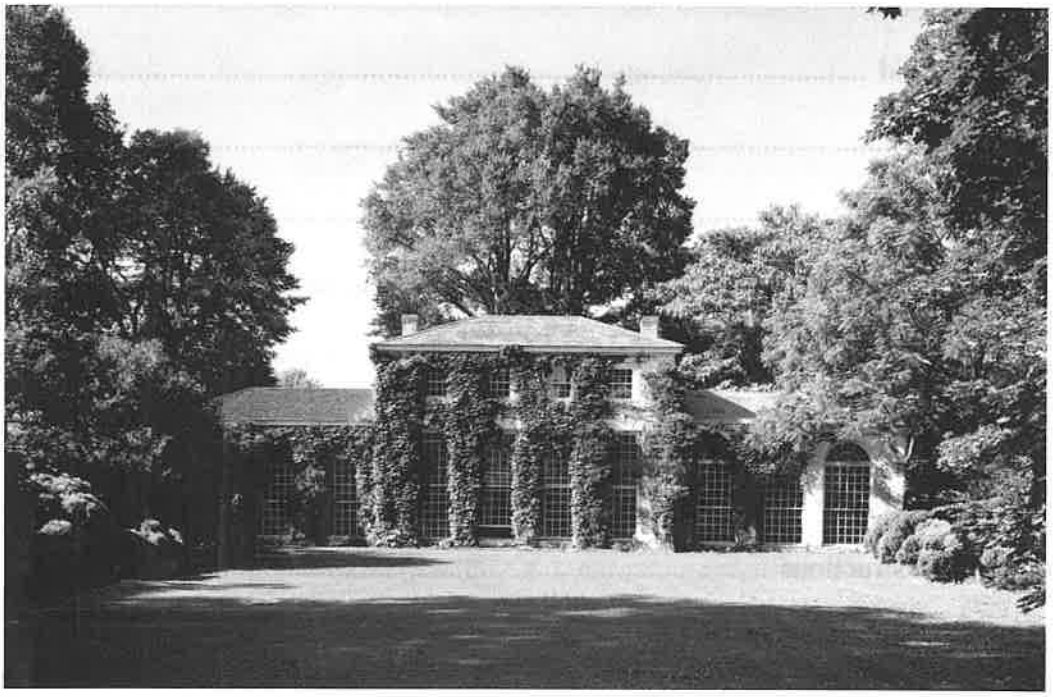
University of Maryland
Field School in Urban Archaeology
ANTH496/696

FIELD AND LABORATORY MANUAL



Historic District of Annapolis, the Bailey Homesite, and Wye House

Summer 2013

1. INTRODUCTION

The 2013 Field School in Urban and Historical Archaeology will undertake excavations on Prince George in Annapolis, and at Wye House Plantation in Easton. These sites have been continuously occupied throughout the 18th, 19th and 20th centuries, and today they continue to be privately owned or serve as residences. This manual contains detailed information about the settings in which we will work, and also outlines the procedures that we will follow, in field excavations, laboratory work, and mapping and survey. The field school will offer a range of experiences, and students will become acquainted with different techniques and contexts for archaeological discoveries. In order to make sense of the archaeology and to make sure we cover the areas important to us, we have developed a research design. The point of a research design is to make explicit beforehand the intention of the proposed excavations. To do this we simply have to lay out the questions we want to answer and devise suitable strategies that will guide us towards comprehending the archaeological record in light of these questions. A summary of our research questions will follow here, along with brief histories of the East and Cornhill Streets and Wye House. Subsequent sections will detail our research methodologies. Excavations on Prince George Street, the Bailey Homesite, and at Wye House will be managed by University of Maryland College Park doctoral students, Kathryn Deeley, Beth Pruitt, Benjamin Skolnik and Stefan Woehlke.

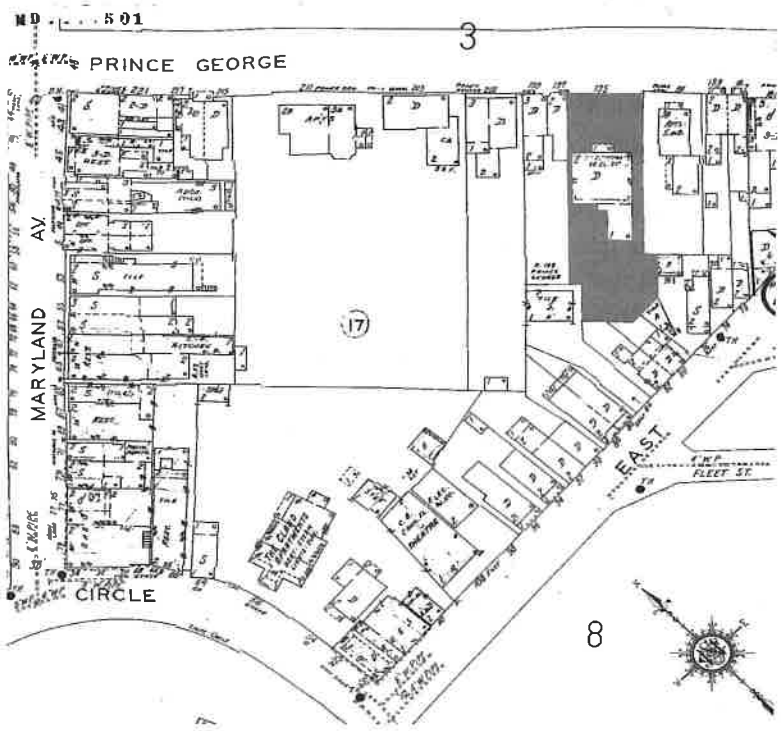
This manual has been revised and updated since in was created by Eric Larson in 1998. This version should be credited to members of the teaching team, Kathryn Deeley, Beth Pruitt, Benjamin Skolnik and Stefan Woehlke.

Archaeology in the Historic District of Annapolis

This summer the Archaeology in Annapolis field school will be excavating backyards on Prince George in the Historic District of Annapolis, Maryland. This research is being planned in cooperation with the Historic Preservation Commission of Annapolis.

Streetscape units were placed along Fleet and Cornhill Streets and the Market Space in the spring of 2008, as part of a project conducted by the Archaeology in Annapolis program under contract with the City of Annapolis, Department of Public Works. Although the contract work was concluded in May of 2008, the research goals of the project were subsequently extended through field school excavations during the summer of 2008, 2009, and 2010 when more streetscape units on Cornhill Street, as well as units in the backyards of 40 Fleet Street, 30 Cornhill Street and 41 Cornhill Street, were excavated (for more information see Knauf 2013). During the summer of 2010, 2011, and 2012 excavations also were conducted at the James Holliday House, at 99 East Street, as a continuation of research goals aimed at understanding the development of this portion of Annapolis (for more information see Deeley 2012).

The land Between State Circle an the City Dock, on which East, Fleet, and Cornhill Streets sit, was reserved for Colonial Governor Francis Nicholson in his 1695 plan for Annapolis, but it is unclear how the land was used until it was sold to Charles Wallace in 1770. A local merchant

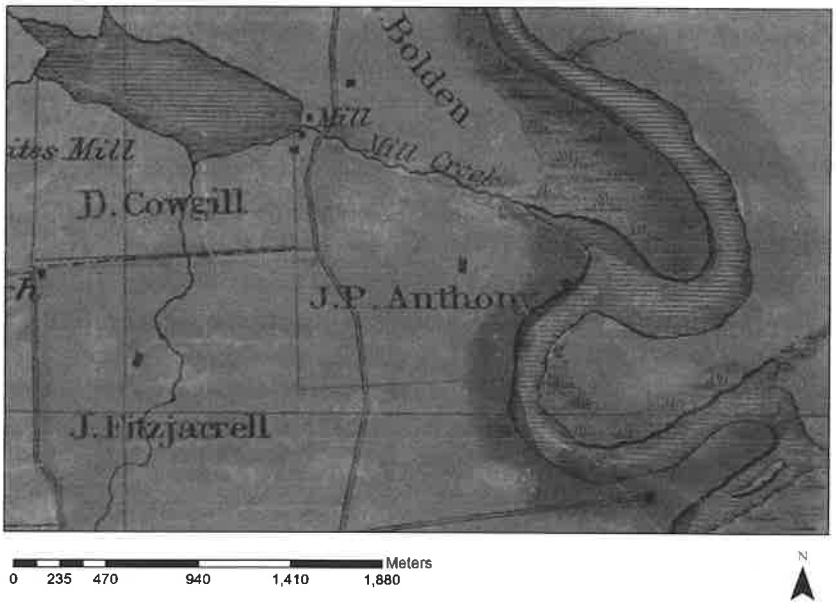


The focus of this study, the front yard of 195 Prince George Street, lies within lot number 85 on the 1718 Stoddert Survey of Annapolis. Lot 85, surveyed in 1718 for Amos Garrett, the first mayor of Annapolis, contained approximately 31,880 sq. ft. In a 1737 conveyance of the lot, from Garrett's heirs to John Brice II, a house is mentioned and valued at L55. This 1737 document, unfortunately, is the earliest surviving mention of a house on the property. It is worth noting that many documents dealing with late 17th-century life in Annapolis and Anne Arundel County, Maryland were destroyed in the fire of 1704. In addition to the loss of documentation, what has also been lost is the linking logic or translation/transposition of numbers between the three Beard surveys and the Nicholson plan of Annapolis. For this reason, the exact date of construction of the John Brice II House (and other historic properties in Annapolis, to be sure) has been problematic, and the subject of considerable debate.

