and children, to be sold; and also to be let by said Ogle 2 good houses in Ogetown, fit for stores or taverns; also horses, cattle, swine, sheep, and sundry husbandry utensils, to be sold. Any person inclining to buy or rent, by applying to said Ogle, at his house in Ogle-town, may see the premises, and know the terms and conditions, he inclining to live easy the rest of his days.

Thomas Ogle

Three contemporary travelers' accounts from the mid-eighteenth century also provided information concerning the economic and social function of the tavern at Ogetown. In 1744 William Black said of Ogetown "at 12 o'clock arrived at Ogle Town 19 miles from North East, where we stopped and refreshed our selves with Bread and Cheese, Punch and Cyder, our horses with good Planter's Oats, after which we proceeded on to Wilmington" (Black 1877:239). Five years later Joshua Hempstead stated in his journal "and so journeyed alone to Ogetown and got there about 4 in the afternoon and dined there with Mrs. Lucus and her daughter, the widow of Ivory Lucus, Decd. They entertained me very bountifully. I oated my horse at ye tavern close by. I stayed here till after 6 and recd. a letter & c for Mr. Sol Coit. Here are mostly wooden houses Cribb fashion and old, those that are newly built the logs are hewed and as thick as hog neck or thereabouts...." (Hempstead 1954:350). Finally, in 1762, Benjamin Mifflin noted rather caustically; "set off and got to Ogle Town, if it deserves the name of a town. There being but one Brick House and a few wooden ones all the property of Thomas Ogle, no tavern in the place Ogle having kept one and behaving ill had his licence taken away. I thought to have pushed in to the head of Elk, but the sun being down, myself and horse fatigued and being a stranger to the road, and Ogle telling me he still entertained travelers, concluded to lodge there, but could get neither punch nor Wine, but good oats and hay for my horse...." (Paltsits 1935:7).

Based on the previous travelers' accounts further research showed that Thomas Ogle had on several occasions failed to uphold the regulations involving tavern-keeping. In 1761, Thomas Ogle appeared before the August term of the New Castle County Court of General Sessions, having been indicted for running a tippling house. Based on the Laws of the State of Delaware, this was the result of a violation of Section 5, the operation of a public house without a license. In such instances, the public house was referred to as a "tippling-house". While in Delaware such terminology implied an illegal operation, in other states small urban taverns were also called grog shops, slop shops, and tippling houses (Rice 1983).

Historians have described the eighteenth century inn as the center of community life and activity, suggesting that all life in the community revolved around the inn, and that taverns were among the most important social, political and economic institutions in American colonial life (Rice 1983 1983; Rivinus 1965; and Bridenbaugh 1960). The tavern variously functioned as a place to procure food, drink, and lodging for travelers, as well as a community social hall, post office, court, visiting place, and auction place. In the seventeenth century, the establishment of a hostelry (ordinary) was second in importance only to providing a gathering place for worship (Earle 1905).

Above all, eighteenth century taverns/inns functioned as convenient locations for the consumption of alcohol by the local community. Lodging was, until the nineteenth century, a secondary consideration. Drinking was the most popular of all eighteenth century tavern recreations. On average, in the eighteenth century, per capita consumption of distilled spirits was 3.7 gallons rising to 5 gallons at the turn of the nineteenth century, approximately 3 times today's levels (Rice 1983). In areas of especially high consumption, reputed to be those regions occupied by Dutch and English ethnic groups, alcohol consumption rates reached as high as 1 quart per day. Beginning in the late seventeenth century many segments of society, including religious and moralist leaders, professed some benefit to the consumption of alcohol (Rice 1983).

To provide a comparative data base for the study of intra- and inter-regional tavern life and material culture, eight inventories of known Delaware tavernkeepers in New Castle and Kent counties were compiled and examined (Table 1). These inventories ranged in date from 1741 to 1777, and included four known taverns from the urban locations of Wilmington and Dover, and two that were known to have been located in rural areas. The remaining two were from Kent County. The purpose of this study was prosopographical in that the common background characteristics of a small group were analyzed by a collective study (Stone 1971). The goal was the analysis of small group dynamics.

TABLE 1
EIGHT COMPARATIVE TAVENKEEPER INVENTORIES

NAME	DATE	LOCATION OF TAVERN	COUNTY
Thomas Downing	July 1741	Wilmington	New Castle
Andrew Leckey	March 1744		Kent
Charles Mathews	December 1752	Dover	Kent
Robert Hannum	March 1759	Wilmington	New Castle
William Wells	December 1762		Kent
Jacob Hamm	April 1766	St. Georges Hundred	New Castle
Samuel Griffen	August 1769		Kent
Robert Hunt	October 1777	Apoquinimink Hundred	New Castle

* compiled from Delaware State Archives, Inventories for New Castle and Kent Counties

TABLE 2
PERCENTAGE OF SELECTED ITEMS WITHIN TAVERNKEEPERS' INVENTORY SAMPLES

Name-Date	Total Inventory Value	Value of Beds (%)	Value of Other Furniture	Value of Glassware and Ceramics	Value of Pewter	Value of Wearing Apparel	Value of Livestock
T. Downing, 1741	t 100	t 33 (33%)	t 16 (16%)	————	t 3.1 (3%)	t 12.7 (12%)	t 4.1 (4%)
A. Lackey, 1744	t 69	t 21 (30.3%)	t 10 (14.5%)	t 4.8 (7.2%)	t 2.9 (4.3%)	t 3.1 (4.3%)	t 11.6 (16%)
C. Mathews, 1753	t 76	t 16.5 (21%)	t 11.5 (14%)	t 3.6 (5.2%)	t 5 (6.5%)	t 5.1 (6.5%)	t 9.7 (11.8%)
R. Hannum, 1759	t 130	t 23.3 (17.7%)	t 33.3 (25.3%)	————	t 8 (6.1%)	t 17.1 (13%)	t 9 (6.9%)
W. Wells, 1762	t 229	t 39 (17%)	t 23.7 (10.5%)	t 4.5 (1.7%)	t 7 (3.0%)	t 16 (7.0%)	t 2.8 (12.2%)
J. Hamm, 1766	t 1453	t 51 (3.5%)	t 25 (1.7%)	t 4.5 (.3%)	t 4 (.3%)	t 10 (.6%)	t 67 (4.6%)
S. Griffen, 1769	t 206	t 32 (15.5%)	t 15 (7.3%)	t 4 (1.9%)	t 4 (1.9%)	t 9 (4.3%)	t 24 (11.6%)
R. Hunt, 1777	t 465	t 35 (7.5%)	t 5 (1.1%)	t 7 (1.5%)	t 4 (.8%)	t 28 (6.0%)	t 172 (37%)
Average	t 341	t 31 (9.0%)	t 17 (5%)	t 4 (1%)	t 4 (1%)	t 13 (4%)	t 41 (12%)

From an intra-regional perspective, the Delaware tavern inventories revealed a remarkable consistency in the types and varieties of items present in these mid-eighteenth century taverns, and in the amount of capital invested in those items (Table 2). Within the inventories, beds and bedding generally accounted for an investment on the part of the operator of about 31 pounds, or 9% of the total inventory. Other furnishings, including desks, chairs, tables, benches, settees and couches, represented an average investment of about 17 pounds, or 5% of the total. Ceramics and pewter, archaeologically the best-represented material category, on average represented only 1% each of the total inventory, or an investment of about 4 pounds. Clothing, a visible status item, generally accounted for about 13 pounds of investment on the part of the innholder, or about 4% of the total estate. Livestock of all types, such as cows, horses, pigs and sheep, accounted for the largest percentage of the total inventory, 12%, or an average investment of over 40 pounds. All totaled, these six categories represent only 32% of the total estate; the balance of the tavernkeeper's wealth was made up of primarily agriculturally-related items, such as tools and grains, with considerably smaller amounts invested in sundry items, such as candlesticks, rugs, tubs, casks, and liquor.

The types of ceramics, glass, pewter, wooden objects, and cutlery present in the Delaware tavern inventories was of interest for the study of Thomas Ogle's Tavern. The ceramic types most prevalent at all of the Delaware taverns were china, probably export porcelain, delftwares, stonewares, such as Rhenish and English brown stonewares and imported earthenwares. Considering the time period under examination, the delftware was undoubtedly tin-glazed earthenware. Other distinctive ceramic types mentioned included "Liverpool China plates and Dishes", "blue and white China Tea Cups", "Enameled Sugar Dish and Saucer", and "1/2 pint [pint] Enameled Bowl". In a number of cases earthenware plates and dishes were recorded along with delftware and stoneware, indicating that local redwares were being used for food serving and consumption, and not just as preparation and storage vessels. Among the ceramics, teawares and large serving or punch bowls were prevalent.

The number of tin-glazed (delft) punch bowl vessels in the Ogletown Tavern assemblage was consistent with that expected for a tavern assemblage. The inventories from New England taverns indicated an average of seven bowls per establishment of delftware or porcelain. The Delaware inventories recorded on average 4 delft punch bowls per establishment. When the Ogletown Tavern assemblage was analyzed, fragments of at least six 1 quart or 2 quart bowls were noted.

The tea cups and saucers were consistently made of china (or porcelain), and the punch bowls ranged from half-pint to 2 gallon delft bowls. As part of the tea ceremony, silver teaspoons, generally in sets of six, and a pair of tongs, were present in all of the inventories along with one or two pair of sugar tongs used for cubed or lump sugar. Coffee pots and tea pots, along with sugar and cream pots, were consistently recorded in the tavern inventories, although often their material type (ceramic or pewter) was not specified.

Glasswares and bottles were not as prevalent in the inventories, with glasses and tumblers the least common. The relatively low percentage of bottle glass from the site was consistent with other tavern sites (see Bragdon 1981). The method of transportation for most alcoholic beverages was in wooden casks or hogsheads. The contents were then transferred to barrels, casks, bottles and decanters by the tavernkeeper. In combination with the high cost of bottles in eighteenth century America and the rural nature of the Ogletown tavern, the low percentage of bottle glass was not surprising.

Pewter in varying amounts was present in all of the tavern keepers' inventories. Vessel types included plates and dishes, basins, and a range of drinking vessels such as 1/2 pint and one pint pots or tankards, 1/2 gallon pots, and quart pots. Where the number was specified, pewter plates and dishes were present in larger quantities than ceramic plates and dishes. The least common types of material found in the inventories were items made of wood. Cedarware and "wooden bowls and trenchers" were mentioned only three times in the inventories. Tin and copper wares were frequent in the inventories, but often vessel forms and functions were not specified.

Cutlery, invariably including both knives and forks, was recorded in all but one of the inventories. Besides silver teaspoons, tablespoons or "large spoons" were included in the tavern inventories. These spoons were usually made of a less valuable metal such as pewter.

Besides the inventories, five manuscript tavernkeepers' accounts and/or day books were examined to obtain background data concerning the management and function of eighteenth century taverns in Delaware. These were the daybooks of Daniel Robison of Kent County (1742-1747), and of William Davis (1742-1746) and Leonard Vandergrift (1780-1787), both of New Castle County, and the account books of Henry Hoover (1769-1771) and Thomas Macomb (1778-1782), also of New Castle County.

Liquors of various types were served at all five of the taverns, and rum, cider, and beer were consistently the most common. Sweet drams, cherry drams, mint water, and egg drams were less frequent. By far the least common drink in any of the taverns was wine; based on their account books, only Hoover's and Macomb's taverns appeared to have stocked any wine at all. The small amount of wine recorded in the account books was supported by the tavern inventories examined, where wine was listed only occasionally as part of the tavernholder's stock.

Besides beer, cider, rum, and wine, punches and mixed drinks of a wide variety of types were served. At the taverns investigated, punches came in all sizes and mixtures, including rum punch (a standard), egg punch, milk punch, lime punch, and mulled punch. Other mixed drinks included sylibubs, or as William Davis recorded in his account book, "2 bowls of Silly Boob", mims, and metheglin, a liquor made of honey and water boiled and fermented, and often enriched with spices (Webster's Original 1828 Edition, s.v. "sylibubs"). All drink types, regardless of their content or mixture, came in a wide selection of sizes ranging from drams, gills, and nips (or "Nibs"), to pints, quarts, and gallons.

Meals, ranging from breakfast to supper, were also served at all five taverns examined. The tavernkeeper inventories suggested that beef, lamb, and pork were common menu items. Shellfish in smaller quantities were also served. Besides patrons, the tavernkeeper also served meals to slaves and servants, as suggested by the entry in William Davis' book for "Negro Dinner".

Lodging for both man and beast was offered at all of the taverns studied. It was apparent from the record books that tavernkeepers ran more than simply inns or restaurants. Tavernkeepers were often important members of their communities and had special talents or "sideline" occupations; in many ways, they functioned as 'jacks-of-all-trades'. Both Robison and Macomb appeared to have operated dry goods stores from their taverns, a fairly common eighteenth century practice.

For all of the services that they provided, tavernkeepers were rarely paid in cash; more often "in kind" payment was received from patrons. Daniel Robison in Kent County accepted a wide variety of "in kind" payment, including "by Maryland Money", "4 days moing [mowing]", "By one mutton", by "26 days work of the Negro woman", "by one sow + six shoates", and "by six bushels of flax seed".

From the tavern accounts and daybooks, the ways eighteenth century taverns functioned in both urban and rural locations in Delaware was revealed. Taverns were utilized in a full and varied range of activities, ranging from social meeting places to medical aid stations, from transshipment depots to blacksmith shops and lodgings (Coleman et al. 1990:57-60). In these capacities, they served as nodal points within the region, operating to bring the community

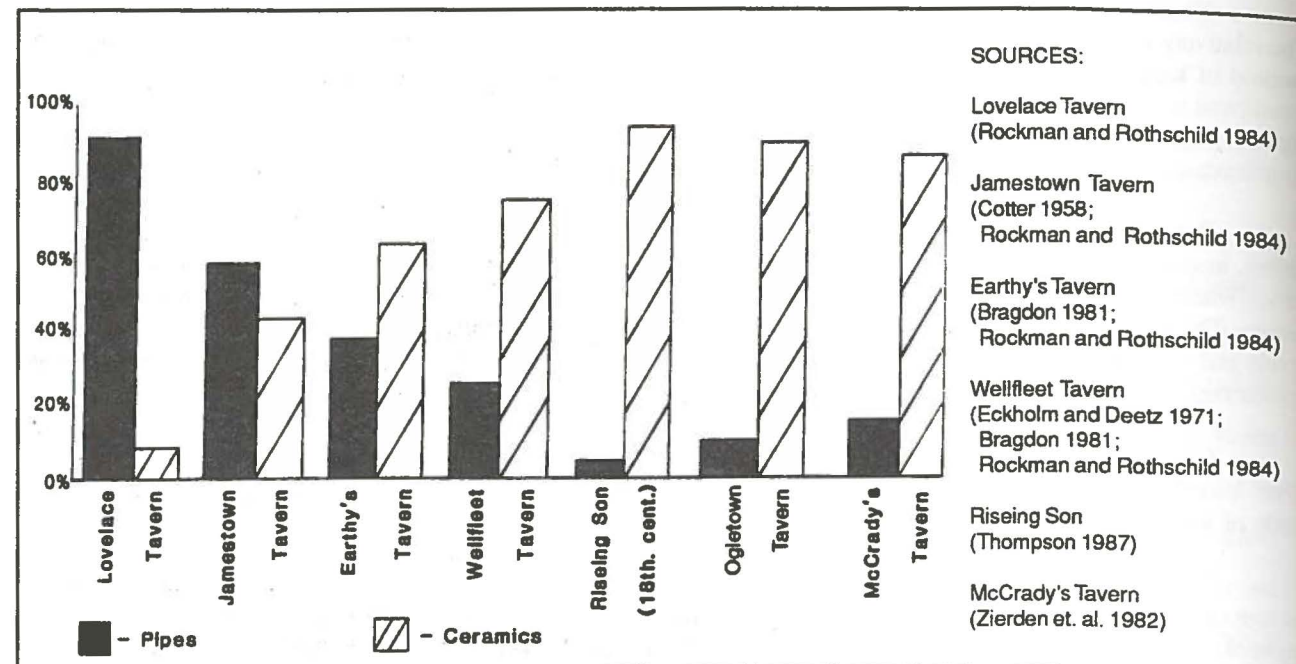


Figure 6. Proportions of Pipes and Ceramics at Seven Tavern Sites

together for important events and occasions. Although its name and operator was not known with certainty, the Ogletown tavern most assuredly functioned along similar lines and in a similar capacity to those whose records have survived and were investigated.

ARTIFACT ANALYSIS

The Ogletown tavern artifact assemblage was analyzed at the sherd and vessel levels, and a comparison of the archaeologically derived assemblage with the documentary data was conducted. First, at the sherd level of analysis, the Ogletown Tavern assemblage was compared to other tavern sites in order to determine its similarity to other tavern assemblages. The results of this comparison, indicating a strong tavern component, led to the application of techniques to determine the 'urban' vs. 'rural' nature of the assemblage.

In order to provide further comparative information at the sherd level of analysis, the Ogletown Tavern assemblage was compared to six other tavern assemblages using the percentage distribution of tobacco pipes, ceramics, and bottle glass. Other studies (Rockman and Rothschild 1984; Thompson 1987) utilized similar analyses using the Brainerd-Robinson Coefficient-of-Agreement (Brainerd 1951 and Robinson 1951), and compared the percentage distribution of these specific functional artifact classes between urban and rural taverns. Urban taverns, assumed to serve more of a social function would presumably generate more artifacts associated with those activities, such as smoking pipes and bottle glass. Rural taverns, functioning more for subsistence of travelers may have possessed a higher relative percentage of ceramics. Although this analysis used the basic assumptions of the Rockman and Rothschild study, the difference-of-proportion test was used, rather than the Brainerd-Robinson coefficient-of-agreement because the coefficient-of-agreement did not take into account differences in the size of samples that produced the percentages. The difference-of-proportion test did not require normally distributed data. Rather, application of the difference-of-proportion test was based on the fact that the sampling distribution of estimated sample proportions was normally distributed (Parsons 1974:433-436).

Figure 6 shows a bar graph with the percentages of pipes and ceramics at the seven tavern sites considered. Almost all of the differences in percentages were statistically significant and allowed the ranking of the tavern sites by frequency of artifact types. Within the rankings, Jamestown and Earthy's taverns showed insignificant differences in frequencies of pipes, Wellfleet and McCrady's taverns showed insignificant differences in the frequencies of ceramics, and Rising Sun and Wellfleet taverns showed insignificant differences in frequencies of bottles. Thus, the difference of proportion test for comparisons between sites for pipes, ceramics, and bottle glass, disclosed a large percentage (99%) of significant differences. The amount of actual variability between the tavern assemblages was thus much greater than identified in previous studies employing the Brainerd-Robinson statistic (Rockman and Rothschild 1984, Thompson 1987). As noted, only 3 out of the 66 pair-wise comparisons of the difference of proportion test showed percentages

which were not significantly different (Table 3). However, the similarity noted throughout the comparisons between the Ogletown Tavern and the Rising Sun Tavern seemed to indicate that geographical location was a major causative factor and that more relevant and realistic comparisons could be made among geographically-limited tavern assemblages. The difference-of-proportion test employing the seven tavern assemblages indicated greater differences among the assemblages than previously noted. In fact, such a great range of variability was noted, that the concept of a Mid-Atlantic tavern artifact pattern or even a rural versus urban artifact pattern at tavern sites must be questioned.

Only the Wellfleet Tavern's ceramic assemblage had been analyzed at the vessel. Therefore, intersite comparisons used two residential sites of comparable age (John Hicks and Bray), two documented slave occupied sites of comparable occupation period (Littleton, Kingsmill Quarter), and one residential site (Whitten Road) within close proximity to the Ogletown Tavern (Stone 1973; Kelso 1984; Shaffer et al. 1988). The site assemblages were compared on the basis of the proportions of hollowwares and flatwares, storage/preparation and serving vessel proportions, and cups and drinking vessel proportions. The goal of the examination was to compare and contrast the Ogletown assemblage with general trends and characteristics of eighteenth century ceramic vessel use and function. Out of 126 pair-wise comparisons, approximately 65% showed significant differences (Table 4). Again it should be noted that the results of the difference-of-proportion tests revealed results very different from those obtained from simple ratio comparisons.