Also of note is the fact that in 1740, just three years after acquiring the Prince George Street property, John Brice II began his career of public service. He held several offices within the county, among them: Chief Justice of the Provincial Court, Alderman of Annapolis, and Judge of the Western Shore Circuit. He was also Clerk of the Court, an office he resigned shortly before his death in favor of his son, John Brice III. In addition to his administrative and judicial duties, John Brice II ran a small store. No longer standing, it is known to have been located close to the extant house, and later served as John Brice III's law office.

A room-by-room inventory of the house and storehouse, completed in 1765, values the household goods at L452.7.3 and the store's goods at L373.15.4. John Brice II's will, recorded in 1766, devised the house and lot to his wife Sarah, for life. At this same time, John II's store was left to his son, John III. Upon Sarah's death in 1782, the house and lot descended to John Brice III. The first

In *My Bondage and My Freedom*, Douglass writes that his first memories are of living with his grandparents in "a log hut, or cabin, built of clay, wood, and straw" (Douglass, 1855: 36). It was in the cabin of his grandmother, Bettie, which he spent the first several years of his life and it is this cabin that is the focus of this project. Clues in Douglass's biographies and other texts point to where his birthplace could have been. This evidence will be used in conjunction with spatial analysis in order to identify possible locations of this structure.



According to Douglass, the cabin was set apart from the other slave quarters. He writes that his grandmother "enjoyed the high privilege of living in a cabin separate from the quarter, with no other burden than her own support" (Douglass 1855: 37). He additionally writes, "It was a long time before I knew myself to be a *slave*" and that it was a long time before he understood that the cabin in which he lived "belonged not to my dear old grandparents, but to some person who lived a great distance off" (Douglass 1855: 38). He thus describes his childhood experience as a state unawareness of his identity of a slave, for his grandparents no longer did slave work but rather raised children in their private home, separate and isolated from the rest of the slave plantation (Douglass, 1855: 37). There is currently a highway marker on Maryland State Route 328 indicating that the Douglass birthplace is in Tuckahoe; however, this marker is more than seven miles south of the Aaron Anthony property ("Maryland's Roadside Historical Markers"). It is on Anthony's property, near the Kentucky ravine, that the cabin used to be (Preston, 1980: 190). In his autobiographies, Douglass recounts how he was forced to leave this home as a small child and travel across Talbot County to Wye House where Aaron Anthony was the overseer for Edward Lloyd V (Douglass, 1855: 46).

In 1878, after escaping slavery and becoming a prominent abolitionist, writer, and orator, Douglass returned to Talbot County (Preston, 1980: 189). In addition to dedicating several African American churches, which are still in existence, he returned with a small party to his birthplace. He came back with Louis Freeman, a man who used to be a slave on the Anthony plantation, who, from the corner of Lewistown Road, spotted an area that was known as "Aunt Bettie's Lot" during his time as a slave (Preston 1980: 18). This spot was where "a deep, curving gully ran up toward the road from Tuckahoe Creek" (Preston, 1980: 190). According to this story, Douglass entered the woods "near the edge of the ravine," found an old Cedar tree from his childhood, thus proclaiming that he had found his birthplace (Preston, 1980: 190). Douglass's daughter, Harriet Lucretia Anthony, noted in the margins of her copy of *My Bondage and My*

The historical sources we have consulted, as well as our discussion with the descendant community of the Wye House slaves in Unionville, MD helped to define this project's research approach. Archaeological projects focused on plantations regularly result in the collection of materials pertaining to slave quarters and work buildings. Especially in the last ten years, these materials have been used to reconstruct practical details of enslaved life on plantations, including the cultural practices of enslaved workers. These practices seemed to be of particular interest to the congregants of St. Stephens AME, in founded in Unionville. Some of the specific questions asked included;

1. How did the Lloyds help the slaves (or fail to help them) achieve freedom?
2. How would have the enslaved perceive the plantation landscape and how is this different than how the Lloyds would have perceived it?
3. What were the spiritual practices of the slaves like?
4. How did the Wye House slaves live on a day-to-day basis?
5. What was family life like at the Long Green?

To answer these questions, we have first explored the written record. The most important historical work associated with Wye House's Long Green is Frederick Douglass' "My Bondage and My Freedom", in which Douglass describes the Long Green and the surrounding plantation in detail, as well as many events, routine as well as singular, which occurred there[2]. Douglass lived on Wye House Farm for a short time as a boy. He came there when Aaron Anthony, who owned Douglass, became the Lloyds' overseer around 1820.

Douglass cites this place, and his experiences there, as instrumental in his realization of what it meant to be a slave, to be black, and to be legally less than human. He describes the place as "the community…in which my earliest and most lasting impressions of slavery, and of slave-life, were received" (Douglass 1855, 110). He spent the balance of the 19th century in a relentless fight against slavery and became one of the most prominent African-American abolitionists in our country's history.

Douglass lived at Wye House for a short time, and there is no way to tie any archaeological remains to him personally; we have struggled to devise methods of uniting Douglass' historic presence to the modern landscape, its occupants, and the material culture that is being recovered at the site. Douglass' home in Washington D.C. is undoubtedly inscribed with some mark of the man's personality, but the Long Green, as described by Douglass, was a small space with a large population. It is likely impossible to assign any artifact or feature to a specific individual. Nonetheless, Douglass' presence and later visits to Wye House, in literature and in person, mark it as a site that was significant to him as an activist as well as for personal reasons.

The essence of what we'd like to accomplish is the reclamation of the Long Green's history of resistance, in an effort to provide space to black voices that have been shut out. The plantation is

[2] Douglass, Frederick, 1818 – 1895 (1855) *My Bondage and My Freedom.* With an Introduction by James M`Cune Smith. Electronic Text Center, University of Virginia Library. Cited in-text throughout.

starting in 1650 and continuing into the 20th century. Among the generations of Lloyd family occupants were many statesmen, soldiers, and otherwise influential figures, including three who served as Maryland state governor. The property was inherited by Edward Lloyd IV (Talbot County Historical Society Webpage, 2005). According to a map drawn by architect Henry Chandlee Forman, which cites a plat dated 1784, Wye House had a designated area for work-related buildings and slave quarters called the Long Green. The slave quarters, icehouse, carpenter's shop, smithy, and other working structures that once stood in the Long Green are either gone, or have been replaced by modern barns and sheds.

Through the fieldwork done by the University of Maryland/Archaeology in Annapolis field school we can see that Douglass' description appears to be highly accurate. We uncovered brick foundations of three separate structures, and during the 2011 field season identified the foundations of two additional structures. The summer 2012 field season continued excavations on these structures in order to better determine the locations of the building walls. 2013 excavations will focus on the yard spaces of these structures.

There is still a lot of work to be done, both in the field and in the archives, not to mention in discussion with the many interested people whose families lived at Wye House historically. In our discussions with the descendants of the Wye House community in Unionville so far, it seems that details of home and household, spirituality, and daily life are of the most interest. Happily, there seems to be a strong likelihood of recovering data that speak to these interests.

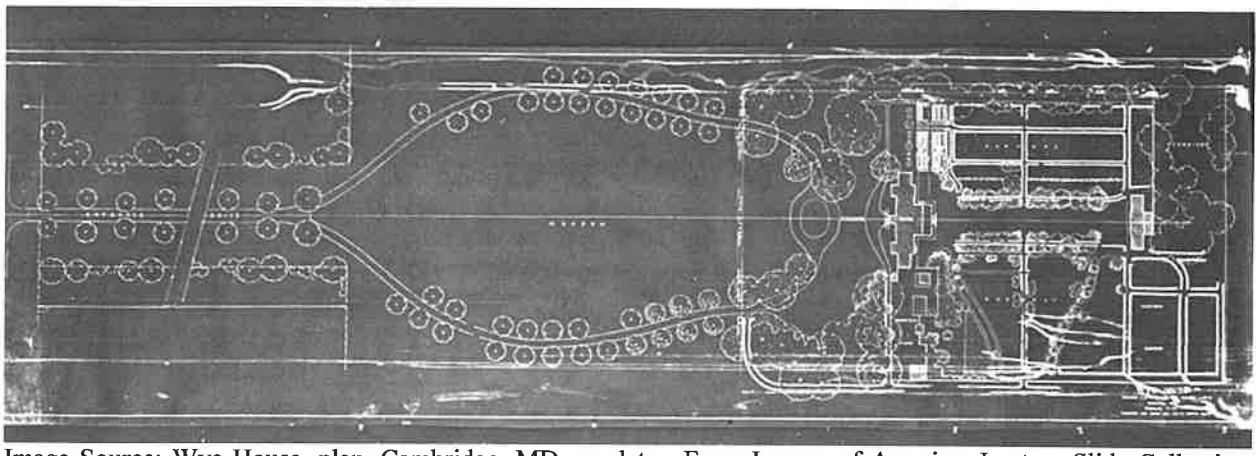


Image Source: Wye House, plan, Cambridge, MD, no date. From Images of America: Lantern Slide Collection, GSD lantern slide 19765 accessed through http://memory.loc.gov.

Archaeological Context

The site is located on the property belonging to Mrs. R. Carmichael Tilghman at 26080 Bruff's Island Road in Easton, Maryland. The specific area to be surveyed is the Long Green, which was, according to Henry Chandlee Forman's map of the property (which is based on the plat drawn in 1784), the location of three slave quarters, a slave cemetery, and several work-related buildings including an icehouse, a carpenter's shop, a smithy, and a corn house.