Among the vessel categories compared, significant groupings were identified when the ranking of sites based on cups vs. mugs and jugs was examined (Table 5). Different groupings of sites were also noted for cups and mugs, and jugs. Within cups, the upper class Hicks and Bray sites group together due to their common significantly high percentage of cups. The Whitten Road assemblage again was anomalous due to a very high percentage of cups. There was a significant grouping of the tavern assemblages (Wellfleet and Ogletown) and slave sites (Kingsmill Quarter and Littleton Quarter) based on their similarly low percentages of cups and high percentages of mugs and jugs. It appeared from this analysis that these vessel forms most accurately characterize the true

TABLE 3
SUMMARY OF DIFFERENCE-OF-PROPORTION TESTS -
PIPES, CERAMICS, AND BOTTLES

Tavern Pair	Pipes	Ceramics	Bottles
Lovelace/Jamestown	21.99	24.13	7.72
Lovelace/Earthy's	33.77	68.61	47.12
Lovelace/Well Fleet	66.94	96.89	57.35
Lovelace/Rising Sun	35.83	63.72	14.01
Lovelace/John Ruth Inn	79.15	95.49	30.66
Lovelace/McCrady's	32.05	53.36	7.32
Jamestown/Earthy's	1.52*	25.49	15.13
Jamestown/Well Fleet	9.78	35.93	48.26
Jamestown/Rising Sun	17.53	30.03	17.23
Jamestown/John Ruth Inn	29.01	45.23	29.96
Jamestown/McCrady's	12.38	21.50	11.40
Earthy's/Well Fleet	23.53	14.03	17.38
Earthy's/Rising Sun	20.17	16.09	13.47
Earthy's/John Ruth Inn	46.80	28.30	25.17
Earthy's/McCrady's	15.30	4.52	28.85
Well Fleet/Rising Sun	14.08	12.15	1.81*
Well Fleet/John Ruth Inn	34.40	21.78	16.37
Well Fleet/McCrady's	8.11	.72*	15.59
Rising Sun/John Ruth Inn	4.75	5.78	3.04
Rising Sun/McCrady's	6.78	10.37	6.99
John Ruth Inn/McCrady's	4.47	8.85	7.23

* - p > .10, no significant difference

TABLE 4
VESSEL FORM COMPARISONS -
DIFFERENCE-OF-PROPORTION TESTS

	Flat ware	Hollow ware	Storage/Preparation	Serving	Cups	Mugs and Jugs
Well./Hicks	.68	.68	1.95	1.95	5.02*	5.02*
Well./Bray	3.69*	3.69*	2.46*	2.46*	2.69*	2.70*
Well./Ogle.	2.75*	2.75*	4.16*	4.16*	1.97*	1.97*
Well./Little.	3.28*	3.28*	3.22*	3.22*	5.31*	.31
Well./Whitten	6.95*	6.95*	2.39*	2.39*	6.60*	6.60*
Well./Kings.	4.93*	4.93*	5.54*	5.54*	2.16*	2.16*
Hicks/Bray	3.22*	3.22*	1.04	1.03	1.03	1.03
Hicks/Ogle.	2.18*	2.18*	2.34*	2.34*	3.19*	3.19*
Hicks/Little.	2.83*	2.83*	2.03*	2.03*	2.82*	2.82*
Hicks/Whitten	6.64*	6.64*	4.30*	4.30*	2.61*	2.61*
Hicks/Kings.	4.50*	4.50*	4.04*	4.04*	2.37*	2.37*
Bray/Ogle.	1.41	1.41	.75	.75	1.18	1.18
Bray/Little.	.13	.13	1.02	1.02	1.67	1.67
Bray/Whitten	2.07*	2.07*	4.22*	4.22*	2.89*	2.90*
Bray/Kings.	.67	.67	2.45*	2.45*	.80	.80
Ogle./Little.	1.23	1.24	.52	.52	4.95*	.95
Ogle./Whitten	4.49*	4.49*	6.33*	6.33*	5.07*	5.06*
Ogle./Kings.	2.47*	2.47*	2.08*	2.08*	.38	.39
Little./Whitten	1.74	1.74	4.74*	4.73*	4.34	4.34*
Little./Kings.	.56	.56	1.08	1.08	1.15	1.15
Whitten/Kings.	1.61	1.61	7.36*	7.36*	4.27*	4.28*

*Test Value > 1.96, p < .05

KEY:

Well. - Well Fleet	Hicks - John Hicks
Ogle. - Ogletown	Little. - Littleton
Whitten - Whitten Road	Kings. - Kingsmill

TABLE 5
RANKINGS OF SITES BY VESSEL FORM CATEGORIES

	Flatware	Hollowware	Storage/ Preparation	Serving	Cups	Mugs and Jugs
Most	Whitten Kingsmill Littletown Bray Ogletown	Well Fleet John Hicks Ogletown Bray Littletown Kingsmill Whitten	Whitten Well Fleet John Hicks Bray Ogletown Littletown	Kingsmill Littletown Ogletown Bray John Hicks Well Fleet Whitten	Whitten John Hicks Bray Kingsmill Ogletown Littletown	Well Fleet Littletown Ogletown Kingsmill Bray John Hicks Whitten
Least			Kingsmill		Well Fleet	

KEY:
] - Brackets list similar sites

social conditions of the sites' occupants and/or the function of the site. While the Wellfleet assemblage contained an anomalously high percentage of mugs and jugs to cups (a 1:4 ratio), especially when compared to the 1:2 ratio for the Ogletown Tavern, those sites seemed to form the parameters of a functionally and socio-economically distinct assemblage grouping.

The final analysis to be discussed was a comparison of the archaeological artifact assemblage and the assemblage expected based on the tavern records research. Figure 7 shows flatwares, hollowware, and cups and drinking vessel proportions based on an average percentage distribution. Significant differences were noted between the archival and archaeological assemblages with respect to flatware and hollowware vessel forms, but no differences were noted with respect to cups, mugs, and jugs. The comparison of flatware/hollowware ratios between the Ogletown Tavern assemblage and the archivally derived percentages showed an almost perfect inverse relationship of an excavated assemblage approximately 1:3 and a documentary ratio of 2:1. Thus, a significantly lower number of flatware vessels were recovered from the excavation than would have been expected based on archival research. The reason for the discrepancy was traced to the extensive presence and use of pewter as a flatware form in all tavern inventories sampled (see also Martin 1989). It was extremely unlikely that pewter plates would be included within the archaeological assemblage and the flatware percentages of the archaeological assemblage were thus unrealistically lowered. When the archivally derived cup/drinking vessel ratio was compared to the archaeologically assemblage ratio, an almost identical percentage distribution was noted with archivally-derived percentage of 21% cups, 69% drinking vessels versus an archaeological percentages of 28% cups and 72% drinking vessels. This almost perfect correlation between the two information sources was related to the almost exclusive presence of cups and drinking vessels of earthenware or other ceramic types as noted in the inventories. Unlike pewter, these forms were highly susceptible to breakage and incorporation in the archaeological assemblage.

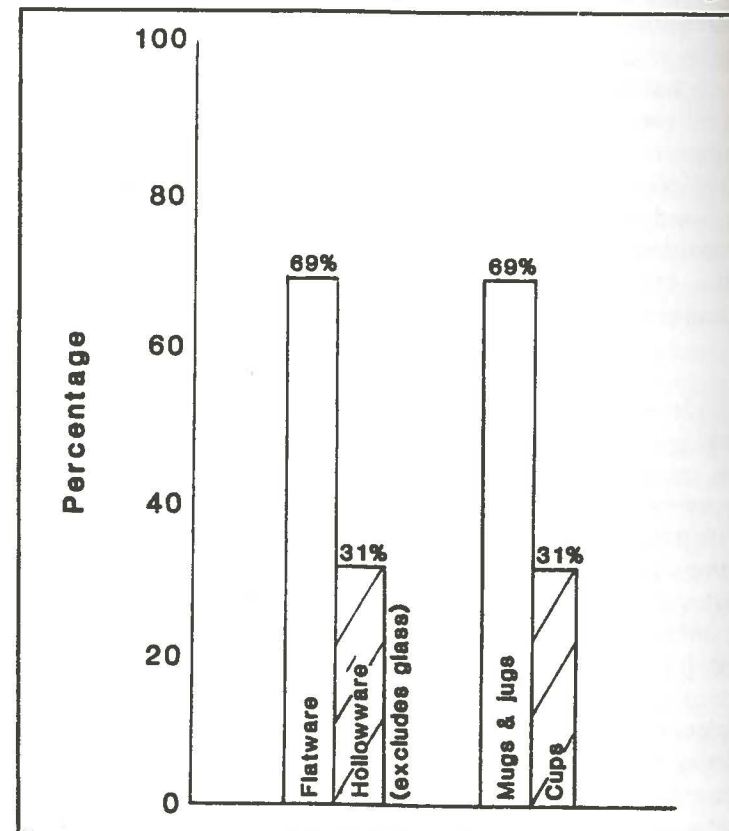


Figure 7. Vessel Data from Tavern Inventory Research

CONCLUSIONS

The artifact assemblage of the Ogletown Tavern and the architectural reconstruction of the tavern structure indicated that the Ogletown Tavern was most accurately characterized as a rural tavern serving both travelers and the local community. A functional analysis of the artifact assemblage indicated a close similarity to other archaeological sites that were utilized as eighteenth century taverns. Specifically the assemblage showed a high correlation based on artifact frequency distribution with taverns in rural settings in the Middle Atlantic region, especially the Rising Sun Tavern. Further inter-site vessel level comparison indicated that when the ratios of flatwares to hollowwares and of serving to storage preparation vessels were compared, the higher economic status assemblages compared favorably with the Ogletown Tavern assemblage. The single comparative tavern assemblage (Wellfleet) included in the sample did not show similarity with the Ogletown Tavern assemblage except for the ratio of cups to drinking vessels. A significant contribution of pewter and wooden vessels to the true vessel population that existed at Delaware taverns was found through tavern records research. Also supported by this research was the infrequent occurrence of bottles on average mid-eighteenth century tavern inventories. It seems apparent that, based on the analysis of certain ceramic vessel forms (cups versus mugs/jugs), a tavern component was identified. However, a similar patterning of vessel forms was noted for the slave occupied sites and the known tavern assemblages.

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EXCAVATION OF THE OLD SWEDE'S CHURCH PARSONAGE, BLOCK 1184, WILMINGTON, DELAWARE

Charles H. LeeDecker
Louis Berger & Associates, Inc.

ABSTRACT

Excavations on a downtown block in Wilmington, Delaware have recovered well preserved eighteenth-century deposits associated with the parsonage of Old Swedes Church. Located at the corner of Spring Alley and Walnut Street, the deposits were sealed in a cellar that was defined by two partially preserved masonry walls. The surviving structure is believed to be the remains of the first parsonage built by the Old Swedes Church congregation in 1701 and demolished in 1768. Material recovered from the cellar includes ceramics, bottle glass, architectural remains, dietary material, clay tobacco pipes, gunflints, buckles, etc. The site's historical significance derives from its association with Old Swedes Church, and it has provided information about a period of Wilmington's history for which there is very little surviving archaeological or historical information. Analysis of the collection was carried out according to a research design that focused on consumer behavior, particularly foodways.

INTRODUCTION

Excavations on Wilmington's Block 1184 have produced one of the few well preserved eighteenth-century urban sites in the Delaware River Valley. Block 1184 is located in the city's downtown area of Wilmington and is bounded by Spring Alley and Second, French and Walnut Streets. The 1986 excavations were sponsored by the Christina Gateway Corporation and conducted by Louis Berger & Associates, Inc. (LeeDecker et al. 1990). This study followed a survey by the Delaware Department of Transportation (DelDOT) for the Wilmington Boulevard Project (Cunningham et al. 1984).

The excavations focused on a cellar that was identified by two partially preserved masonry walls. The surviving walls are believed to be the remains of the first parsonage built by the Old Swedes Church congregation in 1701 and demolished in 1768. Material that had accumulated in the cellar includes ceramics, bottle glass, dietary refuse, and small finds such as coins, pipes, gunflints, architectural material and clothing. Analysis proceeded according to a research design that focused on consumer behavior.

HISTORICAL BACKGROUND

Block 1184 was historically contained in the glebe of Trinity (i.e., Old Swedes) Church. Swedish settlers colonized the Wilmington area in 1638, but their first settlement, Christianaham, had practically disappeared by the end of the seventeenth century. In 1699, the church acquired 509 acres from yeoman John Stalcopp, and this became the nucleus for Christiana Parish, which ultimately developed into the City of Wilmington.

Although a grid plan had been established, the city was only sparsely settled in the early eighteenth century. The parsonage was one of the first structures in the City, and it appears on the Benjamin Ferris map that purported to show all extant structures in the City as of 1736 (Figure 1). The Ferris map fixes the location of the parsonage near the center of the block and Spring Alley, a location that corresponds well with the excavated structure. However, this map was compiled in the mid nineteenth century from unknown sources.

Partitioning and development of the block accelerated during the nineteenth and twentieth centuries, and the lots were given to residential, commercial and industrial uses. By the late nineteenth century, the block's industrial uses were concentrated along French Street, while Second Street and most of Walnut Street were mostly residential. One of the important industries was the William Hare pottery, which made stoneware and redwares from circa 1838 to 1889. The Baker Machine shop was initially located at the corner of Spring Alley and French Street, but it had expanded across the block and encompassed the parsonage lot during the twentieth century.

A succession of households headed by the church pastors occupied the lot during from the early eighteenth-century to the mid-nineteenth century, and most pastors served less than 10 years. The first historical reference to the parsonage dates to 1701 when the church set aside a parcel of land south of Spring Alley for the use of their ministers.

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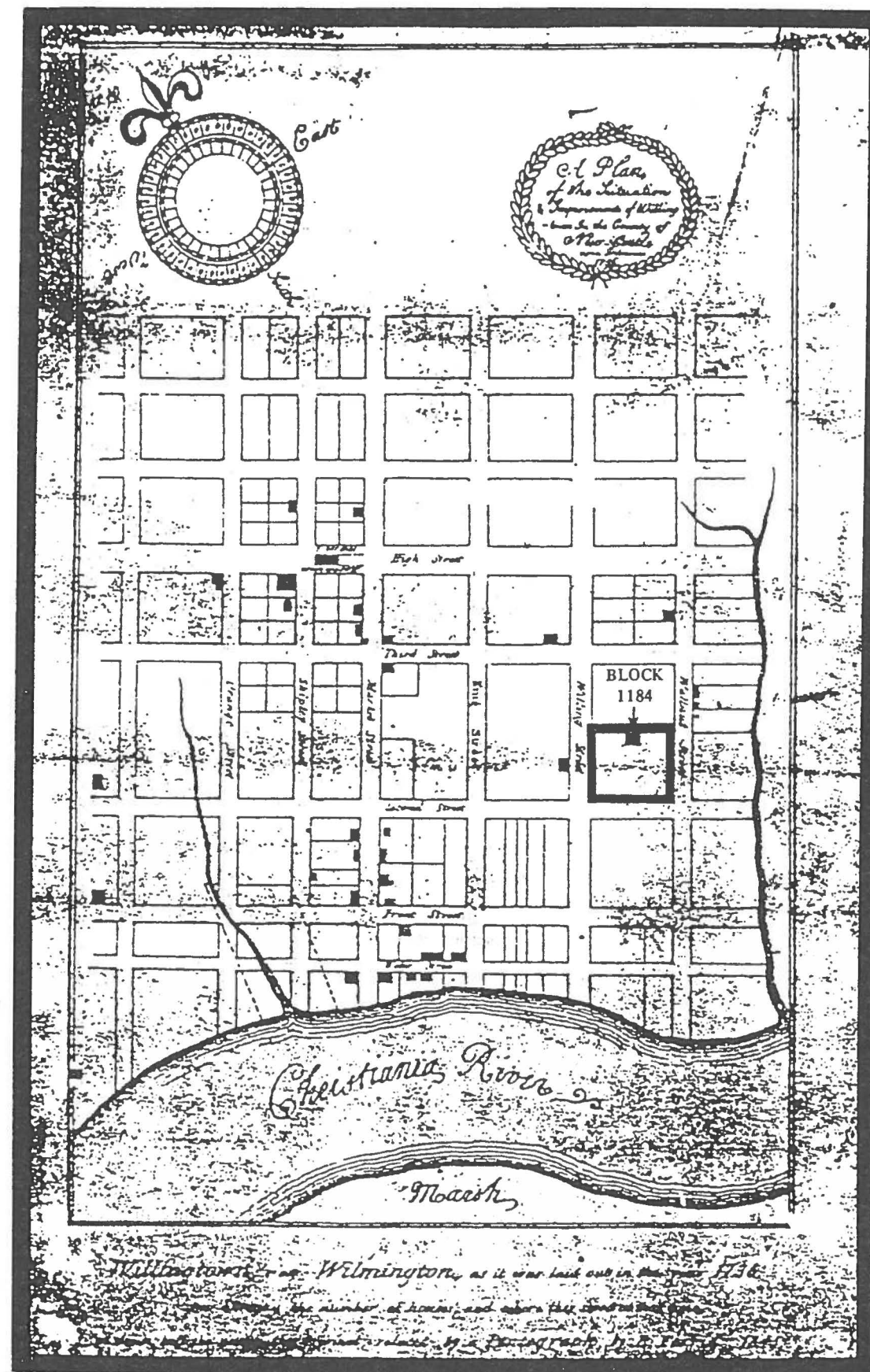


FIGURE 1. Block 1184 and Vicinity, 1736. Ferris, Benjamin (1736), A Plan of the Wilmington in the County of New Castle Upon Delaware.

However, three different parsonages were built between 1701 and 1842, which has led to some confusion about the location of the original structure. Construction of the first parsonage began in 1701, and it was first occupied by Pastor Andreas Hesselius, who arrived in 1712.

The second parsonage was built by Pastor Peter Tranberg. When Tranberg arrived in Delaware in 1741, he found the existing parsonage to be uninhabitable, so he built himself new house on land provided by the church. The location of Tranberg's parsonage is unknown, but after his death, it remained in the possession of his heirs, so it is doubtful that it was built on the Parsonage Lot. After Tranberg's death in 1749, Israel Acrelius was assigned to the Christiana parish, and he initially took up residence with Tranberg's surviving family. The congregation undertook construction of a new parsonage for Acrelius in 1750. This third parsonage was located on the Parsonage Lot at the corner of Spring Alley and Walnut Street, and it remained standing through the mid-nineteenth century.

The so-called "old parsonage," or the first parsonage built in 1701, remained on the Parsonage Lot until 1768. Pastor John Enneberg was apparently the last occupant of the old parsonage, and after his departure in 1742, it was not used as a dwelling. It was retained as an outbuilding, and used as a kitchen, store-room, stable and servant's room.

Church records contain occasional references to the parsonage, mostly for repairs. One of the most interesting items is a entry of September 12, 1768 indicating that the church paid for demolition of the "old house." The "old house" taken down in 1768 was presumably the original parsonage. Other references to the parsonage property provided information about the households and their habits. The lot contained a kitchen garden, and a cow and a horse were kept on the grounds. A servant or slave was included on a list of the chattels in 1744, along with a walnut table, two chairs and old pewter spoons (Burr 1890:380).

FIELD INVESTIGATIONS

The Parsonage Lot, which was later identified as Lot 58 of Block 1184, had a complex developmental history prior to the DeIDOT survey. In the intervening years between the 1981 survey and the 1986 excavation, the lot had been downcut and truncated by the realignment of Walnut Street.

During the 1986 excavations, intact eighteenth-century deposits were delineated by a series of mortared stone walls. Remnants of two parallel stone walls, identified as Features 2 and 12, ran parallel to Spring Alley and defined the cellar of a structure. Both walls had been truncated by recent downcutting of the lot and by the foundation wall of the machine shop. After delineation of these walls, excavation focused on full recovery of the surviving deposits in the cellar defined by Features 2 and 12. This area was covered by only seven 5x5-foot units, but the cellar deposit extended to the west, outside the area of allowable archaeological excavation.

The general stratigraphy within the Lot 58 excavation block consisted of three principal units. Stratum A, the surface soil, was an extremely compact silt that contained asphalt chunks and other modern items which indicated this layer had been deposited after the 1984 DeIDOT survey. The two walls, designated Features 2 and 12, representing the parsonage cellar were directly beneath Stratum A. Stratum B, a deposit of brick rubble and mortar, was beneath Stratum A and within the two walls. Below the Stratum B brick rubble was a series of thin, distinct deposits that contained an assortment of eighteenth-century ceramics, white clay pipes, curved and flat glass, bone, shell, various small finds and aboriginal items.

DATA ANALYSIS

During analyses, Depositional Units (DUs) were defined to provide a basis for synthesis and comparison of various contexts. The depositional units reflect the principal historical events that shaped the archaeological record, and the intact eighteenth-century deposits associated with the Parsonage are included in DUs 58B and 58C.

DU 58B includes the brick rubble layer (Stratum B) that capped the eighteenth-century refuse deposits. The rubble deposits presumably reflect a building demolition event, and they are considered part of the eighteenth-century Parsonage Lot occupation, because of the large number of ceramic cross-mends between Stratum B and the underlying deposits and a close correspondence in the dates.

The Mean Ceramic Dates for DUs 58B and 58C both fall in the 1750s, and they have a *Terminus Post Quem* of 1750. But there is reason to believe that the demolition event occurred at least ten years after 1750. A disturbed level of the rubble layer contained sherds of a white salt-glazed stoneware plate fragment with a cannon, battle axe and drum motif, and this motif matches one of the "King of Prussia" patterns that commemorated a 1757 military victory by Frederick the Great. Also, the historic record indicates the old parsonage was demolished in 1768, and it is plausible that the rubble deposit reflects this specific historical event.

The Parsonage assemblage includes a total of 140 ceramic vessels, including domestically produced red earthenwares and slipwares, as well as English stonewares and earthenwares and Chinese export porcelains. The vessels include tea and tablewares, milkpans and various food preparation forms.

The red earthenwares are characteristic of Lower Delaware Valley assemblages during the mid-eighteenth-century period. Many of the redware milk pans, chamber pots, bowls and other food preparation vessels were probably made locally. There are at least 11 milk pans, and the large number of milk pans suggests that the excavated structure was used as a kitchen, or for storage of infrequently used vessels.

A second group of red earthenwares was probably manufactured in Philadelphia. It includes both plain and slip-decorated wares: the slip-decorated vessels are identifiable as Philadelphia products by the style of their decorations. The feet of the Philadelphia style bowls and chamber pots are thinned on the interior of the vessel, and the feet have a distinctive flange. The plain vessels have a yellow or a dark brown glaze, and the bowl forms resemble Oriental porcelain bowl shapes. The interiors of several Philadelphia vessels were decorated with a white slip applied in a swirled "petal" pattern. The interior surfaces were glazed, and the exterior surfaces were undecorated and unglazed.

Another group of Philadelphia style, red slipwares includes slip-trailed dishes, pans and a bowl. Several of the dishes resemble the "pie plates" with coggled rims, and they are decorated with bands of trailed slip with green blotches and a yellow glaze. One pan has a design of multiple concentric circles which has been identified as a Lower Delaware Valley style by Ellen Denker (personal communication 1987), and another pan has an intricate trailed design and a unique rim profile that Denker has identified as Pennsylvania German style.

The majority of the tin-glazed earthenwares with identifiable forms are plates. The largest plate measures 11 inches in diameter, and it has a basket-with-flowers design. A smaller plate fragment has a floral polychrome decoration which is typical of eighteenth-century British delft.

White salt-glazed tablewares in the Parsonage deposits included plates, cups and bowls. The dot/diaper/basket pattern and the barley pattern were the most common. There are also teacups with overglaze enamels and a bowl with a scratch-blue floral pattern. There were three teapots in the Parsonage deposits. The most complete example is a refined agateware pot, and another vessel represented only by a spout and a body fragment is a clouded-glaze early cream-colored ware.

All of the porcelain vessels associated with the Parsonage are Chinese and most are teawares. The teawares have three distinct decorative motifs which suggests that they were purchased or used as two or three matching sets. One set has a polychrome motif of landscapes with flowers and birds or insects. Another possible set is decorated in the Chinese Imari style with simple, symmetrical floral designs. The third set has a geometric border with a floral motif on the cups and a floral landscape with ducks on the saucer. There are also at least two porcelain plates in the parsonage assemblage. Both had blue floral decorations that differ from the cups and saucers.

The glass assemblage was extremely fragmentary, and there were no intact or fully reconstructible vessels. Of the 31 vessels identified, there were 18 bottles, 12 tablewares, and one unidentifiable form. The largest group of glass vessels were wine/liquor bottles, and there were 12 bottle bases that had a mid-eighteenth-century English form. There was also one case bottle and two pharmaceutical vessels. The glass tablewares include a colorless stemware drinking vessel, five tumblers, a mug and a few unidentifiable forms.

A few tobacco pipes were recovered from the parsonage deposits. They were represented mostly by unmarked stem and bowl fragments, although one stem fragment exhibited a Dutch mark. The pipestem bore diameters provided dates in the 1750s, which is consistent with the ceramic dates.

The small finds from the parsonage deposits contained a range of materials, including architectural materials, kitchen utensils, clothing items, gunflints, coins, and other items.

A fairly large proportion of the window glass was identifiable as crown glass, and a sample of the crown glass was mended, enough to show that the glass had been cut into trapezoidal quarrels which would have been assembled into the frame of a casement window. A few fragments of turned window lead were also found, and one was stamped with the date 1725. The quarrels and turned leads not only supports interpretation of the excavated structure as the 1701 Parsonage, but they also provided some information about its physical appearance.

The excavations produced a varied dietary assemblage, although bone preservation was overall quite poor. The floral and faunal analyses focused on the delineation of ethnicity, and determination of which food items were produced on-site and which were derived from the market economy. It was clear from the documentary record that the site occupants were of Swedish origin, and the dietary analysis was supported by research into Scandinavian foodways.

The diet apparently included a wide variety of domestic and wild mammal, poultry, fish, shellfish, vegetables and fruits. Pork appears to have been the favored meat, followed by lamb or sheep. The relative frequency of pig, sheep and cow parallels the pattern described in Scandinavian recipe books, providing evidence that the ethnicity of the pastors' households was expressed in the diet.

Deer was recovered only DU 58C, and the occurrence of venison within the excavated assemblage may represent an expression of Scandinavian foodways. During the eighteenth century, reindeer meat was consumed quite regularly in all the Scandinavian countries, and it is reported that venison was substituted for reindeer meat by Scandinavians new to America (Kakkonen 1974).

Poultry from the parsonage deposits includes duck, pigeon, grouse, and goose. The absence of chicken is of some interest, as a Scandinavian recipe book indicates that chicken was considered a special Sunday meat (Kakkonen 1974:83). Goose was recovered exclusively from DU 58C. In Scandinavia goose is eaten traditionally on St. Martin's Day and Christmas (Root 1980:151), and it is the second most popular fowl in Scandinavia.

Poultry raised on site would have had the added benefit of providing eggs, and the recovery of phalange, mandible and skull fragments suggest that either the poultry was raised on-site or purchased as whole birds either alive or dressed.

Fish remains were recovered primarily from flotation samples, which were taken mostly from DU 58C. Four different kinds of fish were identified — herring, shad, swordfish and perch. Herring was the most common fish recovered, and this species has a long history of consumption in Europe. Traditionally the most enthusiastic consumers of fresh herring are Scandinavian (Root 1980), so the high proportion of herring in the assemblage is perhaps another reflection of ethnic preference.

DISCUSSION AND CONCLUSION

As educated gentlemen and members of the clergy, the eighteenth-century pastors certainly would have been held in high esteem within the community. Although the pastors were accorded high status within the community, this high status was historically not accompanied by a high level of compensation. The priesthood is often cited as an example of a profession of high social standing but modest economic reward. Social position and wealth are often expressed through patterns of consumption, and foodways is the element of consumer behavior, foodways is perhaps the area most amenable to archaeological interpretation. Ceramics also played an important role in foodways and consumption in colonial society Deetz (1977).

The parsonage deposits contained a wide variety of ceramic vessels related to food preparation and service. These include a various locally manufactured red earthenwares in forms ranging from utilitarian milk pans to elaborately decorated plates and serving bowls. The red earthenwares account for approximately half of the vessels associated with the parsonage, and as a group, they were the most widely available and least expensive ceramics in the early to mid-eighteenth century, and these wares should be expected within any contemporaneous domestic assemblage.

TABLE 1 INTER-SITE COMPARISONS OF CERAMIC ASSEMBLAGES, THREE EIGHTEENTH-CENTURY DELAWARE VALLEY SITES			
CERAMIC TYPE	BLOCK 1184 PARSONAGE	GLOUCESTER CITY	TINDALL CELLAR
Porcelain	138 9.1%	12 0.7%	13 0.4%
Delftware	235 15.4%	371 22.9%	169 5.2%
White Salt Glazed Stoneware	115 7.5%	47 2.9%	67 2.1%
Coarse	937 61.5%	1061 65.4%	2721 83.4%
Other Wares	99 6.5%	116 7.2%	291 8.9%
SHERD TOTALS	1524	1622	3261
Source: Block 1184 Parsonage — DUs 58B and 58C Gloucester City — Feature 31, Strata C-G; Feature 98 Tindall Cellar — all Feature 13 fills			

element in the pastor's social life. And the use of costly, highly decorated ceramics is indicative of the social significance associated with this activity.

Comparison of the Parsonage with other sites provides a context for evaluation of the pastors' overall standard of living and consumption patterns. For this analysis, two other eighteenth-century sites in the Delaware Valley have been used for comparison—the Gloucester City Site and the Thomas Tindall Site.

The Gloucester City Site, in Gloucester City, New Jersey, was first purchased in 1695 by a wealthy English merchant, and it was later owned by a militia leader during the Revolution. The site's eighteenth-century occupation was interpreted a farmstead, and it was represented archaeologically by fills recovered from a large cellar and a well, which were bracketed roughly between 1740 and 1790 (Thomas et al. 1985).

The Thomas Tindall Site, located between Trenton and Bordentown, New Jersey, was a farmstead established in the late seventeenth century. In the early to mid-eighteenth century, it was a profitable, well-diversified farm, with a number of barns, orchards, meadows, and gardens. Excavations focused on a cellar that contained a series of fills, including some redeposited yard refuse. The dating of the cellar fills indicated an early to mid-eighteenth century deposition, with a TPQ of circa 1740 (Louis Berger & Associates 1986).

Comparison of the Parsonage, Gloucester City and Thomas Tindall sites ceramic assemblages (Table 1) is possible only at the level of sherds, rather than vessels, as no vessel counts have been reported from the Gloucester City Site. To facilitate inter-site comparison, general ceramic ware groups have been used in this analysis.

There is a marked degree of similarity between the Gloucester City and the Wilmington Parsonage assemblages. Coarse red earthenwares, Philadelphia redwares, slipwares, delftware, Whieldonwares, refined stonewares (white salt-glazed and scratch blue), and Oriental export porcelains were found at both sites. The Tindall Site assemblage is overwhelmingly dominated by locally produced coarse earthenware, but also includes imported ceramics such as delftware, white salt-glazed stoneware, Oriental porcelain, Midland's clouded ware, and Buckley ware.

Among the three sites, the Wilmington Parsonage has the highest proportion of porcelain, which represents the most costly ceramic ware and which was used primarily for teawares. The Parsonage assemblage also exhibits the highest proportion of white salt-glazed stoneware, which was used primarily in tablewares. The Tindall assemblage, dominated by locally produced earthenwares, clearly represents the least costly assemblage. The proportion of coarse

Tin-glazed earthenware (delft), white salt-glazed stoneware, and Whieldonware represent a finer grade of food service vessels. These wares would have been imported from Britain. Forms represented by these imported British wares exclusively fall into the food service category, and they include teawares, plates and bowls. During the early to mid-eighteenth century, these wares would have been affordable by households of moderate economic means.

Oriental porcelains account for one-fifth of the vessels in the parsonage deposits. These were the most expensive ceramics available in the American colonies, and they would have been too costly for households of modest or limited economic means (Deetz 1977). The Oriental export porcelain vessels are represented primarily in the teaware category.

Teaware vessels account for one-fourth of the ceramic vessels that can be identified according to a specific form, which suggests that participation in the tea ceremony was an important

earthenwares in the Parsonage and the Gloucester City assemblages is roughly comparable, but the Gloucester City assemblage has the greatest proportion of delftware among the three sites, and far less porcelain and white salt-glazed stoneware than the Parsonage.

Comparison of the faunal assemblages from the three sites (Table 2) is possible only at the presence/absence level for individual species, because of different faunal analysis methods. The greatest similarity among the three sites is in the medium to large domestic mammals — cow, pig and sheep. The greatest variation appears in the use of aquatic species.

Fish were an important element of the Scandinavian diet and were well represented in the Parsonage assemblage. Fish are also well-represented at the Gloucester City and Tindall sites, although there is wide variation in the species selection between assemblages. Fish identified in the Parsonage assemblage include perch, herring, shad and swordfish. Sturgeon and catfish were important dietary components of the Native American Delaware Valley populations, and they were used at both the Gloucester City and Tindall sites, but not at the Parsonage site. Drum, long-nosed garpike and sucker were also used at the Gloucester City site but apparently not at the Parsonage.

The differences in the faunal inventories suggests that the pastors' households were selective with regard to use of fish and other locally available wild species, and historical information supports the idea that ethnic foodways were perpetuated by the pastors' households. The relatively short tenures of the eighteenth-century pastors may have resulted in a situation which prevented familiarity with local foods, thereby encouraging the perpetuation of ethnic foodways and culinary practices.

TABLE 2
INTER-SITE COMPARISON OF FAUNAL ASSEMBLAGES,
THREE EIGHTEENTH-CENTURY DELAWARE VALLEY SITES

SPECIES NAME	BLOCK 1184 PARSONAGE	GLOUCESTER CITY	TINDALL CELLAR
MAMMAL			
COW	X	X	X
PIG	X	X	X
SHEEP	X	X	X
DEER	X	X	X
RABBIT	X	X	X
SQUIRREL	X	X	X
OPOSSUM		X	
WOODCHUCK			
BIRD			
CHICKEN		X	X
DUCK	X	X	
PIGEON	X		X
GROUSE	X		
GOOSE			
GUINEA HEN			X
BOBWHITE			
FISH			
BASS	X		X
WHITE PERCH	X		X
YELLOW PERCH			X
HERRING	X		
SHAD	X		
SWORDFISH	X	X	X
STURGEON		X	X
CATFISH		X	
DRUM		X	
LONG-NOSED GARPIKE		X	
SUCKER			
MOLLUSC			
OYSTER	X		
MUSSEL	X		
CLAM	X		
RAZOR CLAM	X		
WATER SNAIL	X		
AMPHIBIAN			
TURTLE		X	X
FROG/BULLFROG			

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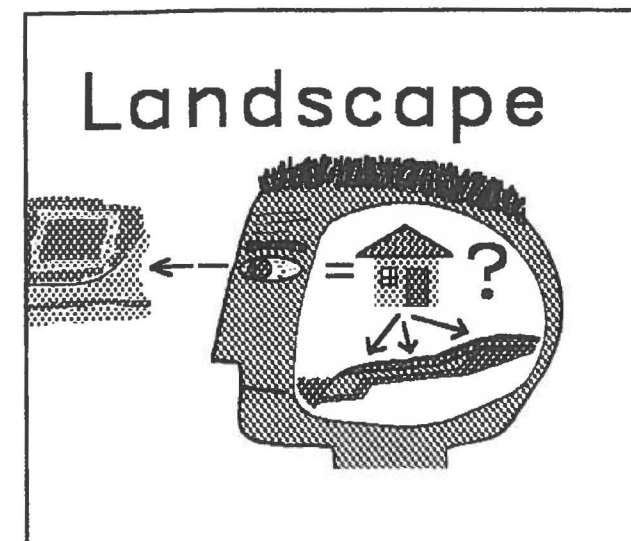
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LANDSCAPE AND POST-OCCUPATIONAL CHANGES AT THE PATTERSON TENANT HOUSE (7NC-E-100), NEW CASTLE COUNTY, DELAWARE

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ABSTRACT

Excavation of the Patterson Tenant House and coring in the adjacent marsh revealed that the area of the site had been significantly altered since abandonment. Remains of the house consisted of a brick foundation situated on what appeared to be a terrace above the marsh adjacent to Eagle Run, a small tidal stream that empties into the Christina River. Eagle Run had been channelized when the "Great Bend" of the Christina was bypassed by a canal in 1821. The site had been abandoned by 1830. Subsequent agricultural activities led to the complete burial of the site and development of the "terrace". Coring in the marsh showed that Eagle Run had moved 75 to the west of its location since the time of site occupation. Thus, interpretation based on the present setting of the Patterson Tenant House would be problematic. Landscape reconstruction based on paleoenvironmental data places the site in its proper context.



INTRODUCTION

The word "landscape" means a variety of things in archaeology. My concept of landscape, as a prehistorian, comes from Wiley's (1953) definition of settlement pattern as the distribution of sites across the landscape. I was introduced to a different concept of landscape when I attended some papers at the First World Archaeological Convention in Baltimore in 1989. I was pretty excited when I saw there was a session on Landscape Archaeology because I was working on a dissertation doing paleoenvironmental reconstructions. I was more than a little surprised to find historic archaeologists talking about formal gardens. I tend to think of landscapes at the regional scale as the "natural environment" to which past cultures adapted (Kellogg 1987), and as the setting for regional analyses (Hodder and Orton 1976). Apparently, more critical thinking considers landscapes as perceptual and contingent. I have since discovered and been introduced to a variety of perspectives on landscape derived from several intellectual traditions eg., cultural geography (Lemon 1972; Norton 1989), history (Schlereth 1990), and a renewed interest in regional analysis in archaeology with the advent of useable Geographic Information Systems (Crumley and Marquardt 1990). In this paper, I will show how different concepts of landscape and different scales of analysis affected the interpretation of an historic archaeological site excavated in Delaware near the Town of Christiana along Eagle Run, a tributary of the Christina River (Figure 1).

BACKGROUND AND DESCRIPTIONS

Setting No. 1: High and Dry

Phase One archaeological investigations in 1989 located three historic sites dating to the last half of the 18th century documented as the property of William Patterson (Figure 2) - the Patterson Mansion, a tenant house, and also the remains of a "boat slip" in a slight topographic depression adjacent to the marsh along Eagle Run near its juncture with the Christian River. Patterson moved here around 1730 and died in 1794 at the age of 88. An Orphan Court map for the estate of Susann Patterson, William's wife, dated 1818 led us to believe that the tenant house was some distance from Eagle Run (Figure 2). In the field, the logical location for the house was thought to be higher ground at the top of the slope to the creek. So the first way in which perception of landscape affected our research was in our expectations and assumptions about how the landscape would have been used in the past - an implicit model.

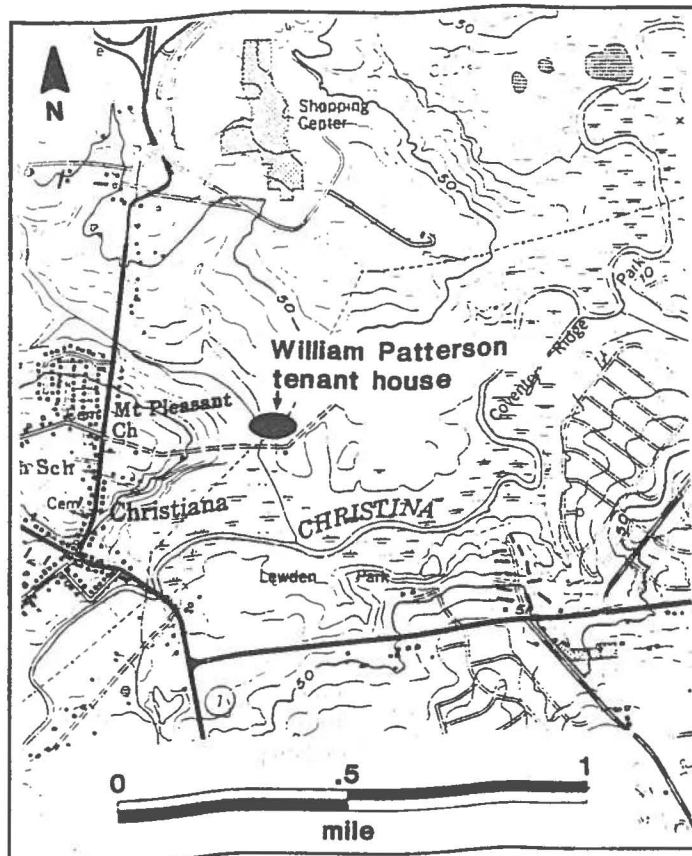


Figure 1. Site Location: William Patterson Tenant House (7NC-E-100, N-12-513)

Setting No. 2: On the Waterfront?