Test Unit 66, East Profile. Showing brick pier foundation belonging to 2 Story Quarter uncovered during 2011 excavations.

Thus far, the extent of excavations carried out by the 2005-2010 field schools has yielded much information and subsequent questions. Three analyzed loci that have been attributed to slaves on the Long Green have been Locus 1, the building around the Tulip Poplar, Locus 2, the Middle Building, and Locus 3, the North Building. The archaeology of all three display structures with multiple functions including work and domestic activities. It is obvious from analyses that slaves were housed in a variety of structures originally built for other purposes such as storage or other types of farm-related production. While they exhibit clear evidence of habitation like ceramic serving vessels and chimneys for instance, none have yielded substantial data which could be attributed to food preparation. Therefore, communal eating was probably practiced on this plantation and such a structure where food was prepared and distributed has yet to be discovered.

The 2013 field season excavations will build on the work done in the summer of 2011 and 2012 and take place in the two areas discovered through non-invasive surveying using GIS mapping. This technique combined a historic aerial photograph of the plantation taken during the early 20th century and a tracing of a historic map drawn by Henry Chandlee Forman in the 1950s and 1960s with a digital elevation model derived from LiDAR (**Li**ght **D**etection **a**nd **R**anging) survey. The results from this survey were tested through a Phase I shovel test pit survey and two loci were identified for further investigation. Locus 4, the Brick Row Quarter, located on the East Cove portion of the Long Green and Locus 5, the Two-Storey Brick Quarter, located on the South Long Green will undergo Phase II testing to ascertain the parameters of these buildings and to better comprehend the archaeology associated with what are presumed to be domestic quarters.

2. FIELD PROCEDURES

In order to reach the goals of our planned research design this summer, we need to follow some very basic (and some not so basic) archaeological strategies, terminology, and recording methods. The rest of this manual is devoted to the discussion of standardized operating procedures that are important, not only to these sites, but to any general understanding of archaeological excavations.

It would be impossible to create a manual that could explain every possible scenario that might be encountered while excavating an archaeological site. In this way, archaeology is much like any other trade or craft, and field school is often seen as the beginnings of one's apprenticeship. This manual attempts to explain much of the logic behind archaeological fieldwork. Look to it as an explanation of skills and tools with which to approach archaeological sites. The specifics of how these tools and skills are applied will, of course, vary with each particular situation encountered, but the generalizations often remain constant. Looking at archaeology as a craft, it takes time and experience to really "master." Learning these generalities, however, will help in generating an understanding of how archaeologists approach the past and how that approach affects the nature of the past.

We start with the basics such as naming the site and laying out a grid system. To those new to archaeology, the emphasis on recording may come as a surprise. But those who have participated in field work know that archaeology is in many ways a destructive discipline. Digging dismantles a site, disturbing materials laid down hundreds (or even thousands) of years ago. The physical evidence of what once happened there is destroyed in the process. When the dig is over, there is only one way that the site can ever be reassembled, and that is on paper. Unless the records of the excavation are complete and accurate, there is no hope of understanding the pasts that they represent.

Naming the Site

Every archaeological site in the United States is identified and registered with a state-level administrative agency, usually something like the State Historic Preservation Office. This procedure allows the state to oversee the excavation and analysis of the state's archaeological resources, keeping a check on the quality of work. It also provides a convenient way to label each archaeological site in a systematic manner. The Maryland Historical Trust is the agency here in Maryland. To identify a site the Trust provides a unique code for the site, identifying the county or township where the site is located and numbering sites within counties in the sequential order in which they are found or recorded. The site at Wye Hall for instance (the subject of one of our readings for the course) is called 18QU977, "18" because Maryland is the 18th state alphabetically, "QU" for Queen Anne's County, and "977" for the 977th site surveyed within that county. We used this code as shorthand when taking notes, identifying bags, labeling artifacts, and practically any other reference to the site in the field and the lab. Because our project and the lab work on several sites at a time, this identifier is extremely important. It helps ensure that materials from different sites to not become confused.

proveniences with decimal places. They do not fall tidily along grid lines and may not be oriented according to the directions of the compass, but they are nonetheless "on grid".

In the areas currently under investigation, labeled stakes are put into the ground. Always try to avoid kicking or stepping on grid stakes, and always check them for accuracy before use.

The datum point is often chosen to mark the center of the grid, but it also is placed to establish a more permanent marker. This provides future researchers with a way of locating earlier excavations long after the temporary survey stakes have disappeared. The elevation of the datum point is also recorded, so that vertical measurements may also be reconstructed at a later date.

Mapping

Once a grid has been laid over the site, the mapping of contours and visible archaeological remains is simplified. Visible remains can be subtle or almost non-existent on a site such as this one, which has been extensively modified because of continuous occupancy since the eighteenth-century, but various clues such as surface undulations and above ground features such as plantings and architecture, may be helpful. All important surface features will be plotted and then be assembled into a composite map of the site called the SITE PLAN. Today this plan is frequently assembled, and exists only on computer. In addition to surface features, the site plan will also contain information from surface collection, remote sensing, and excavation. Understanding the changes in the design and pattern of the site is a very important part of this year's study. The site plan provide us with a base map to work with in making assessments of changes and can be compared with other historical maps.

Metric vs English Scales of Measurement

Archaeologists differ on the use of these distinct scales. Today, most use metric measurements (centimeters and meters) in mapping and documentation of the site. Many historical archaeologists, however, have held on to the use of English measures (inches and feet).

Metric measures are currently used in most nations around the world. It provides ease in doing arithmetic calculations (being based on tens). Archaeologist suggest that because the metric system is a 20th century development–one not based on human measures–it provides a less biased unit of measurement that allows for a more objective measure. English scales, on the other hand, were supposedly based on a more human scale (the foot for an obvious example). If one were doing a survey testing an area for unknown historic sites—regularly testing every 50 feet—one could potentially miss sites because of using the same scale with which the sites were

These and other forces work to create a patchwork of superimposed and cross-cutting features. All excavation and recording methods aim to make sense out of this confusion.

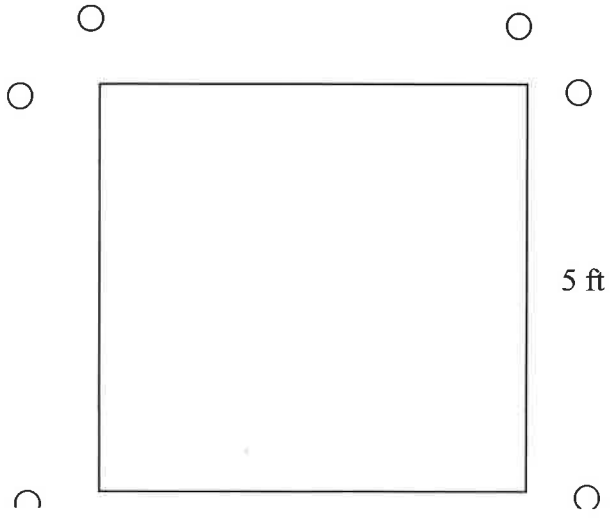
Laying Out Excavation Units

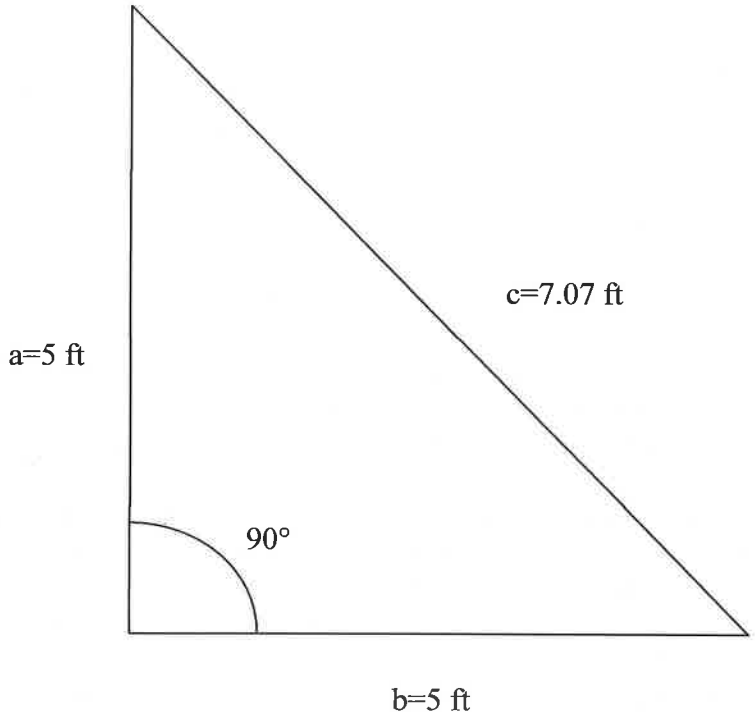
Once a decision has been made as to where excavation is to take place, all of the vegetation obscuring the area must be removed. This does not necessarily mean that trees must come down, but most of the smaller material should be taken out. Nothing, however, should ever be pulled out of the ground. Doing so would disrupt materials which you are about to take great pains to record and then carefully remove. Therefore all vegetation, whether it be grass, saplings, or weeds, should be cut off at ground level. An area somewhat larger than that intended for excavation should be cleared, at least one or two feet beyond the limits of excavation. The cut material should then be carried (not dragged) well clear of the site.