A grid of shovel test pits eventually found the remains of the tenant house. However, the brick foundation of the house was on the terrace adjacent to the marsh not on higher ground as expected (Figure 3). The water table was encountered in our Phase Two excavations before we reached the base of the cultural deposits. We were aware that Eagle Run had been channelized c. 1820 when the bend of the Christina River into which Eagle Run emptied was bypassed by a canal (Figure 4). Thus, a new working hypothesis was adopted during the Phase Three excavations: the structure was situated next to the then navigable stream for functional reasons, and furthermore, its abandonment may have been due to the change in the adjacent stream. Patterson was a "gentleman, merchant, and mariner" and may have used the structure as a storehouse before later renting it out as a tenant house. Therefore, we needed to ascertain the original course of Eagle Run in order to interpret this structure. The question was: what was the relationship of this structure to the contemporaneous natural landscape? To answer this question we took a transect of cores across the marsh to locate the former channel of Eagle Run (Figure 5). Connecting the core data with the excavation profiles yielded a stratigraphic cross-section of the site showing its relationship to the marsh deposits and Eagle Run - past and present (Figure 6).

Setting No. 3: Down on the Farm

Excavations also revealed that the terrace on which the site was situated had been deposited after occupation of the site. Farming practices and fluvial processes had combined to bury the site and form the terrace that we had originally perceived to be the setting of the site (Figure 7). Thus, not only was the "natural setting" of the site altered at the scale of the local area (the Christina River bend area), but also at the site specific scale (micro-landscape?). One hundred sixty years of farming had leveled out the topography adjacent to Eagle Run, and we could discern three distinct plow zones

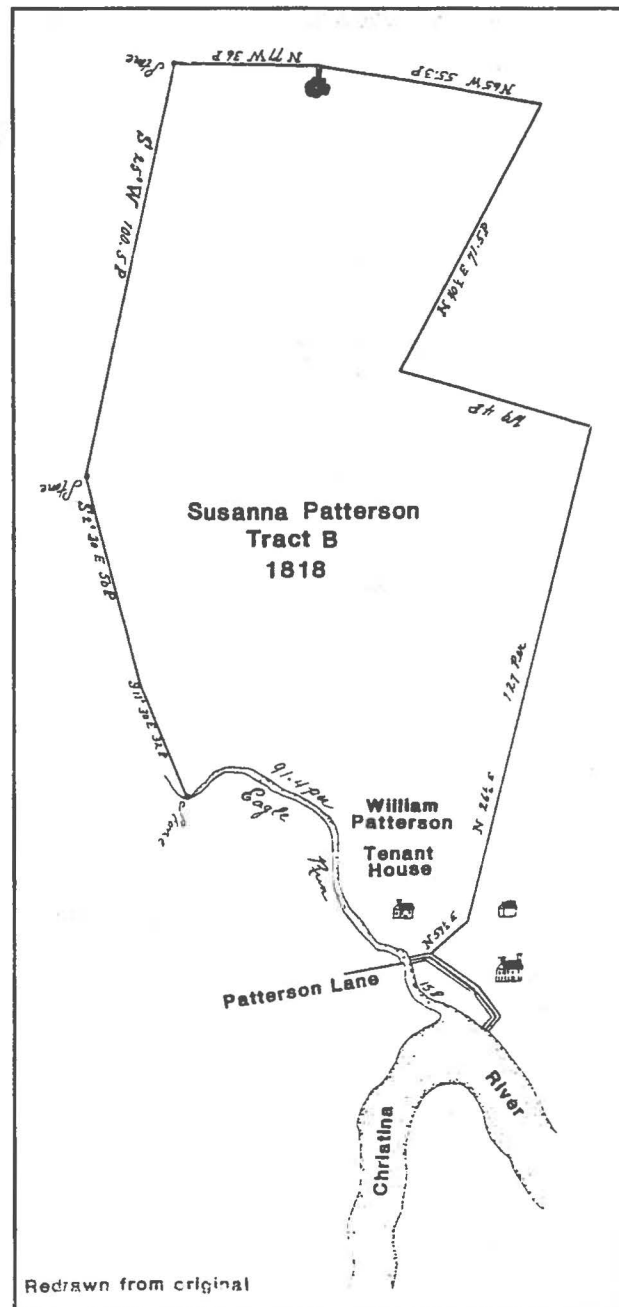


Figure 2. Orphan's Court Division of Susanna Patterson's Estate, 1818, Showing Site Location

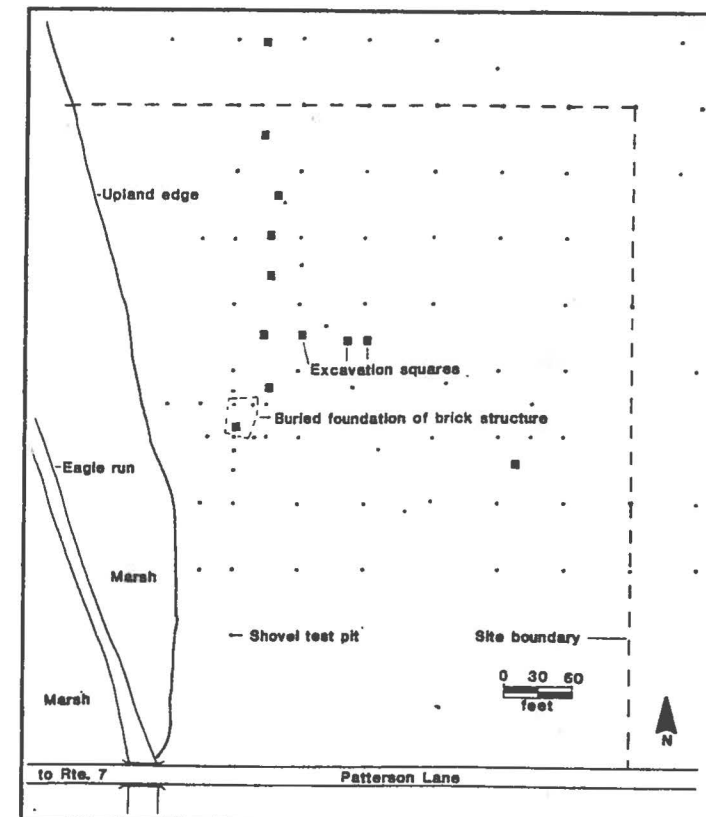


Figure 3. William Patterson Tenant House Site Phase I/II Testing

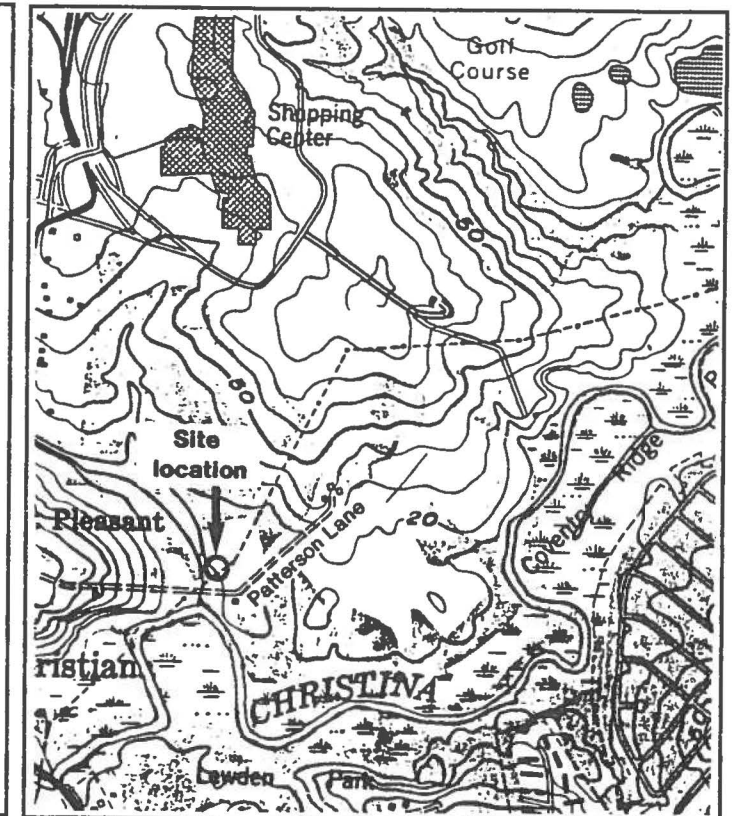


Figure 4. Location of Site. Note that the course of the Christina River has been reconstructed prior to canal construction in the early nineteenth century.

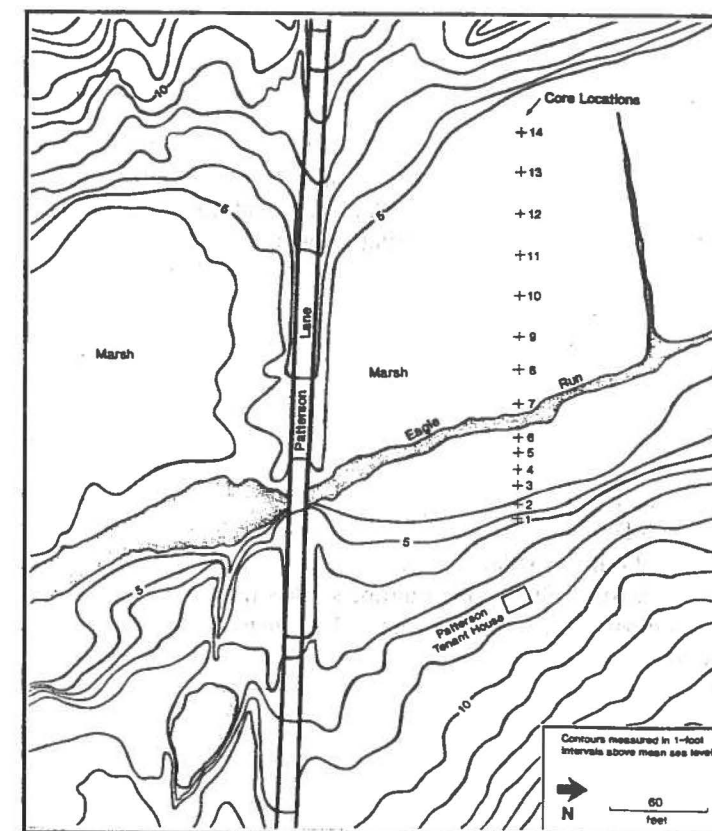


Figure 5. Location of Marsh Transect

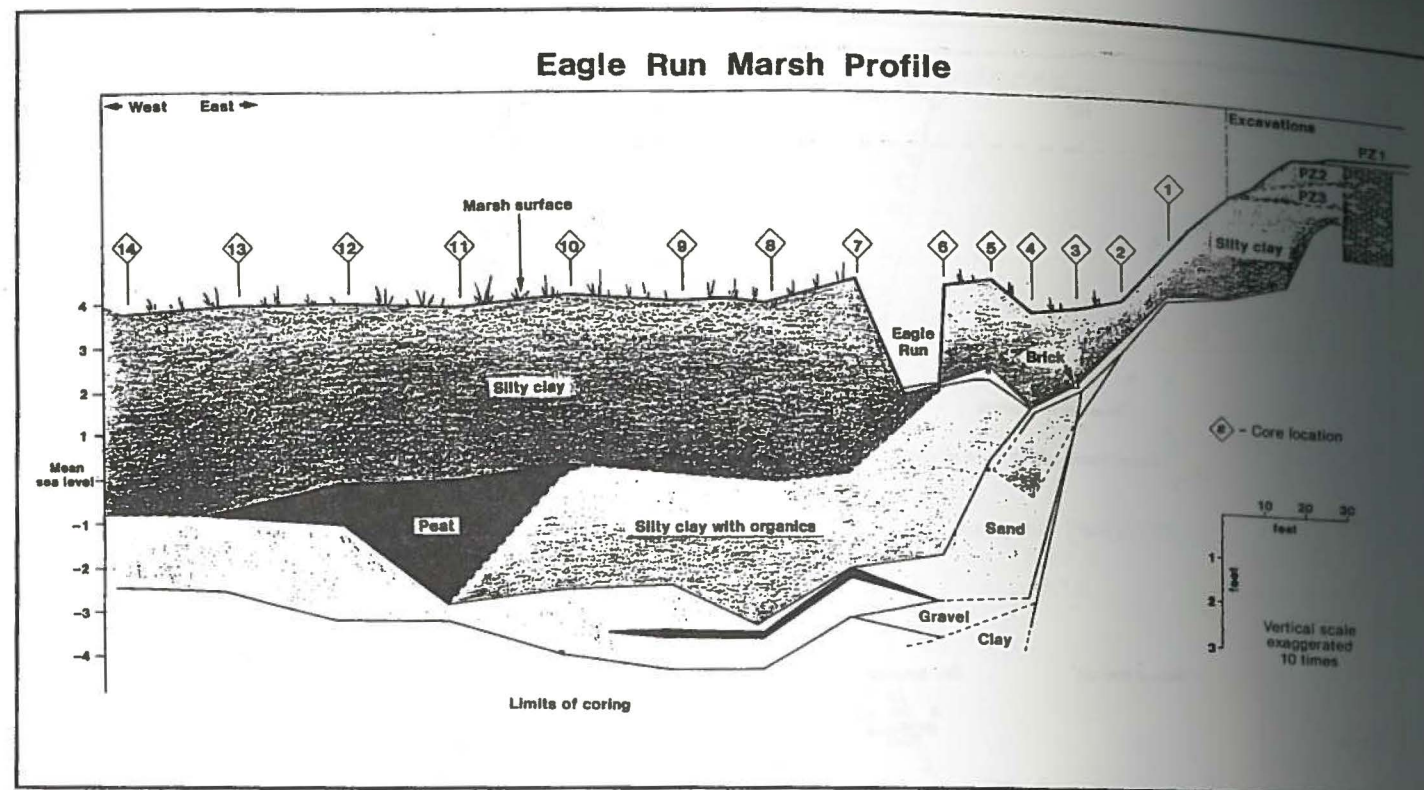


Figure 6. Eagle Run Marsh Profile

covering the foundation. Three terrace edges were associated with these deposits. In addition a dirt road along Eagle Run and over the site had been abandoned, and a tree line developed when the property went to pasture after about 1950. The use of the property for farming led us to another hypothesis for the location of the site: the house was built next to the stream, to avoid placing it on useable farm land. In other words, the house was placed on the edge of farm land, and not on the edge of the stream.

Setting No. 4: Drain or Main

A final piece of data relevant to the setting of this structure is the presence of a ditch (Features 32 and 40, Figure 7) extending from the interior of the foundation under the western wall and trending north towards Eagle Run. Ceramic vessels and fragments recovered from the ditch suggest its use for cold storage. Thus, the structure may have been situated to take advantage of free flowing water for cooling food, and not for access to transportation. An alternative hypothesis for the ditch feature, that we considered during excavation, was that the ditch was designed to drain water from the foundation which was becoming damaged by ground water. This hypothesis was discarded when we discovered that the ditch led in an upstream direction towards Eagle Run. Thus, high water in the creek would flow into the house not out of it.

Setting No. 5: Bypassed by the Canal

The abandonment of the site is most likely related to events in the larger region. The town of Christiana at the head of navigation in the Christina River lost its position as an important transshipment point with the construction first of the New Castle and Frenchtown Turnpike, then railroad (Holmes 1961), and ultimately was bypassed by the Chesapeake and Delaware Canal in 1824-1829 (Gray 1959a,b) (Figure 8). Early plans for the Chesapeake and Delaware canal had favored a connection with the Christina River (See Latrobe's 1803 map; excerpt shown in Figure 9), and the bend at Eagle Run was likely cut in anticipation of this canal route. The Dickson House site on the opposite side of Eagle Run also shows the effects on the local area (Catts et al. 1989). Two foundations overlap at different angles showing the re-orientation of the house to the changing transportation network.