During this entire operation, as well as at all other times, keep foot traffic to a minimum. Unnecessary movement compacts soil, creates subsurface damage, and encourages erosion. Avoid it. Stick to well-defined paths and use board walks if they have been set up in sensitive areas. Do not take short-cuts between excavation areas; use the paths instead.

On Safety and Foot Traffic: It is tempting to discard rocks, roots and other non-cultural debris nearby and adjacent to a unit that you are excavating. This can have disastrous results, as this material accumulates on the ground and comprises a significant hazard. Students have suffered ankle and wrist injuries by slipping or tripping on small stones or roots while carrying buckets laden with soil. These things should be gathered near the backdirt pile!

If the corners of your excavation are marked by nails or stakes, you do not want to undermine these corner points by removing all the soil that supports them unless they are judged





Each unit must have at least one nearby point permanently marked for use as a datum point for the unit. This point will have a known elevation. The elevations of strata and artifacts can then be measured by stretching a line and line level from the datum point to the object. The elevation of each datum point should be clearly marked on it and also recorded in the supervisor's notebook. The elevation of the datum point should be checked with a transit at least once a day for accuracy.

Once an area is cleared and strung out, photographs should be taken, and a beginning plan or map must be drawn before excavation begins, yielding a bird's eye view of the area drawn to scale. Scale and conventions should follow those laid down below, in the section of this manual on drawing. Slope, ridges and features should be indicated. Any surface artifacts which were not collected earlier should be assigned find numbers (see below) and their locations noted on the drawing. This also applies to materials within the immediate area of your excavation limits. This area should be kept clean, thus minimizing the danger that surface artifacts from the surrounding area might be accidentally kicked onto excavated surfaces, skewing data and interpretation.

A final consideration concerns placement of excavated and sifted soil. The backdirt pile, placed on plastic to make backfilling easier, should ideally be close to the unit. It should not, however, be in a spot where future excavation is anticipated -- moving backdirt piles is a waste of time and not particularly fun. If your area is dry and/or windy, place the dump downwind -- why re-fill the unit before its fully excavated?

in more detail. Textures are determined based on the relative grittiness, stickiness, or compaction of the soil. As you dig you should be constantly aware of the color and texture of the soil you are excavating, because it is when either or both of these facets change that you may be coming down onto a new strata.

You may also notice variations in the color, density or compaction of the exposed surface. A post-hole, for example, may show up as a darker colored circle in the surrounding soil. You may also see an area of red or orange soil, which could have been transformed by fire or heat. Or more obviously of significance, you may see the top of a brick or stone wall or foundation. All of these clues can indicate a different layer, and each must be excavated separately. Before they can be excavated, however, you have to record them. And before you can record them, you have an even more basic decision to make; how do you refer to these phenomena? What do you call them?

Any observable phenomenon which you feel is worth taking notice of and recording is called either a LEVEL or a FEATURE.

Each level in a unit is assigned a capital letter (starting with A for each excavation unit, and assigned sequentially in the order in which they are uncovered). Each is carefully recorded, with all of its relationships and associations to other levels and features noted, and carefully removed, all artifacts from the level being put into labeled bags.

Features are different than levels in that they are distinct deposits which represent distinct episodes of deposition. Furthermore there is no way to remove a feature from the ground without at least dismantling it, such as is the case with a buried brick floor, or destroying it such as with foundation, or builder's, trenches. Features are assigned a number from the feature log kept by the site supervisor (starting with 1 for the entire site). Features can be internally stratified and thus are also assigned a lower case letter indicating levels excavated within a feature. As with levels, each is carefully recorded, with all of its relationships and associations to other levels and features noted, and carefully removed, all artifacts from the feature level being put into labeled bags.

Excavating Levels and Features

Since each level and feature is identified and distinguished from others primarily on the basis of its observable characteristics, it's worth noting what some of these characteristics might be. They include soil color, texture, and compaction, as well as artifact content. You will find that some are readily discerned, such as walls, and here clean separation is relatively easy. Often, however, the distinctions are subtle. They may have faded or have been disturbed in such a manner that clean separation becomes difficult. In these cases, trying to decide when you have hit a new level or feature can drive you crazy.

In order to avoid the possibility that a change between levels or features will be missed, careful control must always be maintained, and the excavation crew must be alert to changes in soil

Deposit Types

Archaeologists distinguish two types of levels - arbitrary and stratigraphic. An arbitrary level is simply a stratagem used by an excavator to enhance control over stratigraphy. In excavating a single layer of deep fill, for example, you might wish to divide this stratigraphic unit into smaller, arbitrary levels (excavating, for example, only to a depth of .50 feet before assigning a new level). This would be a way of ensuring that similar material from two or more separate fill episodes were not lumped together. Arbitrary levels are never intentionally used to take the place of stratigraphic levels, only to further refine them.

Stratigraphic levels fall into two major categories - those that are natural and those made by humans. There are many types within these categories. The following notes do not discuss every type of level that might be encountered (that would probably be impossible), but they should provide enough examples to help you identify some of the major ones.

Windblown deposits are usually made up of very fine particles, are soft, and tend to pile up in corners. Their composition can often be determined with a magnifying glass, and should be noted for clues as to provenience.

Soils are confusing! You are following very slight differences in texture and composition, and it is easy to doubt yourself. Before long you can make a mess of your unit, jumble deposits and create an even more confusing problem. If you find this is happening to you or your partner, STOP.

DIG FROM THE KNOWN TO THE UNKNOWN. **Things will start to make sense.**

Water-laid materials can be laid down either by standing or moving water. Moving water generally sorts material by particle size, and its constituents will often have rounded corners and edges, clear indicators of water-washing. The bottom portion of ditches and pits tend to silt up rapidly with coarse material, while the upper portion fills more slowly and with finer material. Sediments, as well as natural soil levels, are sometimes difficult to distinguish, as water percolates downward through levels, obscuring their boundaries. Keeping an eye on the walls of your excavation unit (the "sections" or "balks") is helpful, as changes are often more easily seen in cross-section.

Other natural deposits include those that are intrusive, such as stains from tree roots and animal burrows. These can usually be identified by their size, shape and inclusions. Oftentimes these are identified and excavated within a given level or as a separate feature depending on the size of their intrusion.

Some of the major types of human-made deposits include:

Walls, which are normally one of the easiest features to identify. If any of the wall's courses were left standing above ground, they usually emerge through later levels and features. Overlying

Pits are example of intrusive features. Because they intrude down into earlier levels, they must be excavated first. The reason for this should be obvious - a pit dug into lower, earlier levels will contain artifacts which are of a much more recent date than materials in surrounding levels. Fully excavating the soils associated with the pit prevents the chance of mixing the later intrusions with earlier strata. Recognition of pits is not always easy, but as you can see, an undetected intrusion can confuse the stratigraphic sequence of an entire area.

- Stains - or color differences - are a visible indication of a pit. This is the result of different or mixed soils being used in filling the pit. One can not always count on this, however, as some pits are filled with the same soils that were dug out in their creation. In such a case, the only difference may be in the compaction of the soils.

- Inclusions, such as bone, shell, or other material - particularly when they appear in irregular or loose configuration from being thrown into the pit - may also help in identifying pit features.

- Loose or soft patches of soil mixed with ash, or charcoal should also be suspect.

Pits may have served a variety of functions, ranging from garbage pits, storage pits, privies and holes, dug for a variety of reasons, which gradually filled up with sediment and wash. Because pits could stand open for a time and their excavation and filling are two quite distinct activities, pits will often receive two or more feature numbers.

The actual cut of the pit can be considered one feature, as it represents the act of digging the hole. The contents of the pit can be considered a separate feature, as they represent the filling of the hole. The internal stratigraphy of pits, like that of foundation trenches, can be important, so they should always be cross-sectioned and drawn.

Post-holes, another intrusive feature, can be viewed as a kind of pit which has many variants. Posts can be pointed on one end and driven into the ground, but the most common post is flat-ended and placed into a hole that is then backfilled. Postholes form the 18th century are always somewhat irregularly shaped, as the post-hole digger was not invented until the mid-19th century. The post-hole should always be differentiated from the post-mold, which is the material left behind by the rotted post itself. It should, however, be noted that posts are not always left in the ground to rot, but may instead be pulled out, in which case the resulting hole may be either backfilled or left to fill up with silt and debris (and the occasional broken ankle).

changes which may suggest a new level. This is easiest if you keep the blade of the shovel sharp and skim through the dirt in even peels.

As you dig, be extremely careful not to dig beyond the limits of your square or trench. The side walls of the excavation (the profile) will be used to see soil changes and strata, so they must be kept clean and perfectly vertical. This is difficult to do with a shovel, so you should probably dig to within an inch of the section and then finish making the vertical cut (more on this below) by hand with a trowel.

Once you get into an undisturbed context, you should probably shift to a trowel for excavation. Using a trowel is better learned through practice or demonstration, since it can be used in a variety of ways. But, in general, you should use it with a scraping motion towards your body. As with shovels, keep the blade sharpened, and it will slice through roots and leave a clean cut in which soil changes can be quickly seen. The point of the trowel, however, is rarely used, and stabbing motions to loosen soil should be avoided. Experience will tell you how much pressure to use, and you will eventually find that soil changes can sometimes be felt before they are seen. As you dig, the soil should be scraped back into a dustpan and dumped into a bucket. Once the bucket is full, you'll take it to a screen and sift it make sure that you didn't miss any small artifacts.