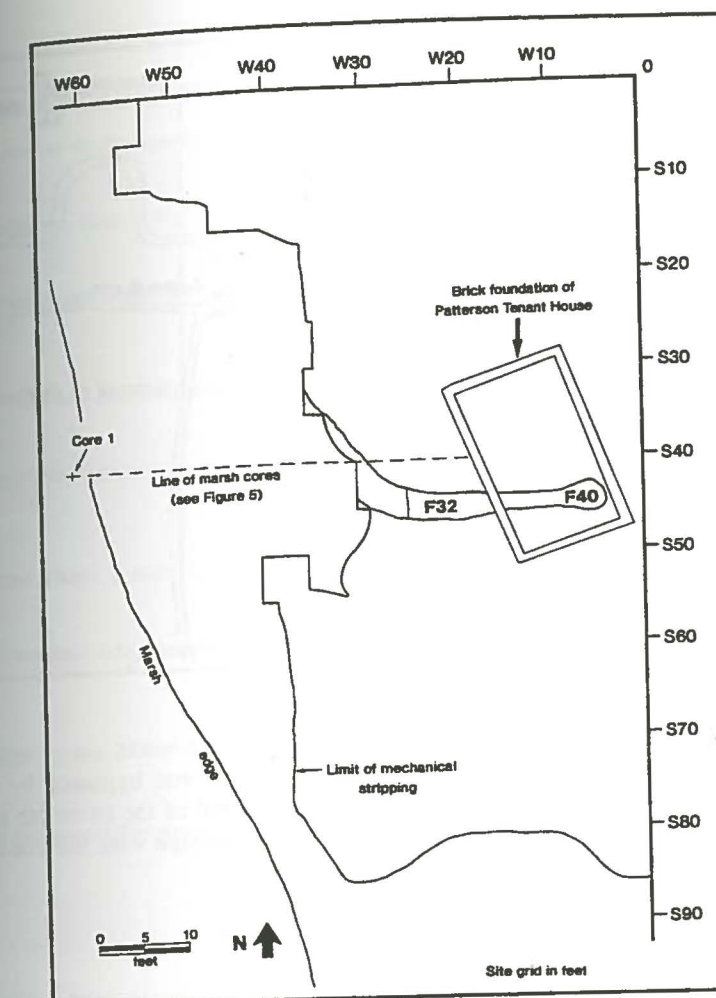


Figure 7. Ditch Feature and House Foundation

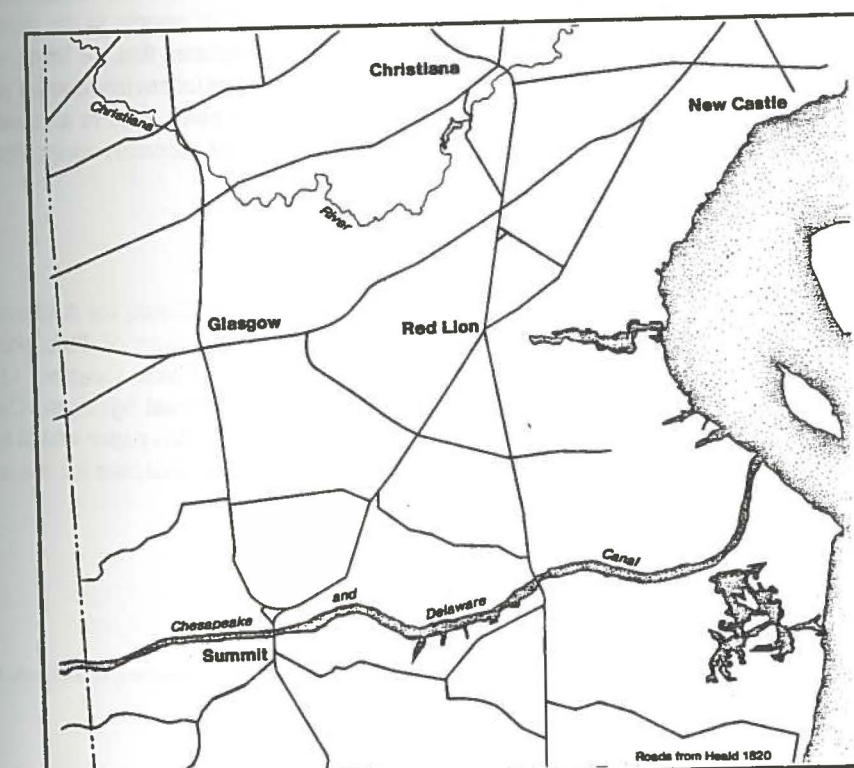


Figure 8. Relationship of Christiana to the Chesapeake and Delaware Canal

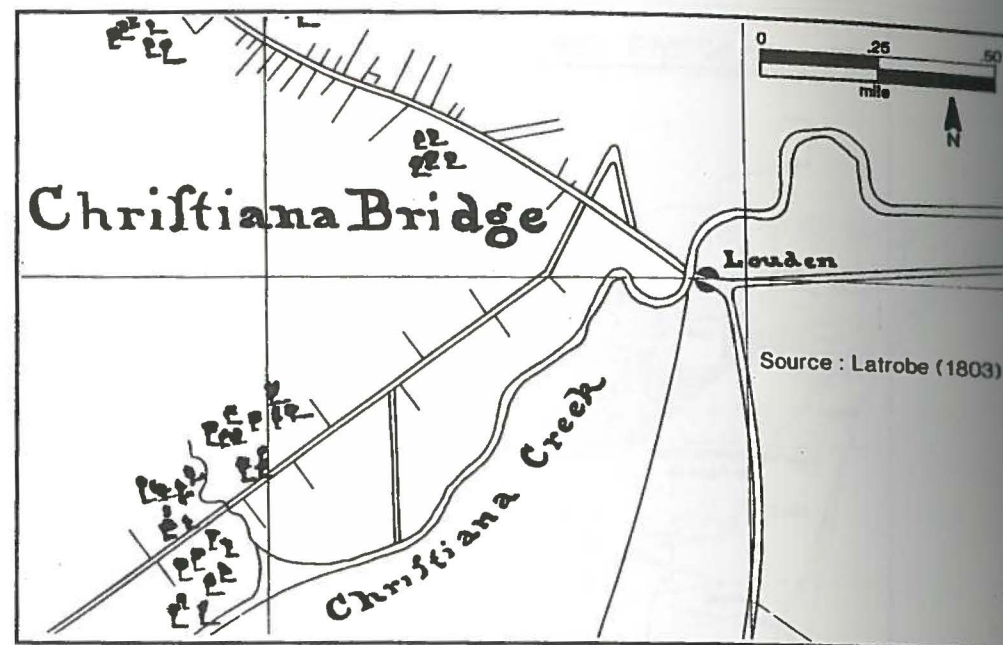


Figure 9. Christiana at the turn of the nineteenth century

In the first half of the 19th century the Patterson Lane site complex was bypassed by the first phase of the transportation revolution that altered forever the local economy. Near the end of the twentieth century the sites were rediscovered due to continuing transportation alterations of the modern landscape with the construction of Delaware Route 7.

DISCUSSION AND CONCLUSIONS

Interpretation of the sites on the Patterson parcel depends on paleoenvironmental reconstructions of the site contexts, detailed consideration of the site formation processes, and placement within the historical landscape of the larger region. If the purpose of landscape archaeology is to "get into the heads" of people in the past, to discover their perceptions of environments and landscapes, then we must be aware of the perceptions that we bring with us to this task as observers of present landscapes. Historians and historic archaeologists need paleoenvironmental information just as prehistorians do. Paleoenvironmental reconstructions provide data that helps to place sites in a context relevant to the occupants, and helps remove investigator bias. Furthermore, paleoenvironmental reconstructions force us to examine our implicit models of the past.

ACKNOWLEDGEMENTS

The research described here was undertaken by the University of Delaware Center for Archaeological Research under the direction of Dr. J. F. Custer. The work was funded by the Delaware Department of Transportation to mitigate the impacts of wetland replacement associated with upgrading of Route 7 in New Castle County. My introduction to Historic Archaeology came with excavations at the Patterson Tenant House supervised by Wade Catts. Wade and I discussed landscape issues on many occasions and his insights contributed greatly to this paper which he encouraged me to present at the 1991 CNEHA meeting. Others who contributed are Jen Thomas, my assistant for the marsh coring, and Kimberly Hood and Robert Schultz who drafted the figures.

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**CAUSE AND (ADVERSE) EFFECT: LANDSCAPE CHANGE AT
THE BUCHANAN-SAVIN FARMSTEAD CIRCA 1840-1991**

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For this publication the site history presented at the 1991 CNEHA Conference has been much reduced, to concentrate on the soil chemical analysis at the Buchanan-Savin Farmstead. The interested reader can find the full site history in the upcoming DelDot publication **Transportation and Agricultural Changes in Blackbird Hundred: Final Archaeological Investigations at the Buchanan-Savin Farmstead (7NC-J-175), Green Springs Delaware** (Scholl, Hoseth, and Grettler 1992).

INTRODUCTION

Phase III archaeological data recovery excavations were conducted at the Buchanan-Savin Farmstead (7NC-J-175), a National Register Site in Blackbird Hundred, New Castle County, Delaware (Figure 1). As part of the State Route 1 Relief Route Project the work was funded by the Delaware Department of Transportation, and excavated by archaeologists from the University of Delaware Center for Archaeological Research (UDCAR). The Buchanan-Savin Farmstead was the remains of a predominantly owner-occupied farmstead occupied from the second quarter of the nineteenth century until 1991. Over 275 historic features were identified and excavated, including the remains of eight outbuildings, two privies, five fence lines, and a series of French drains. Still extant was a early twentieth century dairy farm which stood adjacent to the archaeologically excavated farm buildings.

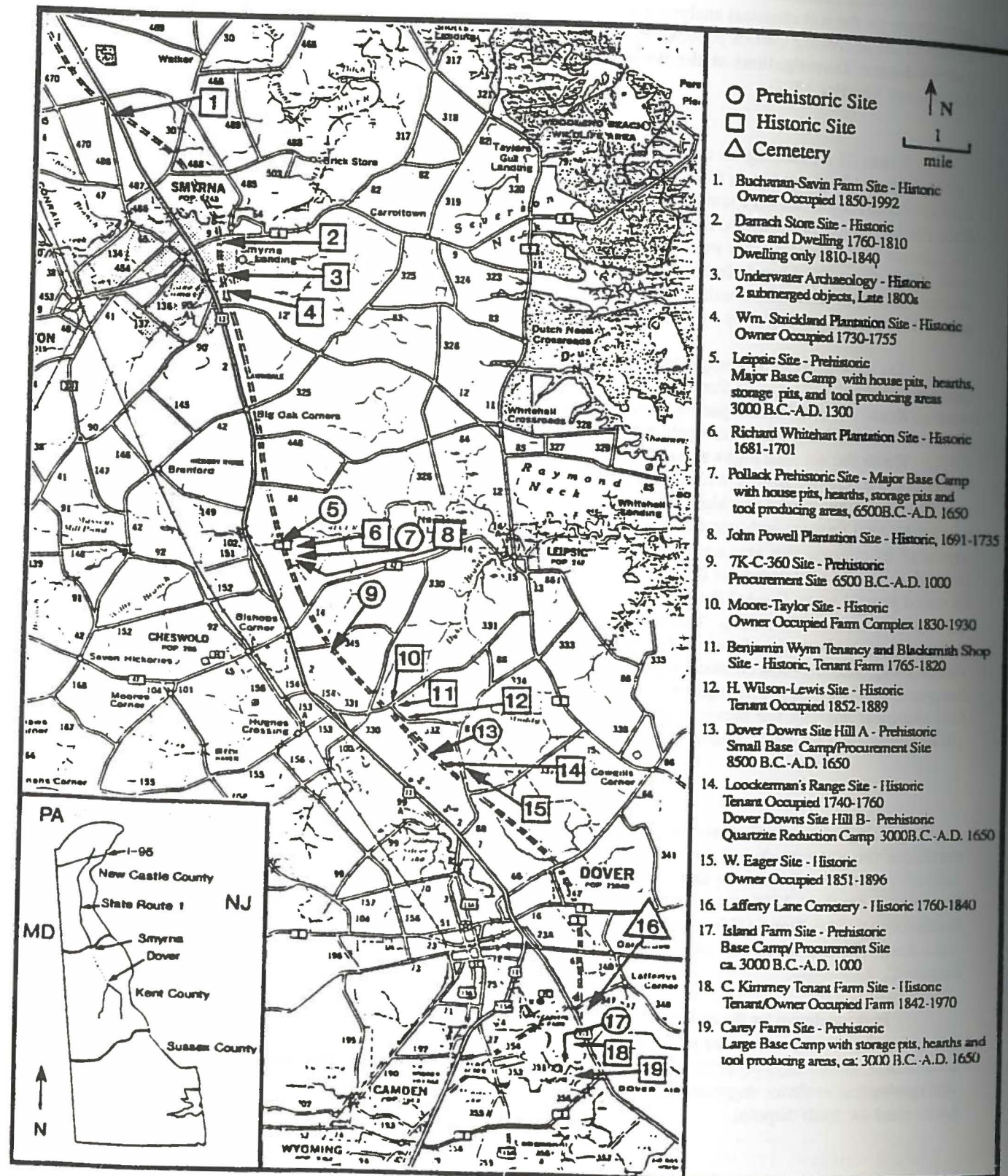
Du Pont style philanthropy, and the desire to stimulate the economy of Delaware in the 1920's instigated the construction of T. Coleman du Pont's dream road, the Du Pont Highway. The Du Pont Highway was incorporated into modern Route 13, and forms a part of the future State Route 1. T. Coleman du Pont envisioned his road as a then state-of-the-art six lane highway that would be self supportive through rents from industry placed along the median (Rae 1975.) While the six lane highway never materialized the two lane Du Pont Highway did serve to connect the capital Dover and the rural down state with the northern urban and industrial centers. Presented to the State of Delaware upon its completion, the benefits of this highway were innumerable. The new road remained passable in all weather, an invaluable service to rural farmers with perishable produce for Wilmington and Philadelphia. However, the Du Pont Highway by virtue of its construction was not without adverse impact on certain Delaware farmers. The Du Pont Highway cut through the tracts containing the Buchanan-Savin Farmstead, creating a barrier to the natural drainage of the land. The dammed ground water flooded the traditional farmyard, making it an unsuitable location for a dairy farm constructed by the Moffetts in the late 1920's. The Moffetts built their new agricultural buildings south of the old farm yard. This proximity of nineteenth and twentieth century farms allowed a unique opportunity to investigate temporal change in Delaware agriculture. Soil chemical analysis of the plow zone and subsoil over both the nineteenth and twentieth century farmyards was utilized to investigate farm activity location, and a "cross-century" comparison of soil chemical deposition. Soil chemical analysis has proven a useful tool in the interpretation of archaeological sites in Delaware (Custer et al. 1986; Coleman et al. 1985; Shaffer et al. 1988; Catts and Custer 1990; Hoseth et al. 1990).

SITE HISTORY

In 1910 Francis C. Armstrong inherited a tract of land that had been in his family since his great-grandfather purchased the property during the depressed economy of the 1830's. Armstrong's grandfather, George W. Buchanan originally established the farm that by 1860, included over 300 acres and was valued at \$15,000. After George W. Buchanan's death in 1866 most of the Buchanan farm went to Armstrong's father, except a 34 acre parcel held by Buchanan's widow, Francis C.'s step-grandmother. The widow's dower parcel was farmed by Armstrong's uncles James and George W. Buchanan Jr.. After the deaths of his uncles and his step-grandmother in 1908, the parcel passed to Francis C. Armstrong.

Perhaps drawn by the easy access to the newly constructed Du Pont Highway, T.R. Moffett purchased the 34 acre tract from Armstrong with plans to establish a dairy farm. By the time of the construction of the Du Pont highway, the agricultural outbuildings constructed by Armstrong's grandfather were over fifty years old and assumably in bad repair. Archaeological evidence suggests that many of the outbuildings were dismantled by Francis Armstrong, and the post holes used for trash disposal.

FIGURE 1
Site Location



The Du Pont Highway had cut through the headwaters of a small creek to the west of the now Moffett farm. The highway dammed the natural drainage and turned the already wet farm yard into a veritable quagmire. A network of "trench and pipe" French drains unearthed during excavation attests to a continual problem of drainage in that area. The Du Pont Highway, and its disturbance of the natural drainage forced Moffett to construct new agricultural buildings in another location, fifty feet south of the traditional farm yard. The forced relocation of the farm was unfortunate for T.R. Moffett, but extremely beneficial to archaeologists who are presented with side by side nineteenth and twentieth century farms free of cross contamination.

SOIL CHEMICAL INVESTIGATION

The Buchanan-Savin Farmstead offered a unique opportunity to compare and contrast a 19th century farm and a 20th century farm soil chemical patterning in the same environmental situation were contamination of the earlier farm by the older farm was not wholesale. Concentrations of certain soil trace elements have been correlated with the occurrence of particular activities which are reflective of site usage or human behavior (Sjoberg 1976, Eidt 1977, Sopko 1983, Custer et al. 1986, Pogue 1988). Besides providing a more generalized understanding of spatial utilization of a site, soils analyses can be useful in determining intra-site activity areas, particularly when used in conjunction with artifact distributional patterns and archaeological feature morphology. Chemical analysis was conducted by the Soils Laboratory of the University of Delaware College of Agriculture.

Soil chemical analysis at the Buchanan-Savin Farmstead consisted of determining the relative frequency levels of soil phosphorus, calcium, potassium, magnesium, and soil pH across the site area. The levels of phosphorus in site soils are probably the most significant of the soils analyses that were conducted, because high phosphorus levels are indicative of chemical evidence of human or animal activities. High phosphorus accumulation is usually caused by the deposition of urine, excrement, and organic refuse. Abnormal concentrations of calcium could be the result of several possible occurrences: agricultural fertilization such as liming, oyster or clam shell deposition, or the presence of building materials such as plaster or mortar in the soils. Magnesium levels are generally related to the calcium levels. The presence of high potassium levels are the result of the deposition of wood ash through surface burning or from the dumping of fireplace or stove ashes. Soil pH readings of 7.0 or greater are indicative of alkaline soils, and readings below 7.0 are acidic. Delaware soil pH values are naturally acidic, and readings above 6.0 suggest agricultural fertilization (Custer et al. 1986).

At the Buchanan-Savin Farmstead samples were taken at ten foot intervals from the upper disturbed plow zone layer and the sterile undisturbed subsoil to investigate differences in soil chemical patterns between the two levels and across space and time. Soil chemical distributions for the twentieth century Moffett dairy farm differed fundamentally from the earlier Buchanan-Armstrong agricultural farm. The Buchanan-Armstrong Farm's soil distributions were marked by a high background level of chemical concentration with slight mounds of higher densities. The Moffett farm was characterized by large areas of low density interrupted by sharp peaks of high density. Several factors should be considered such as; the comparatively small size of the Buchanan-Armstrong farm compared to the Moffett farm; the century long use of the Buchanan-Armstrong farm compared to the 25 year existence of the Moffett farm and another possible influence may be the concentrated strength of modern fertilizers. The Moffett farm buildings were primarily oriented towards dairy activities, but a bag of fertilizer was observed in the large farm implements shed at the time of excavation. Even though it was a dairy farm the Moffetts were also growing crops. Keeping these differences in mind an investigation of the soil chemical concentrations in the context of the surrounding concentrations still shows relative activity areas differentiated by varied soil chemical concentrations.

PHOSPHORUS (Figures 2 and 3). The distribution of phosphorus over the Moffett farm was informative outlining a large area which represented the activity area as a whole, and three areas of highest density. The map of phosphorus concentration neatly shows an activity area encompassing all the farm buildings including the corn crib.

Five areas of high phosphorus density exist at the Buchanan-Savin Farmstead. Two of the high phosphorus concentrations can be found in the excavation area. These two "hot spots" seem to indicate open yard areas between the archaeologically derived buildings were farm animals may have been penned. The other three areas can be found around the twentieth century dairy farm. These areas are; to the west where the Savin dog was penned, to the north of and inside the large equipment shed, and to the north and east of the milking barn. Subsoil distributions reinforce these high phosphorus areas except where the Savin dog was kept. The dog habitation does not seem to have been a long enough or the deposition of waste materials massive enough, to change the chemical composition of the subsoil. This may indicate that time and volume of deposit are crucial to leaving soil chemical indicators in the subsoil, whereas the plow zone is more easily influenced.

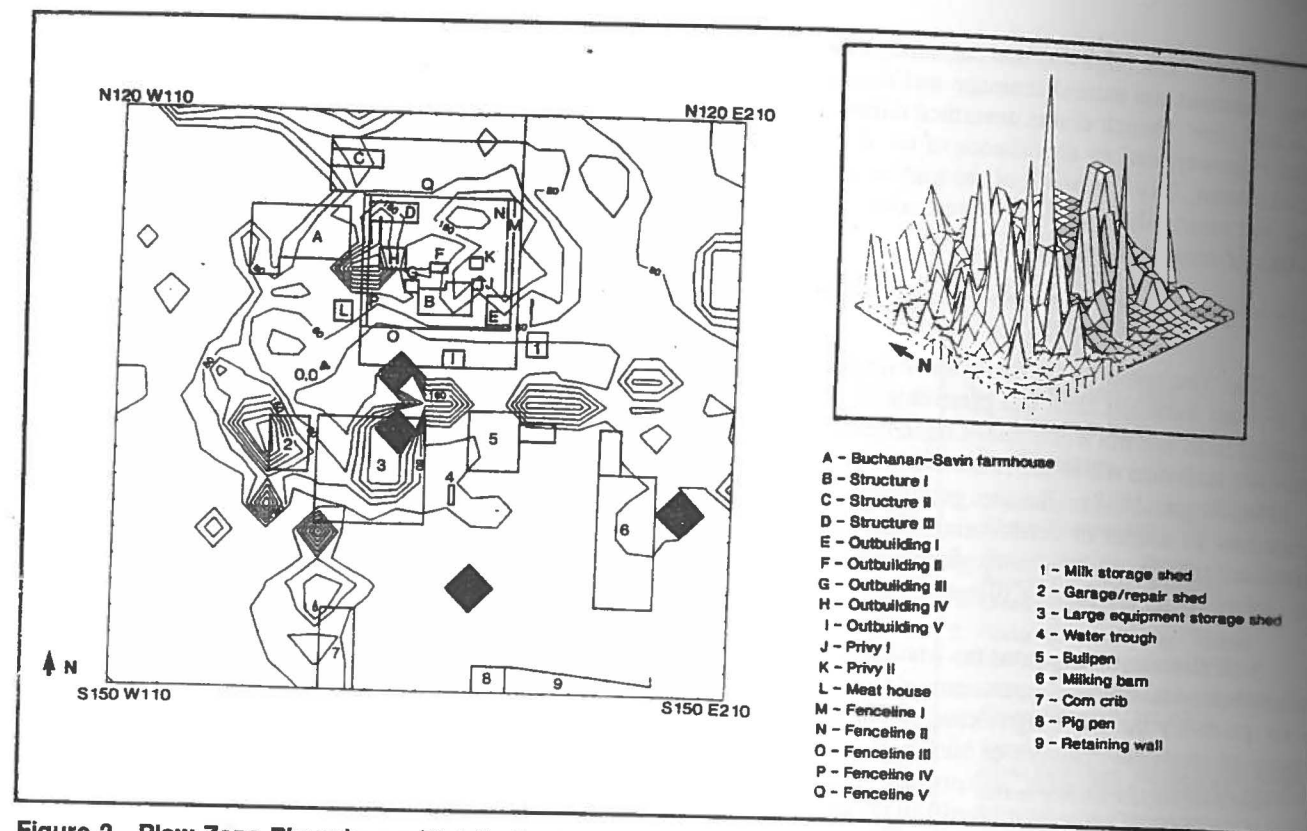


Figure 2. Plow Zone Phosphorus Distributions, Twentieth-Century Farm

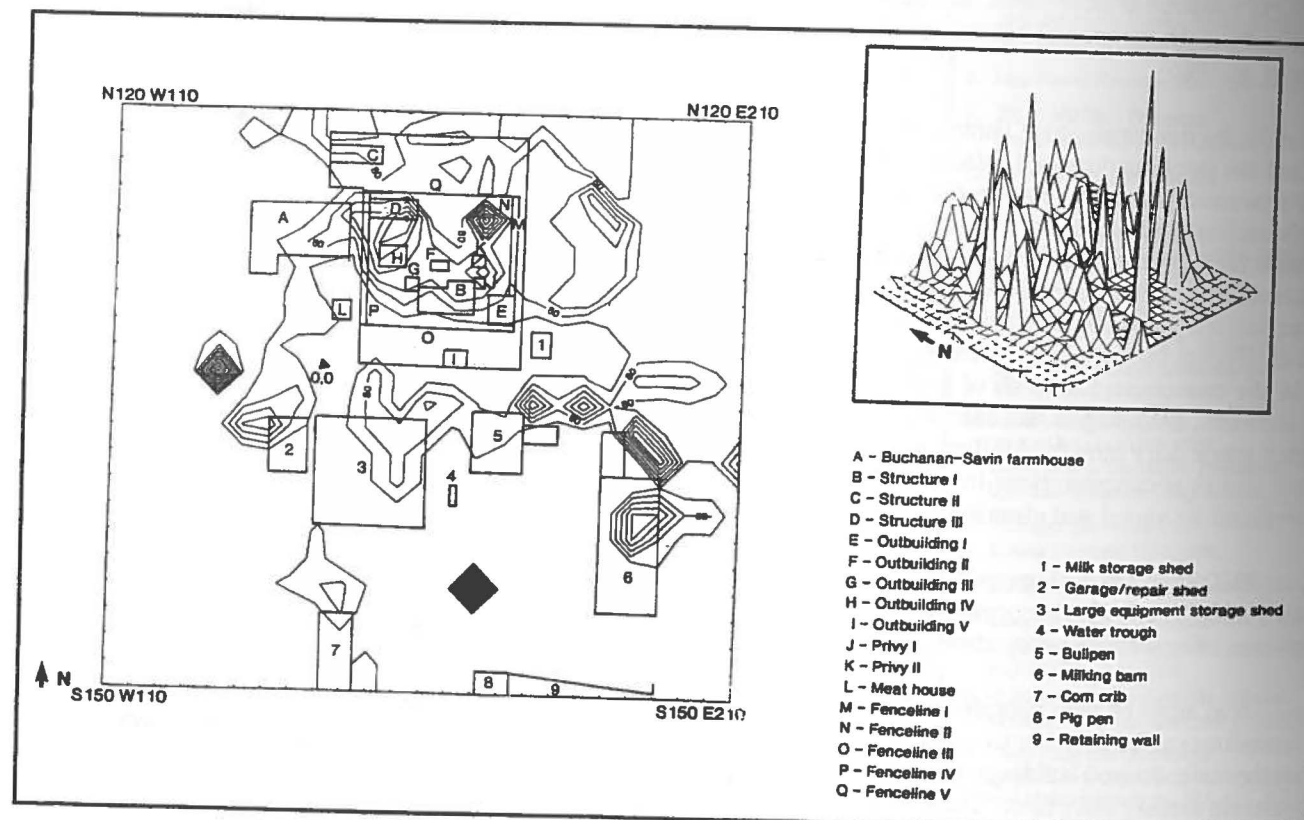


Figure 3. Subsoil Phosphorus Distributions, Twentieth-Century Farm

CALCIUM (Figures 4 and 5). Distributions of calcium in the plow zone are similar to those of phosphorus. There were three areas of high chemical density and that these areas are in nearly the same locations as phosphorus, around the twentieth century structures. The concentrations of calcium in the excavation of the nineteenth century farm, area were recorded as the slightest of rises when plotted with the much higher more modern concentrations around the twentieth century buildings.

The calcium "hot spots" were in the same locations as the phosphorus. To the far west where the Savin dog was penned, to the north and inside the large equipment shed, and to the north and east of the milking barn. The subsoil densities of calcium follow that of the plow zone except in the area of the Savin dog pen where only slight calcium densities were registered.

MAGNESIUM (Figures 6 and 7). The areas of magnesium concentration mirror those of calcium and phosphorus except that the area of the dog pen does not show a large concentration of magnesium. The subsoil distributions of magnesium follow that of the plow zone. The concentrations of magnesium in the soils of the excavation area were so low as to not register when plotted with the more modern deposits.

POTASSIUM (Figures 8 and 9). The distribution of potassium followed the three high density areas as did calcium and phosphorus, and to a lesser degree magnesium. The area of the dog pen showed a concentration of potassium but much less than that of the two other areas. The subsoil concentrations of potassium reflected and upheld the plow zone findings.

PH FACTOR (Figures 10 and 11). The pH factor or degree of acidity of the site was plotted across the Buchanan-Savin Farmstead. The acidity of the soils varied very little. The least acidic (most basic) area was centered on the large area to the west of the garage/repair shop. The area of highest soil acid content was under the corn crib along the southern edge of the site. These slight fluctuations fall well within a reasonable range for the natural variation of pH in Delaware soils.

COMPARISON OF 19TH AND 20TH CENTURY SOIL CHEMICAL DISTRIBUTIONS

Overall, the nineteenth century soil chemical distributions from the plow zone and subsoil of the excavated area of the Buchanan-Savin Farmstead were characterized by a relatively high "background" level of chemical densities marked by slight rises in chemical densities in contrast to the twentieth century Moffett dairy farm, characterized by relatively low density "background" chemical densities marked by sharp spikes of very high chemical concentrations. Phosphorus distributions provided information delimiting activity areas around the farm structures and other activity areas such as the dog house, accidental fertilizer spillage in the heavy equipment shed, and high levels of animal activity at the milking barn. Calcium, magnesium (except for the dog house area), and potassium mirrored the concentrations of phosphorus to a high degree. The twentieth century Moffett dairy farm at the Buchanan-Savin Farmstead created areas of very high soil chemical content which would have greatly overshadowed concentrations in the historic farm yard, had activity within the nineteenth century farm yard been continuous.

Several observations about the use of soil chemical analysis at archaeological sites can be offered. Soil chemical testing for magnesium was redundant, in that the results simply mirrored that of calcium. This may have resulted from a high magnesium source of calcium, such as dolomitic lime from southeastern Pennsylvania. PH levels of the soil did not yield useful information in the determination of farm activity, but seemed to only reflect natural pH composition in the farm yards. However, soil pH has been found to be associated with human occupation at the Thomas Williams site and the Strickland Plantation (Catts and Custer 1990:190, Catts, Jamison and Scholl n.d.). The study area of the Buchanan-Savin Farmstead included only the farm buildings of the site, so did not pick up pH variations attributed to domestic activity areas at the Williams and Strickland occupations.

Phosphorus soil chemical distributions were by far the most useful, and identified activity areas in both the nineteenth and twentieth century farm yards. Subsoil soil chemical concentrations were better indicators of historic activities than plow zone concentrations, being less influenced by recent contamination. The twentieth century soil chemical densities were less in the subsoil, perhaps indicative of a "soak in" period of many years in which chemicals percolate in to the subsoil.

Investigations in to the soil chemical make up of the Buchanan-Savin Farmstead have demonstrated that twentieth century concentrated fertilizers and farming practices leave a strong mark on a farms soil chemical composition. Modern contamination should be a major consideration in the use of soil chemical analysis of archaeological sites where occupation has been continuous through the twentieth century, but analysis of subsoil chemical distributions may greatly reduce that influence.