A few general rules of trowel use might be helpful:

- Dig only one level or feature at a time - this should always be the uppermost layer.
- Trowel only until a change is noticed. This means a change of any kind, regardless of whether it is only millimeters below where you started.
- Move backwards across the deposit being excavated. Do not kneel on freshly excavated surfaces. This way soil changes can be seen quickly.
- Never walk on excavated surfaces (unless absolutely necessary -- and then they must be lightly scraped clean again).
- Trowel in a consistent and systematic direction.
- Whatever you are using to transfer excavated soil into a bucket (usually a dust-pan), let only a small amount accumulate before dumping it into a bucket.
- *DIG FROM THE KNOWN TO THE UNKNOWN.* Things will start to make sense.

A number of tools may be used in addition to the trowel, including dental picks, spoons, ladles, palette knives, and the like, but one of the most useful tools is the hand-brush. Brushes are particularly helpful in removing loose soil from over surfaces and from around rocks, bricks and artifacts. Brushes can be over-used, however, especially in either very dry or wet conditions. Brushing of wet soils (or dry clay) tends to polish them, while excessive brushing of very dry

All artifacts will fall into one of two categories: they are either classified as "small finds" and bagged individually, or they are part of a general bag of artifacts.

Small Finds & General Finds

On many sites all of the artifacts recovered from a given level are bagged together in a general lot. A smaller percentage of the artifacts are often recognized as significant enough to be treated individually and the exact location in which they were found is accurately recorded.

If original surfaces have not been disturbed, then patterns of nails, pane glass, and other materials can yield clues to architecture. The patterns of other debris can provide evidence of where specific activities took place, showing how the site was used by people.

Horizontal patterning of remains is not adequately recovered if one records only the level from which artifacts come. Artifacts recovered from the floor of a room, for example, might all fall into one level. However, different portions of the room may have been used for different purposes, and the pattern of artifact distributions across the room may provide evidence of these differences. The only means of recovering this data is to routinely point-provenience finds.

These small finds each receive a unique small finds' artifact number (assigned sequentially within each excavation unit and recorded in the supervisors notebook) and are bagged separately, but they retain the same bag number as the level or feature in which they are identified. Three-dimensional coordinates are also recorded for the object, so that its precise relationship to other finds and to excavated levels and features is known. Elevations are usually taken with a line level, and the find's coordinates according to the site grid are noted.

There are situations in which a supervisor may feel that such precise treatment is not necessary. Point-proveniencing of extremely common and wide-spread artifacts may not be worth the effort, although you will not know initially what specific artifacts will fall into this category. Whenever this is done, however, it is worth recording in general terms in your notes where each significant artifact was within a level or feature. If you have erred in your assumption that the material does not warrant precise proveniencing, the situation can still be salvaged.

Precautions in Bagging Artifacts

Regardless of whether a bag contains small finds or a general lot, care should be exercised so that artifacts are not mixed up or extraneous matter introduced into bags. (Remember the earlier discussion of dating and interpretive problems if you mix up material from different strata.) The following precautions will minimize the possibility of mix-ups.

- Whenever a new level or feature is begun, label a new bag before starting to dig. Never work without a bag, and never use an unlabeled bag.

record, profiles should be kept perfectly straight and absolutely vertical. There are a number of guidelines which should be kept in mind when cutting profiles.

- Never pull anything out of a profile because a) it may cause a collapse of the profile and b) the texture of the levels should be preserved.

- Leave a pedestal of earth beneath protruding rocks or other items so large or heavy that they would fall out of the profile without some support.

- Strings marking the edge of the excavation unit should be constantly checked when cutting profiles so that a straight line may be kept and excavation remains within limits.

- A plumb-bob should be used to keep profiles vertical. Do not trust your eyes.

- Do not undercut the edge of excavation, even in pursuit of artifacts. This is easy to do, but impossible to undo.

- Keep profiles trimmed down to the level you are excavating, as trimming introduces the possibility of contamination from artifacts in an upper level. Moist soil also trims more cleanly than dry soil.

- Never trim a profile close to an area where contamination is a danger.

- Scraping tends to smear the interface of layers. Use a sharp trowel and a chopping motion to trim.

- ***Do not walk or sit too close to a profile***, since you may cause it to collapse. When working in tight quarters, be particularly careful not to hit the profiles with your feet or elbows.

Many projects use an excavation system in which a grid of relatively small squares is excavated (usually about 2 meters or 5 feet square), and walls of earth (balk) are left between the squares. There is a certain advantage in this, in that it leaves a regular system of cross-profiles across the site. On the other hand, this method can make it difficult to excavate horizontally and clear large areas in phase. In many situations horizontal clearing is the only way in which certain patterns can be seen, and balks may obscure these patterns. For part of this season's excavation we will use a more flexible approach, often digging in somewhat larger units, or trenches, for horizontal clearing.

When digging in trenches and emphasizing horizontal clearing, one is still faced with the need for profiles at intervals within the confines of the trench or through specific features. When such a need arises, a cumulative profile may be used. This method is more easily demonstrated than described, but a line (or lines) is laid where the profile is needed. Excavation then proceeds up to the line and stops. Right at the line, you will at this point have exposed a cross-section of that level. This exposed profile is drawn, and then excavation continues beyond the line until the

quality of the photographs. Therefore the photographer will make the decision as to whether the area is clean enough or needs more attention.

- Be certain that photos are taken of areas both before and after excavation.
- The supervisor must see that all important levels/features, relationships, and methodologies are photographed.
- Remember to photograph all sections.

Keeping the Record

Aside from artifacts and the various samples collected during fieldwork, all evidence and data collected from the work are in the form of verbal descriptions, drawings, or photographs. These constitute the only record of what was encountered on the site. It is therefore worth repeating an observation made in the beginning of this manual: when a site is excavated it is being systematically destroyed. In the process, material and relationships which have been in the ground for hundreds or thousands of years are reduced to a series of paper records. These are the only means through which the site can be understood and thus deserve all possible care. The computer maxim "garbage in, garbage out" applies to archaeology as well. Our interpretations of the past can only be as good as the information we record during excavation.

There are four basic types of field records: field notes, standardized recording forms, scaled drawings, and photographs. Each of these is described in detail in the sections that follow. Briefly, field notes consist of a running commentary on day-to-day field operations, covering objectives, methodology, descriptions of everything encountered and possible interpretations. Standardized records are kept of important aspects of fieldwork, and insure consistency and completeness in recording. A variety of different drawings may be done of excavated areas, but all are done to scale and should be as accurate as possible. All of these records are supplemented with photography, which offers a quick and flexible recording medium, capable of recording from a variety of angles.

A number of important points must be considered when designing a recording system and when completing records:

- Records must always be kept up-to-date and as complete as possible. The importance of keeping records current is best understood by thinking the unthinkable - what would happen if you were hit by a truck tomorrow? Would someone else find your records complete and easy to use?
- Linked to the above, records should be clear and complete enough that anyone can understand them, even many years in the future.

Daily Notes

The daily notes are one of the major segments of the recording system. The notes should provide a running account of everything that is happening in the on going excavation, particularly of progress and strategy of excavation. Because even small points may later be crucial to explaining some aspect of the work, it is best to record as much potentially relevant information as possible.

The bare minimum of information that should go into field notes includes weather and work conditions, names of people present, the objectives of excavation, methodology used and the reasons behind use, and a complete description of findings.

Guidelines for taking Field Notes
By Jenn Babiarz and Lisa Kraus

ALWAYS INCLUDE THE FOLLOWING INFORMATION:

1) **Site Name and Number**
2) **Names (Your name, the names of the people working in the unit with you)**
3) **Date**
4) **Weather conditions (BE SPECIFIC: Cloudy? Sunny? Cloudy then sunny? Partly/mostly cloudy/sunny/rainy/stormy etc??)**
5) **Unit #, or, if you are not working on a unit, the name or # of whatever it is you ARE working on**
6) **Where the unit/feature/whatever is located on the site. Include both grid coordinates of the NE corner and a physical description of the location (ie, "next to the well".)**
7) ***THINK.***
8) **Describe the day's events. Use the following topics as a guide:**

    a. **How many levels were excavated today?**
    b. **Include information about any decisions (yours, your colleagues', and your supervisors') that were made concerning this unit**
    c. **How have perceptions about this unit or feature changed from yesterday?**
    d. **Did anyone make any observations about anything pertaining to this unit? If so, include these comments (yours, your colleagues', and your supervisors')**
    e. **Were there any notable finds? If not, note that artifacts were consistent, or that no artifacts were found.**
    f. **Mention any associated features.**

Sample Field Notes:

June 15st, 2006
18QU977 Wye Hall - Field School 2006
Lisa Kraus, Jenn Babiarz, Matthew Palus
Field Notes

This morning was cloudy and looked like rain, but things cleared up around noon and it's been very sunny the remainder of the day.

Unit 1, N1100 E1285, just north of Structure 1

Today we opened Unit 1. Jenn and Matt thought it would be a good idea to place this unit slightly to the North of the remains of Structure 1, to see if we could define a corner of that structure.
We excavated 5 levels today. Before we excavated, there were no artifacts apparent on the surface. Level 2 contained a high percentage of ash and charcoal, and we all felt it looked like the remains of a significant fire. No identifiable artifacts were found in that layer.
In Level 5 we found ten pieces of tin-glazed earthenware and twenty pieces of porcelain, along with...(etc... We get an A!!).

Level and Feature Report Forms

Just as levels and features are the basic units of stratigraphic excavation, the level and feature report forms are the basic unit of the recording system. The report form should contain all of the data necessary for an understanding of its particular level or feature. It provides space for a description of the deposit, including its location and measurements; the process and progress of excavation; its stratigraphic relationship to other deposits; the materials recovered; an index to other sources of information about the deposit; and an interpretation of the dating and function of the level or feature.

The level report form is a two sheet form which is pre-printed on front and back. The headings on the form are designed to standardize the recording and remind the excavator of the kinds of information that should be recorded. They are not, however, all-inclusive, and a second page will sometimes be necessary for additional information or where large numbers of artifacts are

Interpretation. Identification of the deposit should be made, along with analysis of origin and function. When such interpretations are made, the evidence upon which they are based must also be noted. Dating and interpretation based on artifact content may be discussed. In general, the cultural and archaeological significance of the level should be addressed here. Basically offer a field assessment of the deposit you have just removed. Was it fill or, perhaps, subsoil? Was it a post-hole, or a builder's trench?. Was it sheet deposit with yard scatter? These are only a few of the many possibilities of interpretations for deposits. You will become familiar with the many types in the field.

Terminus Post Quem (TPQ). TPQ means the date after which the level was deposited. Usually we use key datable material like ceramics or glass to offer TPQ's in the field. Always make at least a best guess. This will allow you to see how intact the strata are as they should, ideally, have earlier and earlier TPQ's as you continue to descend. A list of TPQ's for several artifact types is included in this manual.

The bottom of the form allows for the report form to be easily cross-referenced with other recorded data. At the close of every level and feature photos are taken. In this space please record the roll and frame numbers given to you by the supervisor who takes the shots. Please note whether a soil sample was taken in the process of excavation. Record the drawing numbers, if any, that refer to this level or feature. Also indicate what pages in the daily notebook correspond with this form.

On the back side of the level forms and the front of the feature forms there is a 5" by 5" grid. In this space you will make a scale plan drawing (1":1') of the base of the deposit being recorded. Please be sure to indicate north and fill in any of the spaces allotted for information on you, the unit and the level. Techniques of drawing are presented below.

Labeling Artifact Bags

Artifact bags have no preprinted label for you to fill out like some of the other paperwork, however there is a standardized way to record the provenience of collected artifacts. Without the following information, the value of artifacts as data is dramatically diminished. In fact, artifacts without the following kinds of information are rarely worth collecting or worth holding onto. Labels should be marked on the bag with an indelible marker (a Sharpie) in the following manner:

Be sure to include all of the following information:

Bag Number (in the upper right corner)
Site Number, Site Name
Date
Initials of all excavators
Unit #, Grid Coordinates
Unit Level

which simply cannot be captured on film. There are two major types of field drawings, namely plan and profile drawings.

PLANS record excavated areas as seen from above. They provide a measured record of the horizontal relationships between parts of an entire excavation unit. PROFILES are drawings of stratigraphy along a vertical plane. The four sides of each excavation unit are usually drawn, providing a stratigraphic record of four vertical slices through the site. Additional profiles will be drawn within a unit when stratigraphy that does not show up in the main section must be recorded.

Plans

Plan drawings must be done at intervals as excavation progresses, showing every important feature from above. Thus they are the most numerous type of drawing. When excavation is moving quickly, it may be necessary to drawn new plans at the beginning of each day. Major elements from the previous day's plan may be traced, however, so the process is not quite as time consuming as it might appear. All plans should be done on the level forms or on graph paper.

Always label drawings before you start to draw. After the drawing is labeled, label all corners of the unit with their respective grid coordinates and note any datum points in use, along with their elevations. Elevations can be placed right on the drawings with the place of measurement marked with a triangle (e.g. 3.42'). Make sure that the instrument Height is noted. North should be placed at the top of the page and indicated with an arrow.

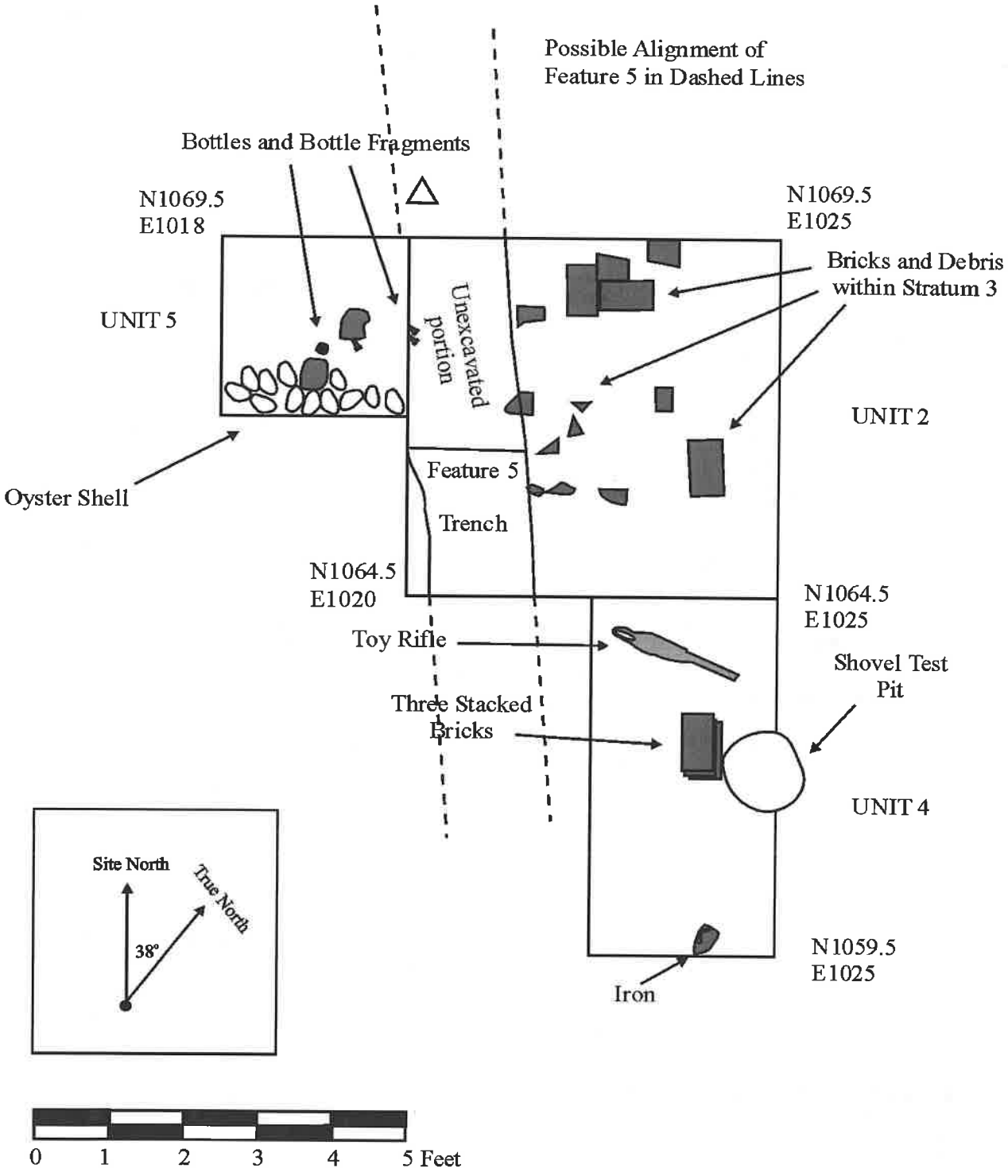
Measuring points to be drawn

In addition to plotting the perimeters of level or feature on a plan, all rocks, tree roots or other items bigger than one or two inches in diameter are drawn. It is not enough to simply sketch these items in; a number of points must be measured for each item so that it can be accurately plotted. There are a number of ways of taking these measurements.

Trilateration - Another method of plotting is trilateration. Here two or three tape measures are stretched from different corners of the unit to the point and the distance noted. Tapes must always be held level, with no slack. Hang a plumb-bob down to the point and read the measurement at the point where the line of the plumb-bob intersects the tape. Once the two or three measurements have been taken, a compass is used by the person drawing to swing arcs the correctly scaled distances on the drawing from each corner. The point at which the arcs intersect is the point measured. Three measurements are more accurate than two, but two are adequate as long as the angle formed by the intersection of the tapes over the point is neither too acute nor too obtuse (because the arcs will tend to overlap, rather than intersect).

Offsets - Another method of preparing a plan is to use "offsets". Here a tape measure is stretched along one edge of the excavation unit. Another tape is then used to measure distances from this edge of the unit to points you want drawn. If you hold one tape at a right angle to the edge of the

Sample Plan Drawing 1



Profiles

Profile drawings are set up the same way plans are, and labeled with the same information. Make sure that you clearly specify which side wall of the unit is represented.