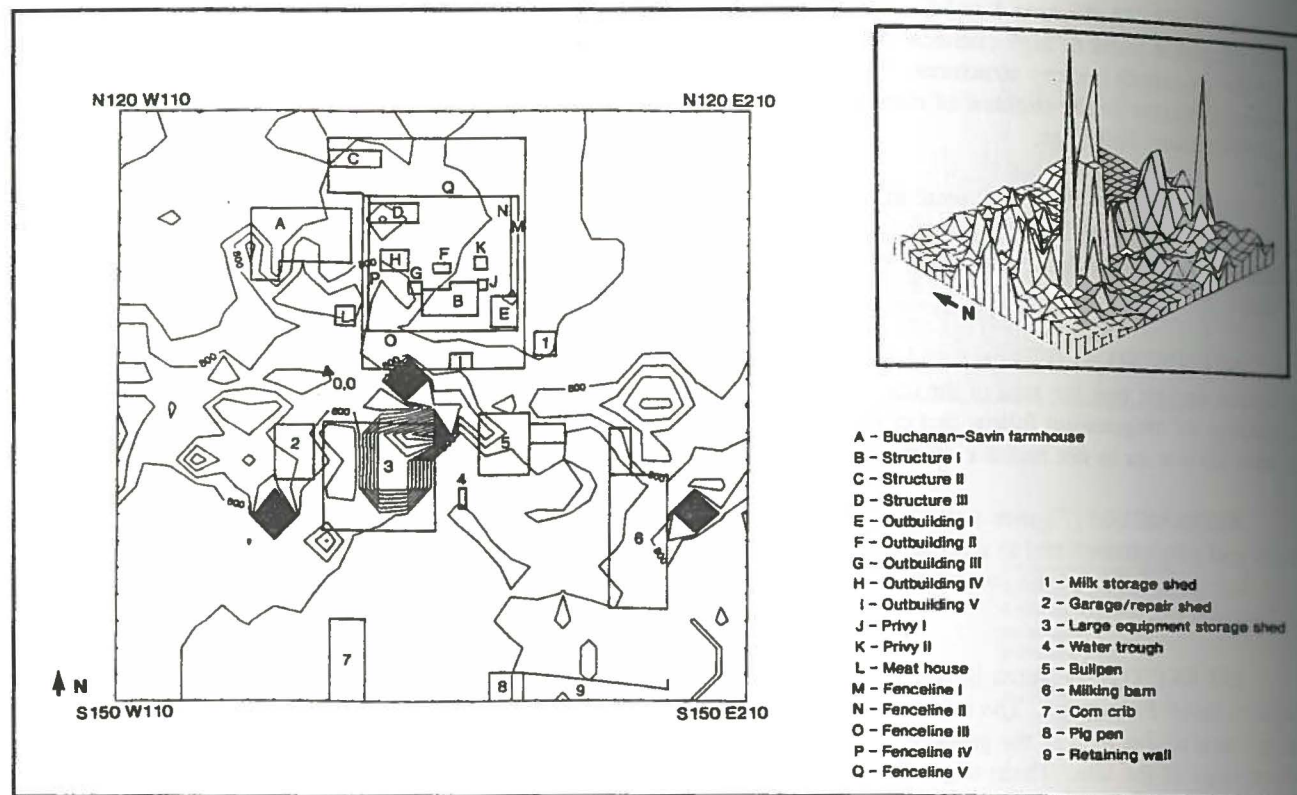


Figure 4. Plow Zone Calcium Distributions, Twentieth-Century Farm

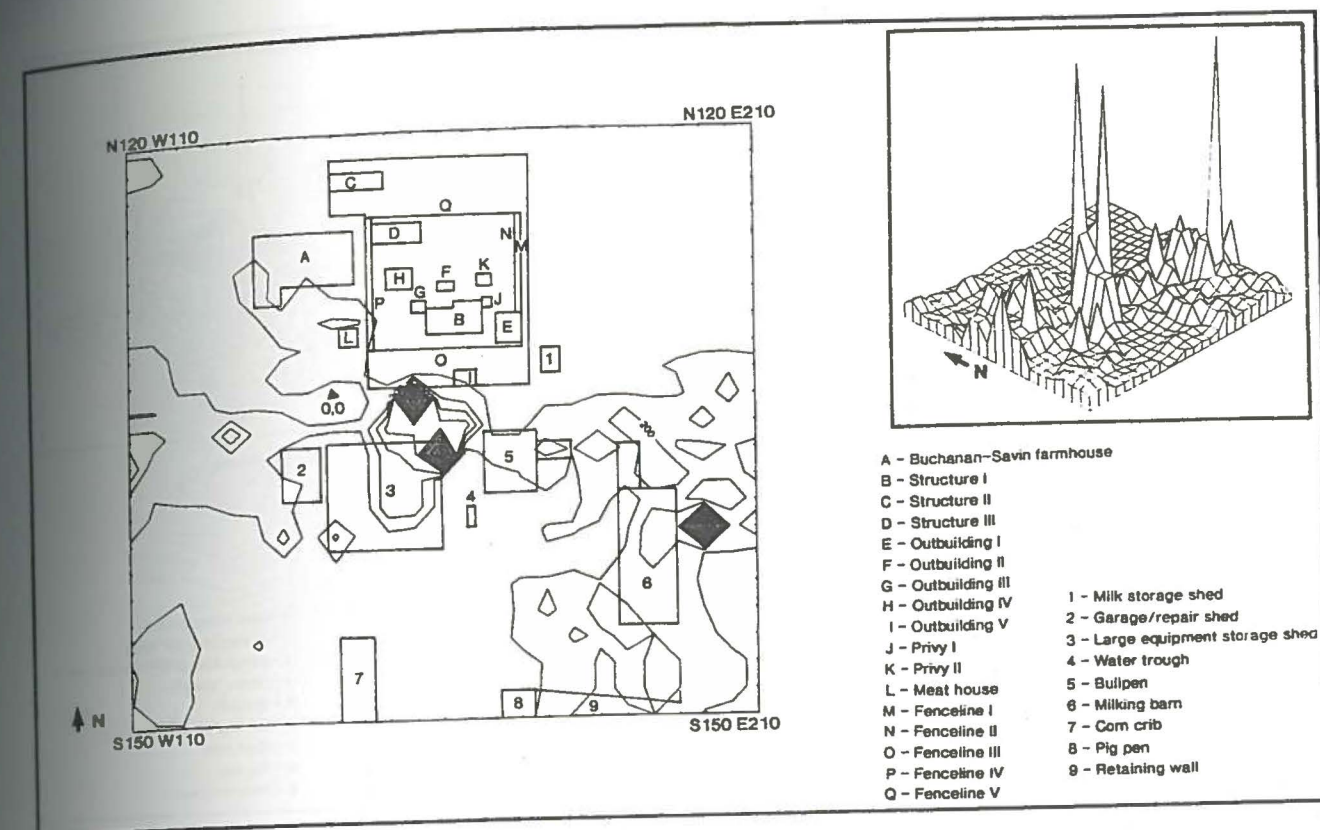


Figure 6. Plow Zone Magnesium Distributions, Twentieth-Century Farm

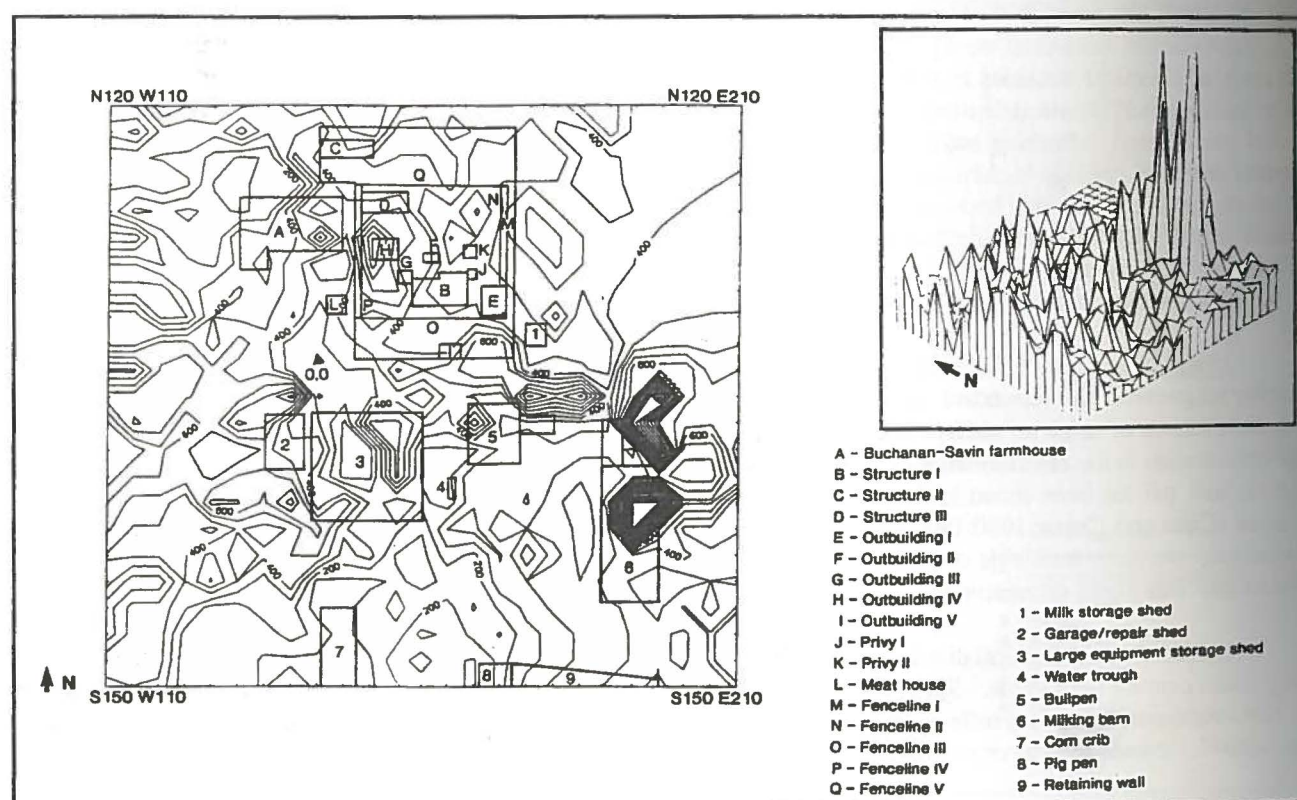


Figure 5. Subsoil Calcium Distributions, Twentieth-Century Farm

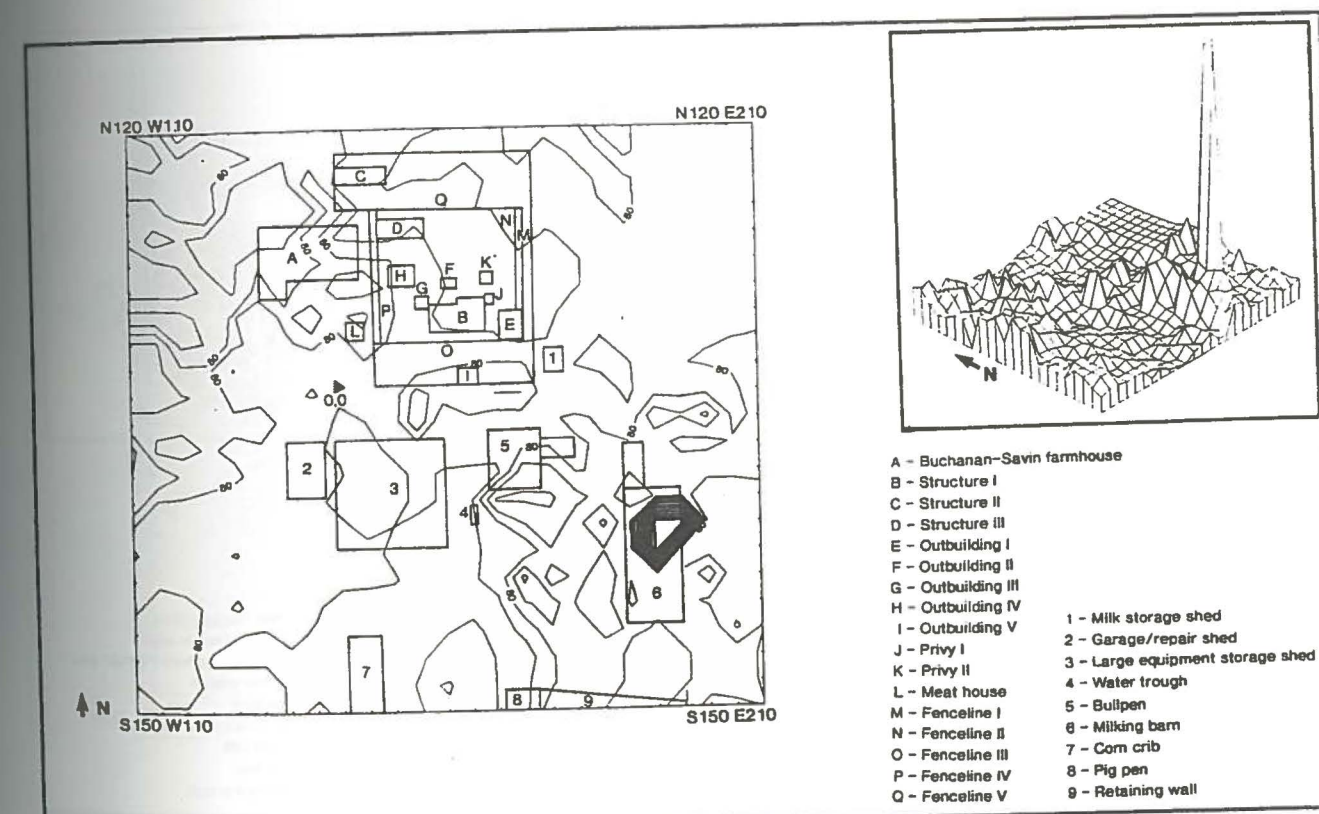


Figure 7. Subsoil Magnesium Distributions, Twentieth-Century Farm

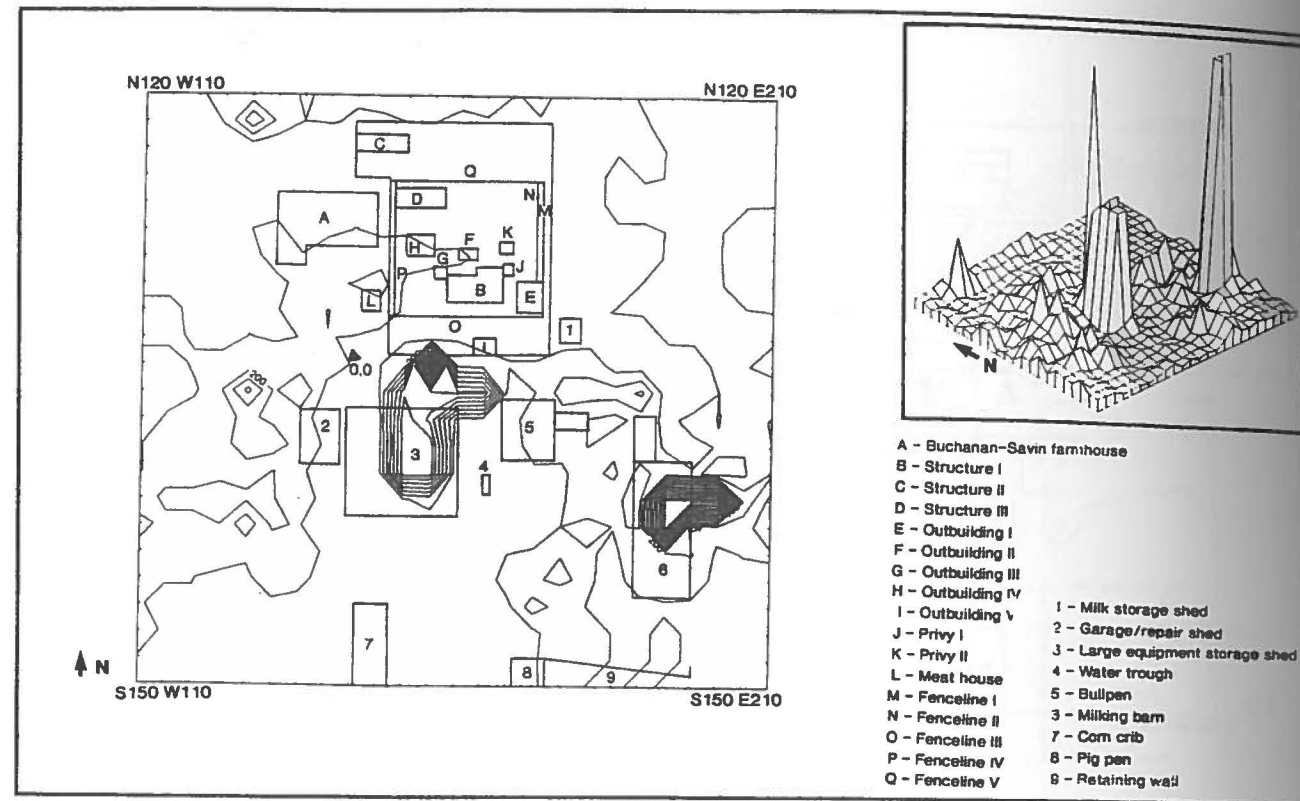


Figure 8. Plow Zone Potassium Distributions, Twentieth-Century Farm

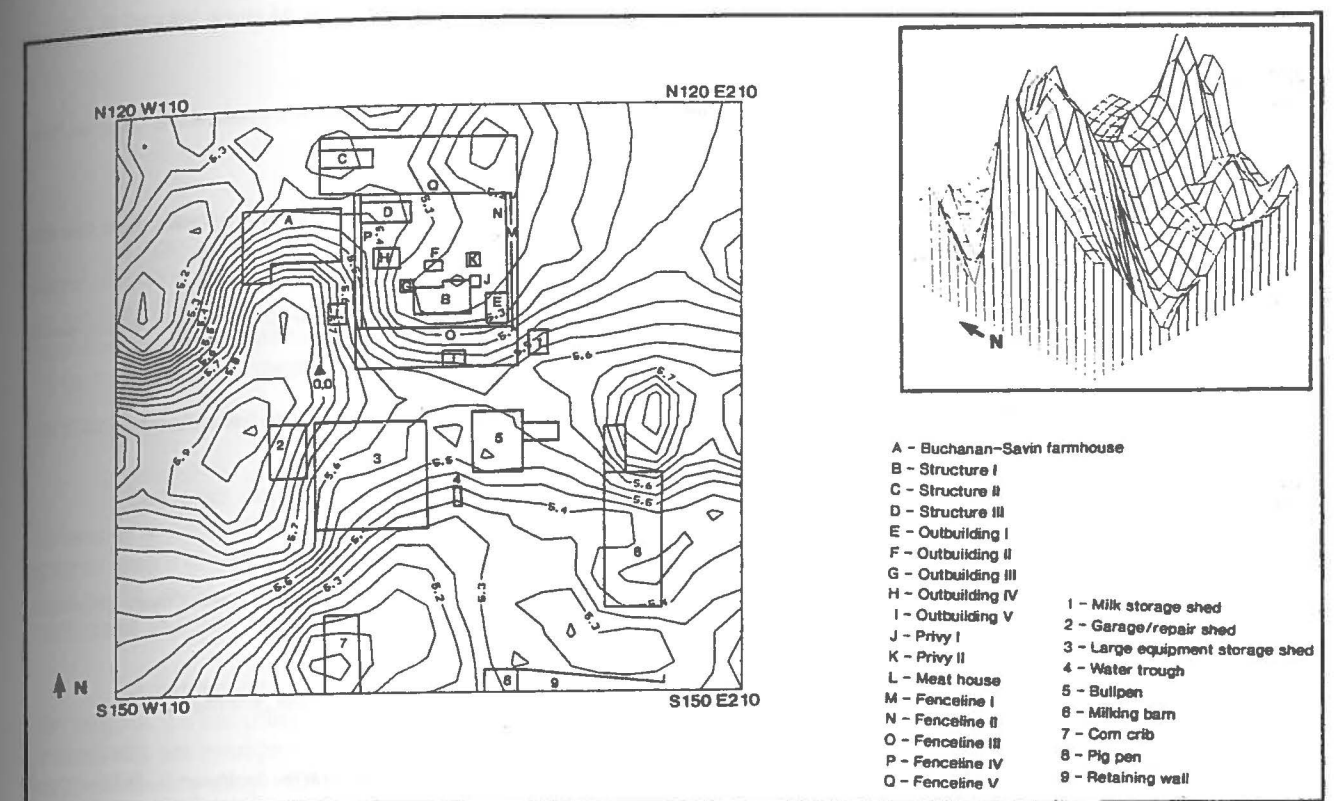


Figure 10. Plow Zone pH Distributions, Twentieth-Century Farm

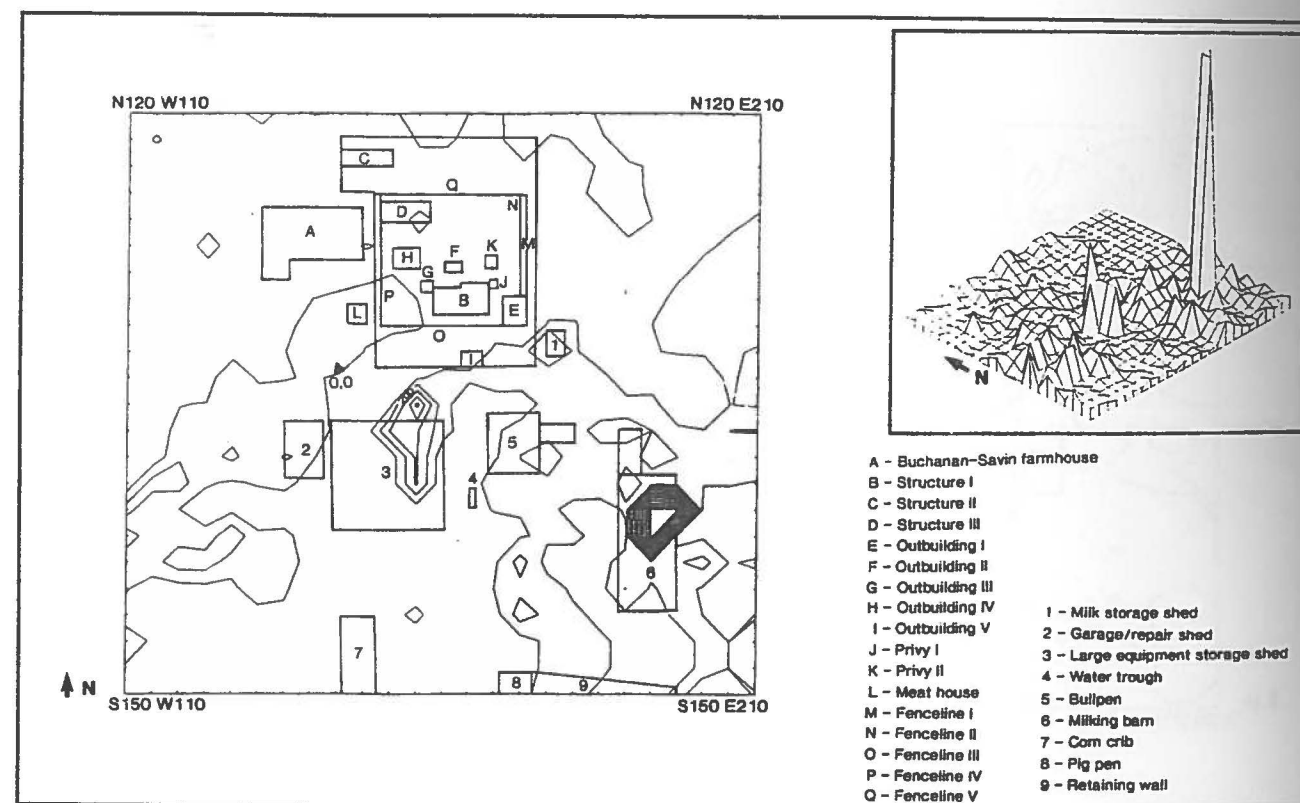


Figure 9. Subsoil Potassium Distributions, Twentieth-Century Farm

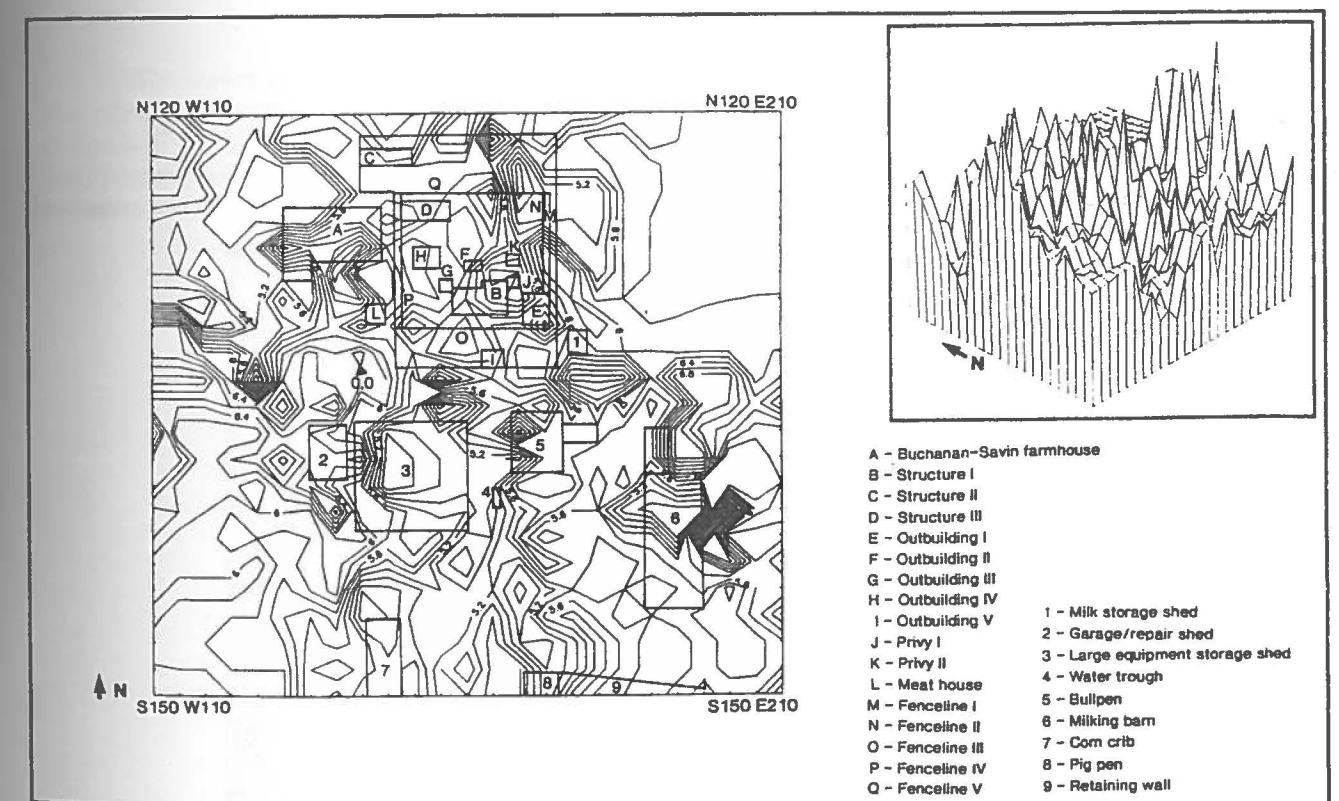


Figure 11. Subsoil pH Distributions, Twentieth-Century Farm

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CAN SIZES AND WASTE AT THE LEBANON CANNERY SITE: UNSCREWING THE INSCRUTABLE

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ABSTRACT

Excavation of a nineteenth-century cannery site in Delaware produced large quantities of can-making waste, some of which could be traced to well-documented common can sizes. Catalogues and trade publications of the period, as well as modern historical works, listed certain sheet sizes traditionally used by tinsmiths. Some of the scrap, however, could not be readily attributed to one of the common sheet sizes. The discrepancy between excavated waste and documented sizes was eventually explained by the accidental discovery of a sheet of "canner's" tinplate.

PROJECT BACKGROUND

Delaware Department of Transportation engaged the author to investigate a project area near the village of Lebanon, in connection with a bridge replacement project on Tidbury Branch, a tributary of the St. Jones River. The project area's largest feature was the site of a vegetable cannery that operated between 1869 and 1884. The cannery site was a flat wooded area at the top of a bluff overlooking the former wharf. While the cannery site itself had been cultivated and then allowed to revert to woods, the tinplate dump remained undisturbed.

A large collection of well-preserved can-making waste was found on the hillside, where it had been tossed over the edge of the hill (Plate 1). Since the canning company's property line was the crest of the bluff, the tinplate dump was technically not even part of the company's property. The waste consisted of blanks, squaring scrap, and a few tools from the can-making shop that occupied the second floor of the large frame building.

After excavation, it was determined that the cannery had been built "by the book," according to plans published by the manufacturers of cannery machinery. Site plan, machinery designs, and operating methods are readily available. Given such vast available documentation, the obvious question should be: Why excavate a well-documented modern industry?

The answer to this question is the same as the one that has been used to justify historical archaeology in general. The nature of the written record demands that industrial archaeologists focus on data that was not written. Whereas plant owners kept voluminous data on manufacturing equipment, output, costs, and product design, large sectors of industrial history were never recorded.



Plate 1. Waste as found just under the surface

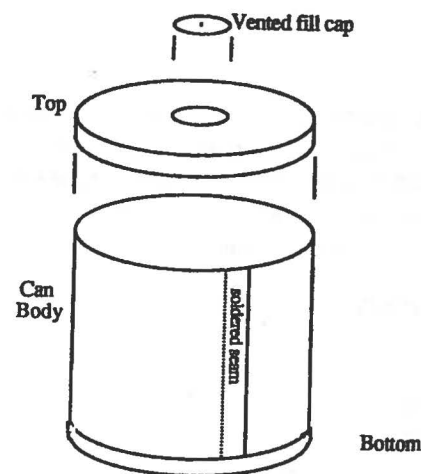


Figure 1
Anatomy of a nineteenth-century can

Based upon a drawing by J. Métivier in Parks Canada Manuscript Report 299, *Manufacturing typology for tin containers from the Arctic Salvage Project*, by Barbara J. Wade, 1978

Most important, industrial archaeology can correct misconceptions embedded in the documentary record. At Lebanon, waste piles were to shed light on the tinplate industry and the process of industrialization.

Workers' attitudes are documented in the written record, primarily in terms of labor conflict, which represents only one aspect of the workplace. Written labor history is flawed, since it represents only the fraction of the history that happened to be recorded by literate observers. The everyday life of less-literate workers is rarely documented.

Unlike the written record, industrial scrap is unbiased and unedited data, since there was no compulsion to falsify the trash record. Until the twentieth century, quality control records are scanty and unquantified, but industrial waste piles provide an accurate measure of industrial efficiency. Archaeology can open a window into the workers' attitudes toward conserving raw material resources, creative solutions to workplace problems, and spare time. Naturally, skill levels and attention to quality control will be reflected in the trash record.

Fortunately for the archaeologists, an expert tinsmith was available to help explain the technology, and an avocational historian had recently completed an

exhaustive history of canning in Delaware. The tinsmith, Richard Haddick, also happened to be related to one of the cannery proprietors, and the avocational historian, Dr. E. D. Bryan, had collected dozens of photographs and documents relating to Delaware canneries.

ANATOMY OF NINETEENTH-CENTURY CANS

Until introduction of the automated can-making machine around 1901, virtually all canned food was put up in soldered tinplate cans with filler holes in the top. Canmaking was a labor-intensive occupation normally performed in the upper floors of canning factories. More than a few cannery fires were ignited by careless workmen who manufactured cans during the off season and filled them during the season.

Can manufacture in country canneries was a semi-skilled derivative of the tinsmith's art. Techniques were simplified and standardized to accommodate a less-skilled labor force. Different workers would cut the can bodies, stamp the ends, and assemble the cans on jigs. Each piece would be soldered in place with specially-designed tools. By the end of the nineteenth century, canmaking tools had evolved away from the standard generalized tinsmith's tool kit into an industrial installation designed for maximum efficiency in making a single product.

Cans began as a sheet of flat tinplated iron, which was first trimmed on a "squaring shear" and then subdivided into blanks. Can sides were shaped into cylinders and soldered with a flat lap joint. Tops and bottoms were stamped on foot presses with lips around the edges, which gripped the cylindrical sides. By a process called "floating," the tops and bottoms were soldered to the cylinder. In the center of the top was a hole, through which the product was inserted (Figure 1). Once the can was filled, this hole was covered by a filler cap, which had a pinprick vent hole in its center.