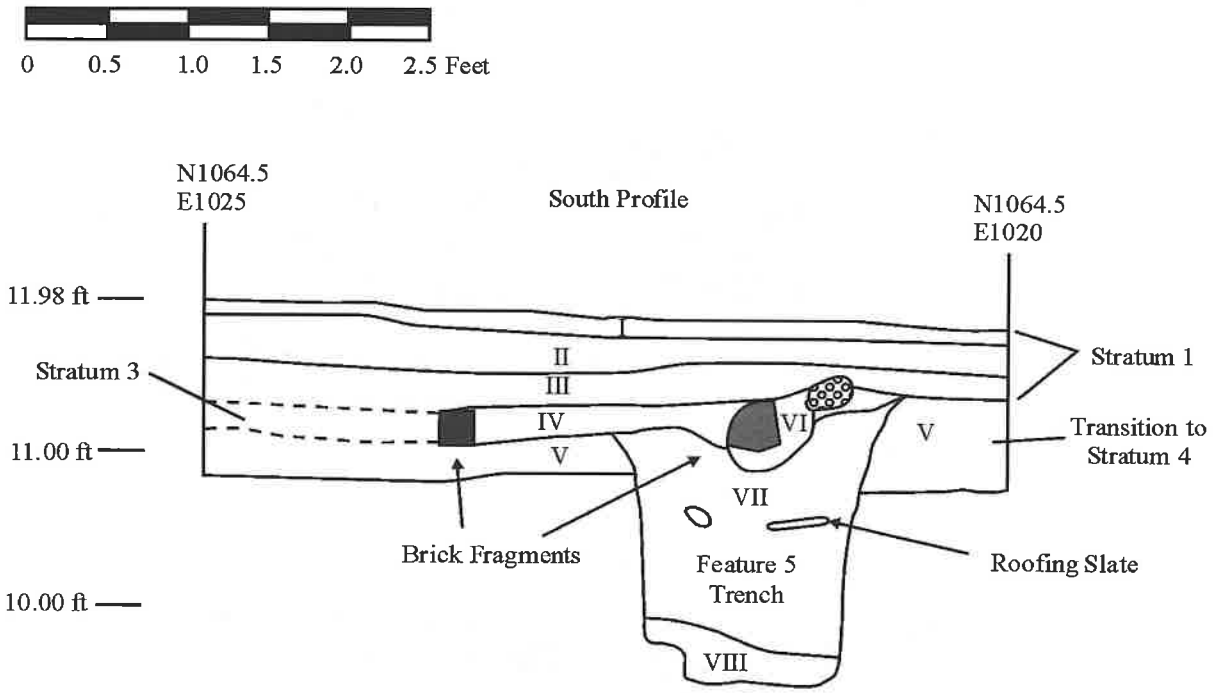
Before a section can be drawn, a datum line must be established across the face of the section. Usually two nails are put into the section, one at either end, and a level tape is stretched between them. This datum line should be noted on the drawing by lightly drawing an "x" at each nail. One end of the datum line will start at zero on the tape, and if this line is matched up with the gridded underlay, the graph marks can be used as a guide for plotting measurements. Sections are drawn at a scale of 1":1'.

The limits of excavation are then marked off and the top or ground surface of the profile is plotted. The usual procedure is for two people to work together, one taking and calling measurements to the other, who does the drawing. Each level is drawn in, one at a time, as well as any rocks, artifacts, or other inclusions which appear in section. The caller uses a tape or folding rule to measure down or up from the datum line to each point plotted. She or he first calls the distance measured along the datum line and then calls the distance up or down to the point from the datum line. Measurements should be taken at intervals close enough to give an accurate picture of the section. One foot is normally the largest interval you should use, although you will often have to take measurements at closer intervals. There is a tendency for profile drawings to end up looking like connect-the-dot pictures. This usually means that not enough points are being called, or that the person drawing is not keeping an eye on the profile as it is drawn. It is not enough to simply plot the points and connect them. The drawing should look like the section it is supposed to record.

It's worth emphasizing that profile drawings represent a vertical cross-section through the site, along a vertical plane. Since you are drawing what is theoretically a vertical plane, contours of rocks should not be noted, and objects which protrude from the section must be measured at their intersection with the section face. In order to draw accurate sections, sections should be cut cleanly and as nearly vertical as possible.

All levels and features should be labeled on the profile. At the bottom of the drawing a key should be inserted, which describes all of the deposits and explains any symbols which are used on the drawing. Profiles are drawn as they are seen, so strata which are drawn may not always perfectly correspond with levels as excavated. Such situations should always be explained in the margin. Since strata are drawn as they appear at the time of the drawing, arbitrary levels within one stratum should be noted with dashed lines.

Sample Profile Drawing 1



I Topsoil - 10 YR 4/4 dark yellowish brown loam
II Fill Layer - 10 YR 4/6 dark yellowish brown clay loam with occasional brick flecks, low artifact content
III Buried Topsoil - 10 YR 3/2 very dark grayish brown silty loam, soot-stained
IV Demolition Layer/Feature 2 - 10 YR 3/3 dark brown mottled with 10 YR 4/6 dark yellowish brown loam, containing brick, concrete, coal and oyster shell
V Transition to Subsoil - 10 YR ¾ dark yellowish brown sandy loam
VI Fill - 10 YR 4/4 dark yellowish brown sand around brick fragments above Feature 5
VII Feature 5 Fill - 10 YR 3/3 dark brown mottled with 10 YR 4/4 dark yellowish brown jumbled loam
VIII Lower Feature 5 Fill - 10 YR 4/3 brown silty loam, possible alluvial deposit

Blogging

Your field notes let us understand what you have been finding and what you learned. As part of your course requirements, you will be asked to compose a blog post on any topic you would like pertaining to the work that you are doing at the time. This lets the public understand what you have been finding and what you learned. If you are not sure what to write about, explain what you did that week as though you were describing it to a member of the public who happened to visit our site. This will appear on the AiA Blog, managed by Beth Pruitt, and will be visible to the public.

1. Go to http://blog.umd.edu/aia, and log in at the bottom of the page using your UMD username and password. If you have trouble logging in, let me know *before* your blog post is due. This means you should try to log in as soon as possible. On the left side after successfully logging in, you will see your options.

2. First, go to "Authors and Users" under the "Users" tab. Find your username and click "Edit." Type your name where it says "Nickname" and choose this as the name to display publically. Click the update button. "Posted by Beth Pruitt" looks far more human than "Posted by epruitt."

3. To create a post, go to "Add New" under the "Posts" tab. The title will go in the first text box and the post content in the one below that. There are two tabs, "Visual" and "HTML," just like you would see with many e-mail clients. If you do not know HTML, use the Visual option. I would recommend typing the bulk of your post in a word processor, then copying and pasting after you've edited it. *Remember: save early, save often.*

4. On the right side, you have options to assign Tags and Categories to your post. These make the blog a little more organized and allow users to view particular topics of interest. The Category for your posts will be "Field School." Add tags that would be useful keywords for users browsing the blog. Choose, or create, tags that summarize what your post is about. They should be single words or short phrases, and should be general enough that others would also use them, but not so general that every post would have that tag. (Example: an "Archaeology in Annapolis" tag would be silly, since everything posted on the AiA Blog will in some way be about Archaeology in Annapolis.) Please always use the "student post" tag for your posts.

5. I would encourage you to include pictures with your post. We maintain a Flickr account (http://flickr.com/annapolisarch), and we will be adding the pictures that you and others in the field school take to it throughout the summer. Unfortunately, Wordpress will not allow you to add images without an administrator's approval, so just add the URL of the image from Flickr or another source where you wish it to appear in your post.

6. When you have finished, click the "Save Draft" button. The post will be published once it is approved by a blog administrator.

3. LABORATORY PROCEDURES

Archaeology laboratory procedures are intended to facilitate the flow of artifacts and cultural material from excavation to analysis and report writing without loosing artifacts or information about the provenience of excavated materials.

Cultural material in the field are bagged by provenience--e.g. site number, unit number, stratum/level number, and/or feature number, excavators initials, and date of excavation. Archaeology in Annapolis assigns a bag number for each separate provenience. All materials from one provenience/bag number remain together in the field and in the lab.

Bags come into the lab and are checked in on the Bag register. This way we know which bags have left the field and are now the responsibility of the lab personnel. Artifacts from each bag/provenience will then be washed, allowed to air dry for at least 24 hours, re-bagged in archival quality plastic bags, labeled, and then cataloged. Archaeology in Annapolis procedures conform to current State of Maryland guidelines for the processing and storage of archaeological materials. Should such standards change in the future Archaeology in Annapolis may review and change lab procedures.

Washing: Wash the artifacts from one bag at a time, do not open several bags at once, and do not mix the artifacts from different bags. Before washing the artifacts from a particular bag write your initials and the date in the washed column on the Bag Register. This way we know what stage in the lab process different bags are.

Mark a screen from the drying rack with the provenience of the bag you are washing, and make sure to keep the contents of your bag separate from the contents of other bags.

When you have two or more proveniences/bags on a screen you must separate the artifacts on the screen by masking tape and clearly indicate which portion of the screen contains the artifacts of a particular provenience. Tape the field paper bag with all original provenience information to the front of the portion of the screen on which the artifacts are drying.

Before you wash the artifacts empty the bag onto newspaper and sort out the artifacts which can be washed from those that are too fragile to be placed in water.
Plaster, mortar, daub, and charcoal are never washed.

Metals usually are **not** washed, with the exception of mud encrusted, corroded nails.

Glass and ceramic usually **are** washed except when they are decomposing, or have fragile labels or decoration that might flake off or be damaged in water.

Wood and bone usually are washed unless they are decomposing or appear fragile.

Artifacts are washed with toothbrushes in water. Wire, pipe cleaners, and other tools are available to clean pipe stem bores and other objects. Do not soak artifacts in water. Change wash water regularly. Check water tubs for small artifacts. When you change the water pour it

Every label should consist of the site number, the unit number, the feature number (if applicable), and the level. Letters that designate a unit level are upper case, letters that designate a feature level are lower case. Feature numbers are preceded with a lower case f.