Once the filler cap was soldered in place, the cans were cooked in a water bath. While the cans were still hot, a drop of solder was affixed to plug the vent hole. As the can cooled, the air inside contracted and a vacuum was formed.

STANDARD CAN SIZES AND SHEET SIZES

It is easy to demonstrate that standard tinplate sheet sizes begat standard can sizes (Figure 2). A 14" by 20" sheet will yield four #3 can bodies exactly, without any waste but the usual squaring trim (Figure 3).

A New Jersey canmaker reported that four bodies could be cut from a 14" by 20" sheet of tinplate (Sim 1951: 23). A picture published in 1883 (Heite 1990:27), representing state-of-the-art canmaking machinery, illustrated the use of 14" by 20" sheets to make can bodies.

A sheet 15" by 11" will yield almost exactly three #2 can bodies. The 15" by 11" sheet size was reportedly used only for "two-cross" tinplate, a heavy grade. By mid-century, when can sizes became industrialized, this sheet had become uncommon. One is driven to the conclusion that the #2 can body was settled early in the history of canning, when cans were made of heavier material and were, therefore, more expensive. As canned goods became cheaper after the Civil War, such thick tins would have been unthinkable. So what sheet size was used to make #2 tins during that period after the 15" by 11" sheet became uncommon?

WASTE FOUND AT THE SITE

Squaring waste was the most common scrap found on the site. Whenever a tinsmith begins work on a sheet of tinplate, he snips off the edges to square the sheet and remove the imperfections commonly found on hot-dipped sheets. This process is done in a large guillotine cutter, which is equipped with guides to ensure that square sheets will result. Squaring is almost a reflex, which tinsmiths will perform even if they believe the sheet to be good.

Squaring waste was commonly about 1/8" to 1/4" wide. Thus the available size of a sheet will be slightly less than the rough size, and the width of the squaring waste will vary with the quality of the sheet and the skill of the tinsmith.

Because cans were hand-made, each could be allowed to vary slightly, as long as it was square and tight. Slight variations in the horizontal dimension of the body could be adjusted by the overlap of the vertical seam, so long as the cylinder fit snugly under the lips of the top and the bottom.

These allowances represent a crude approximation of the "American System" of manufacture, in which all parts are interchangeable because they are made within tolerances, rather than tightly fitted by hand-fitting each piece. Can ends and bodies could be cut separately, partly assembled, and then brought together to make the finished can. Efficiencies of scale and operation could be realized, while the product would be "sufficient" to do the job, but not necessarily perfect.

Traditional craft workers, on the other hand, individually make each part of each end product, carefully fitting all the parts. The results would be not merely sufficient, but as perfect as a skilled craftsman could produce. In an industrial situation, such perfection is not necessary, as long as the product does its job.

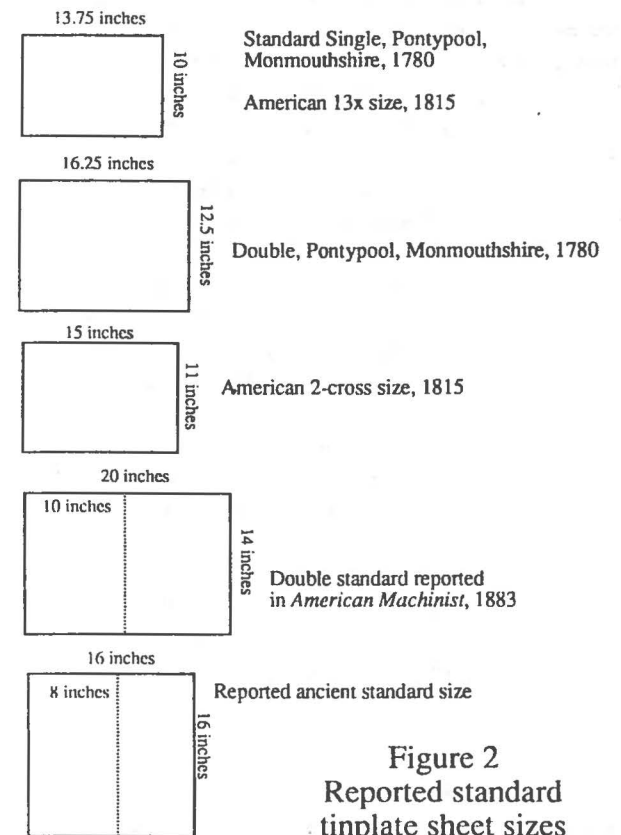


Figure 2
Reported standard tinplate sheet sizes

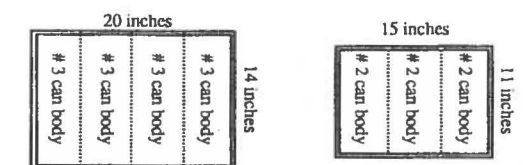


Figure 3
Derivation of standard can sizes from "standard" sheet sizes

Lids were stamped with a foot-powered press, freehand, from standard blanks. Each blank yielded six lids (Figure 4). Three blank sizes were found in the dump: #2 lids were stamped from 8" by 12" and 8" by 16" sheets, while #3 lids came from sheets measuring 10" by 14". There were many instances of lids being stamped from odd-shaped pieces of waste. In particular, filler hole caps were punched from spoiled lids (Figures 5, 6, 7).

So it was settled: a 20" by 14" sheet was the parent of both the bodies and lids to the #3 cans, with minimum waste. It would seem that the well-documented 16" square sheet yielded the 8" by 16" lid blanks (Figure 8). Unfortunately, the 16" sheet does not comfortably provide the 8" by 12" blanks, and none of the other documented standard sheets would do any better. There they were on the site, and they needed to be explained.

A #2 can body, according to the standards of the period, was approximately 4 9/16" by 11 1/4", just barely too large for the 15" by 11" sheet, but clearly derived from an ancestral sheet of that approximate size. An old English size, the "double," or 16 1/4" by 12 1/2" would have made three #2 bodies with considerable waste, but no such waste was found in the quantities necessary to make so many cans.

CANNER'S TINPLATE

After the report was published, Richard Haddick visited a supplier who provides tinsmithing tools and supplies for craft tinware makers. On this occasion, the dealer mentioned that he had a skid of "canner's" tinplate, which proved to be hot-dipped tin sheets, 24 3/8" square (Figure 9). Hot-dipped tinplate is especially prized by modern craft tinsmiths, since it is considered to be better than more modern electroplated tin. When the Lebanon cannery was making its own cans, only the hot-dipped variety was available.

When the #2 body requirements and the waste from Lebanon are superimposed on this sheet, all the missing parts fall into place. The sheet can easily be divided into 8" by 12" and 8" by 16" blanks. When #2 bodies are cut from one side of the sheet, it produces leftovers that are slightly over twelve inches. Such oversize 12+" blanks were found.

But the #2 body will also leave a piece of waste about a half-inch wide. This corresponds nicely with the strips of tin used to make a woven toy Dr. Bryan found on the site. Such woven toys were evidently common in nineteenth-century canneries; one New Jersey cannery worker produced a whole set of doll furniture by weaving such strips.

CONCLUSIONS

Some of the waste betrayed workers' attitudes, and helped to define the cannery's position in the process of transition from craft to industrial process. In a craft setting, the individual craftsman conserves raw material,

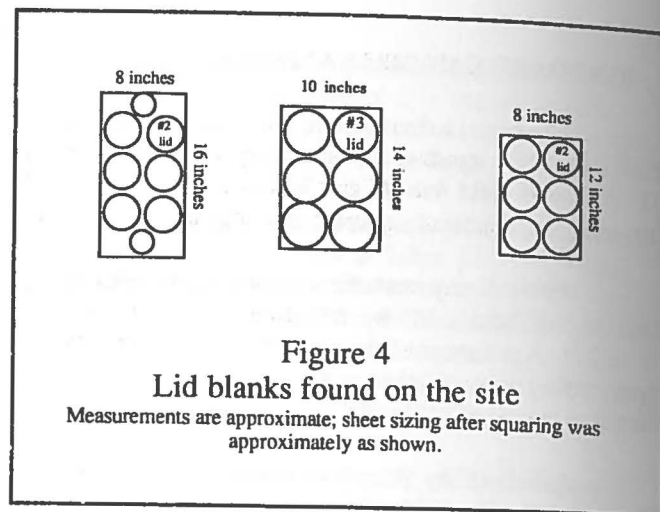


Figure 4
Lid blanks found on the site
Measurements are approximate; sheet sizing after squaring was approximately as shown.

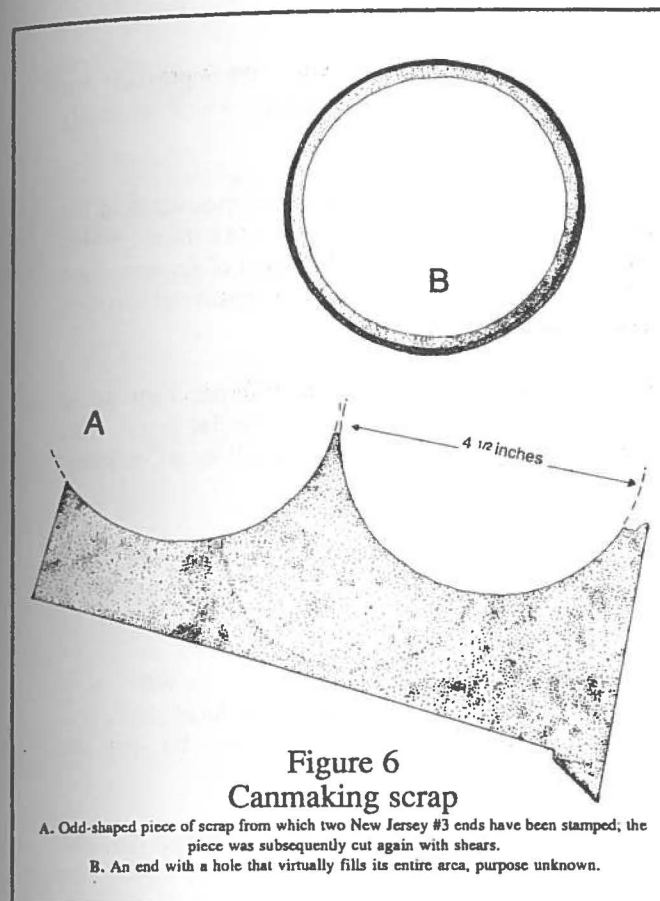


Figure 6
Canmaking scrap

A. Odd-shaped piece of scrap from which two New Jersey #3 ends have been stamped; the piece was subsequently cut again with shears.
B. An end with a hole that virtually fills its entire area, purpose unknown.

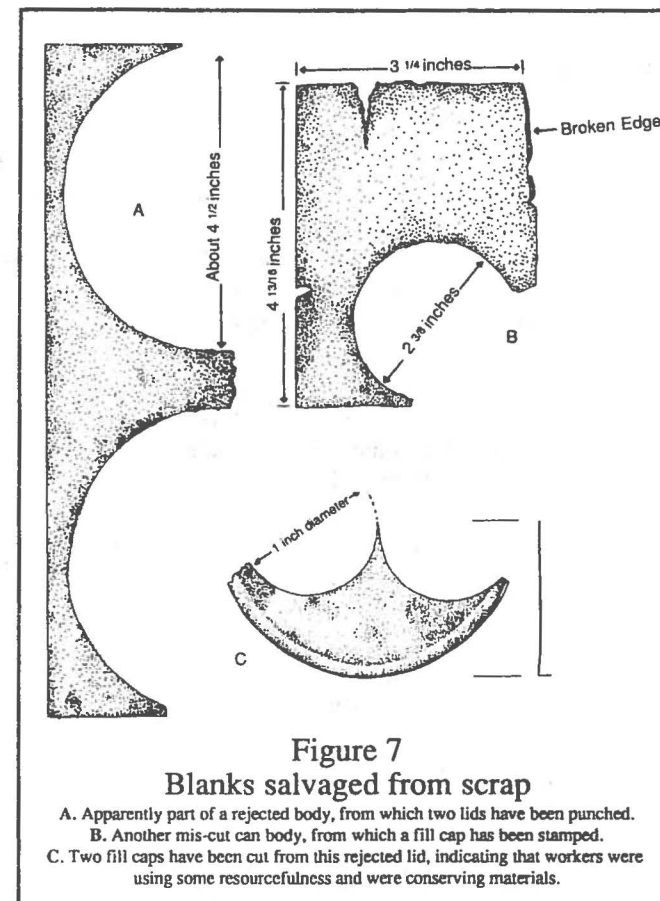


Figure 7
Blanks salvaged from scrap

A. Apparently part of a rejected body, from which two lids have been punched.
B. Another mis-cut can body, from which a fill cap has been stamped.
C. Two fill caps have been cut from this rejected lid, indicating that workers were using some resourcefulness and were conserving materials.

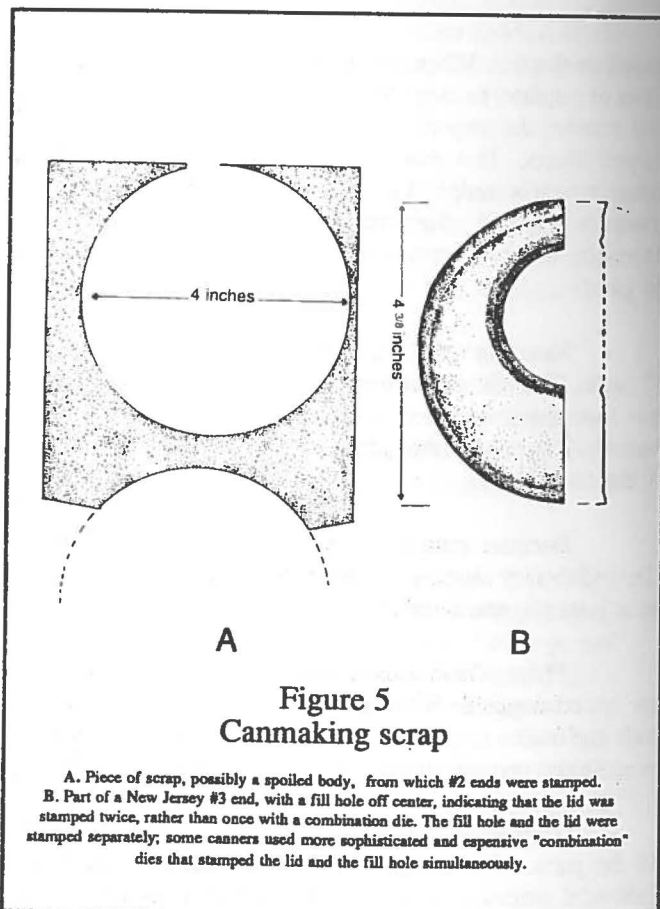


Figure 5
Canmaking scrap

A. Piece of scrap, possibly a spoiled body, from which #2 ends were stamped.
B. Part of a New Jersey #3 end, with a fill hole off center, indicating that the lid was stamped twice, rather than once with a combination die. The fill hole and the lid were stamped separately; some canners used more sophisticated and expensive "combination" dies that stamped the lid and the fill hole simultaneously.

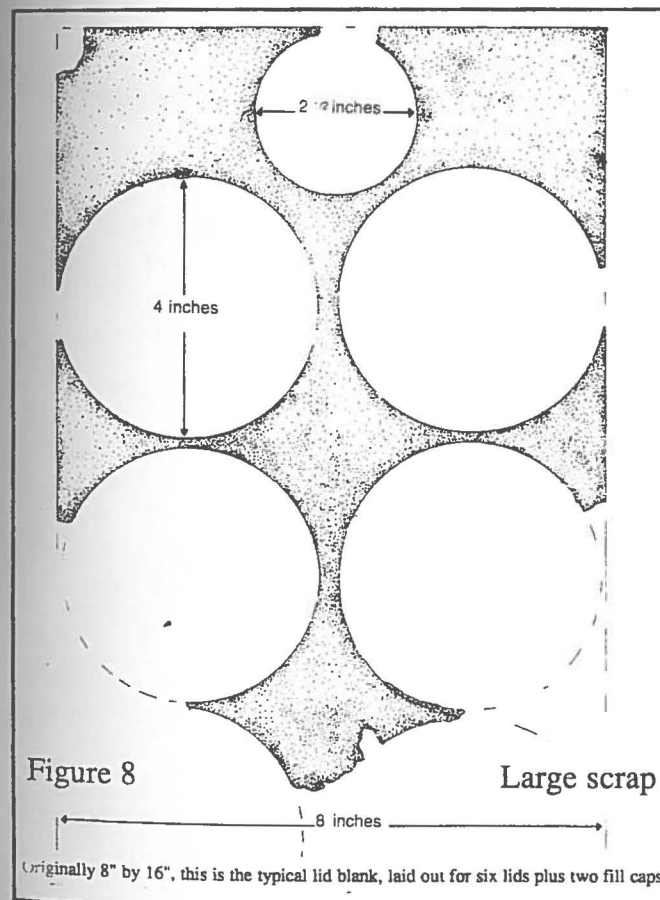


Figure 8
Large scrap

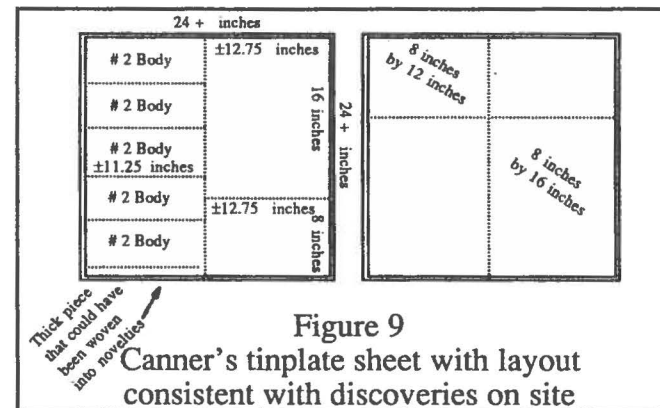


Figure 9
Canner's tinplate sheet with layout consistent with discoveries on site

re-uses scrap, and recycles as much as possible. Such recycling practices require initiative and concern for the bottom line, which one might expect to be absent from a purely industrial setting. At Lebanon, the careful re-use of scrap could be interpreted as a holdover from earlier craft attitudes that would finally disappear with the last remnant of craft tinsmithing in the industrialized canmaking during the twentieth century.

There was every reason to believe from the published histories that the 14" by 20" and 16" by 16" tinplate sheets were the basic raw materials for nineteenth-

century can-making. Standard secondary sources, based in turn upon suppliers' catalogues, conveyed the impression that these standards were uniform. Still, these two sheet sizes could not account for 12" by 8" lid blanks, which are easily explained by the existence of a 24" square sheet.

This conclusion, that 24" sheets were used, raises the question of why this sheet size is not mentioned in the standard histories of tinsmithing. The answer to this question may lie in the difference between craft and industry, which was only then developing. America's tinplate was still being consumed largely by individual makers of tinware, who were steeped in a tradition accustomed to 14" by 20" and 16" by 16" sheets. The 24" sheets were an industrial product, distributed through channels in the canning industry. They were not a product for tinsmiths.

Today we are accustomed to a marketing system in which similar goods are distributed in different channels for home, office, and industrial users. Just as a supermarket is unlikely to supply institutional rolls of toilet tissue, craft tinsmiths today buy their materials from channels different from the ones that supply cans for the Campbell Soup Company, even though the tinplate material itself may be identical.

When J. B. Campbell bought his first tinplate, there was only one distribution channel that served both canners and craft tinsmiths. By the time his Campbell Soup Company stopped making its own cans, tinplate for the canning industry came in rolls.

Before the Industrial Revolution, this distinction among distribution channels did not exist; all products were craft products, and all users were end users. As industrialization progressed, the distinction between producer goods and consumer goods became more clear-cut. In each industry the various channels diverged at different rates, but they are important to keep in mind.

One could plausibly define industrial archaeology as the archaeology of the transition from craft to industry, and the transition of the workers from craftsmen to wage laborers.

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