Example: Slayton House site, unit 25, level A = 18AP74.25.A
Slayton House site, unit 26, feature 166, level B = 18AP74.26.F166b

If the artifact is too small the label may be abbreviated or omitted. Ask the lab instructor before doing any of the above.

After labels have been written on the artifacts, and the ink has dried, a clear sealant must be placed over the ink to protect the label. Let the sealant dry completely before re-placing artifacts in their bags.

All provenience information must also be written on a tag of acid-free paper, in black permanent ink. The tag is placed in the large provenience bag. All labeled artifacts are placed in acid-free storage boxes.

Cataloging: Catalogs list all the objects recovered from each provenience, and summarize all known information about any particular artifact.

Before cataloging any particular provenience/bag remember to put your initials on the Bag Register next to the bag number that you are going to catalog.

Guide to Using "Bayly"
Sokkia SET 4BII Electronic Total Station

PRECAUTIONS

- When it is not used for a long time, check it at least once every three months
- Always remove the battery before returning it to the case

Battery Codes
0 = less than 1 hr
1 = less than 1.5 hrs
2 = less than 5 hrs
3 = less than 9 hrs

ALWAYS CHECK THE PRISM to make sure it is securely attached to the pole
Replace the cap after use!

Steps for Use:

1. Set up and center tripod over datum
2. Level instrument
3. Rotate whole instrument 360 degrees
4. Rotate lens 360 degrees
5. Input instrument height - *shift* 7

The blacksmith's workshop was a large, one-room building, much like a barn. There were usually built of brick in order to lessen the chances of a fire. Inside were all the implements and materials needed for production, including the forge. The forge was a large fireplace in which the blacksmith heated metal. The shop was kept dark at all times so that the blacksmith could judge the temperature of the metal. The intensity of the glow of the heated metal allowed him to determine the consistency of the metal.

The anvil was one of the most important tools the blacksmith had at his disposal. Examples have been found dating back as far back as the late Neolithic. An anvil is simply a large block of metal, though in the last few hundred years, they have usually been made from wrought or cast iron. The anvil provided a flat, strong surface on which heated material could be placed and hammered. Anvils have one rounded ended called a "bick" which looks somewhat like a thorn. This end is used to shape rounded pieces of metal.

Anvils often have "hardie" and "pritchel" holes. Hardie holes are square holes cut into the top of the anvil. They are so named because they hold a tool called a "hardie". Hardies are used for cutting or carving, and resemble a small chisel. Pritchel holes, on the other hand, are round and hold a pritchel. Pritchels are used to makes punches in metal, primarily in the manufacture of horseshoes.

The hammer were an essential part of the blacksmith's toolkit. It was very simple: the head was made of a strong metal, and the handle was made of wood so that it would not become too hot. Its primary use was in pounding the heated material.

A blacksmith usually had several tongs of varying size and shape. These were used to transport the heated material, and to hold it in place while working on it. If the material were small, the blacksmith might use long tongs so as to keep a safe distance. The different types

Rhenish Stoneware

Stoneware was developed in Germany at the end of the 13th century, and was first exported to England during the 14th century. During the 17th century, Rhenish stoneware was the most durable pottery available in Western Europe, and thus increasingly large amounts were exported to England, and thence to America. Rhenish stoneware was used primarily for storage, service, consumption, and sanitary purposes. The body ranges from off-white to various shades of brown and gray. Rhenish stonewares are notable for their often elaborate decorations, with applied spring molds being perhaps the most characteristic element. Other common decorative techniques include incising, stamping, and rouletting, as well as cordoning around rims, necks, and bases. From the early 16th century through the mid-18th century, one of the most typical designs was the "Bartmann" face mask, also known as "Bellarmine" or "graybeard." In the early 18th century, a common decoration was stamped and incised around a central moulded medallion containing the cipher of the English monarch beneath a crown and over a winged cherub. The cipher was usually either AR for Queen Anne (1702-1714) or GR for George I (1714-1727) or George II (1727-1760). Until the end of the 18th century, Rhenish potters did not use slip-cast moulds, which makes this ware different from many others. Trade began to decline in the mid-17th century, as the development of English brown stoneware greatly diminished the demand for Rhenish stoneware. However, it was still imported in limited numbers into the 1770s, and experienced a revival around 1860.

English Brown/Fulham Stoneware

English brown stoneware was first produced by John Dwight in Fulham, England in 1671. Until this time, there had been a Rhenish monopoly over the manufacture of salt-glazed stoneware. The characteristic form is a tavern tankard or bottle. The grainy body is generally buff to light gray with small dark inclusions, covered at least partially with a speckled brown slip and salt glazed. The dark inclusions and graininess serve to distinguish Fulham from most German products. The majority of mugs and bottles are undecorated except for simple turned bands or cordons. Pint and quart-sized mugs are normally stamped below the rim with an impressed, crowned WR (William III Rex), indicating that they conform to government capacity standards. This stamp was used as late as 1792, and the initials AR (Anna Regina) or GR (Georgius Rex) are occasionally seen. Vessels could also be incised with a date and the name of the tavern keeper. By the 1750s or 1760s, molds and printers' type were being used to add the names, rather than hand incising. Sprig-molded tavern signs also appear on vessels. On larger pieces, the sprig designs could include figures, hunting scenes, buildings, and trees. Nearly all Fulham-type stoneware found on American sites will date between ca. 1690 and 1775, except perhaps for areas occupied by the British during the Revolutionary War.

American Stoneware

By the second quarter of the 18th century, William Rogers of Yorktown, Virginia was producing brown stoneware mugs, bottles, and pitchers as good as those manufactured in England at the time. In the 1730s, Anthony Duché was making the first American cobalt-decorated gray stoneware in Philadelphia. By the end of the 18th century and well through the 19th, American-made "blue and gray" stoneware was widely used, mostly as larger items such as harvest bottles, cream pans, storage crocks, pinched-neck pitchers, and cuspidors. The later American wares were generally adorned with cobalt alone, either painted in freehand or applied

late creamware by the way in which the glaze appears blue in crevices of foot rings and around handles; creamware glaze appears green or yellow. The earliest transfer-printed "willow pattern" and related chinoiseries occur on pearlware. The "willow" pattern was first developed by Thomas Minton at Chaughley in 1792. From there it was shipped to China for use on export porcelain. The standard willow pattern includes one bridge, a cottage or mini-pagoda, three figures, a boat and two birds, surrounded by a geometric border. The combination of these elements tells a story. Chinese versions of the willow pattern on porcelain were hand-painted, while the English versions were usually transfer-printed in blue. Production of pearlware had ended by 1840.

Creamware

Thomas Whieldon and Josiah Wedgwood worked to develop creamware throughout the 1750s, and it was in 1762 that Wedgwood perfected the technique. Creamware is a clear lead-glazed, refined earthenware with a cream-colored body, and was common in all tableware forms. Decorative pieces such as figurines, latticework baskets, and fancy centerpieces, plus toiletry ware, especially chamber pots, were also made. The vast majority of early creamware is plain, though often molded or slip-cast. It may be assumed that the earliest pieces are of a deeper yellow than the later. The "feather-edged" technique was used on the rim starting around 1765. In the mid-18th century, the main decorative techniques used were overglaze painting and overglaze bat transfer printing, often in imitation of Chinese porcelain. Transfer printed designs were also painted with overglaze enamels. Underglaze painting with cobalt blue became more extensively used after 1780. Vessels with annular or banded decoration, also called "dipped" wares, were manufactured in the last quarter of the 18th century.

Yellow ware

Production of yellow ware began around 1840, peaking between 1870 and 1900. Yellow ware has a buff to dark yellow fabric, sometimes vitrified, with a clear lead-glaze giving the vessel a yellow appearance. In general, this wear was used for kitchenwares and storage vessels. By the mid-19th century, there were many forms and decorations used for yellow ware. Cups, pitchers and bowls were slip-banded in different colors, mostly white or blue. Mocha designs over a white slip were also used for this ware. Later variations featured more elaborate designs with moulded relief, underglaze painted, finger trailing, and luster. Though most yellow wares found at American sites were produced in England, there were several producers in North America who operated from the mid-19th century until about 1930. The popularity of yellow ware declined as white wares began to dominate the market, but production of yellow ware continued into the 20th century.

October 15, 1992

ARCHAEOLOGY IN ANNAPOLIS
ARTIFACT CATALOG COMPUTER CODES

(Where XX appears, substitute codes from attribute list)

CERAMICS

Earthenware 100000

Coarse Earthenware 120000
- Unglazed (describe in comments) 120001
- Aboriginal (describe in comments) 123000
- Iberian Storage Jars (1763)c.1745-1780--ext wash,int clear glaze [p.143] 124000
- Interior Lead Glazed (describe in comments) 120002
- Exterior Lead Glazed (describe in comments) 120003
- Int/Ext Lead Glazed (describe in comments) 120004
- Black Glazed Redware (only true black glaze) 127100
- Staffordshire Manganese Mottled (late 17th, early 18thc) buff body streaked brown glaze, very porous..... 126000
- North Devon Gravel Tempered Ware (1713)c.1650-1775--red to gray body, apple green glaze 121100
- Buckley Ware (1746)c.1720-1775--streaked body, black glaze [pp.132-133,135] 122000
- Coarse Agate (1780)c.1750-1810--marbled body--date excludes doorknobs, [p.132] 129500

Slipwares 129000
- Slip Combed (1733)c.1670-1795 [pp.107,134-135] 129005
- Combed + Dotted (1733)c.1670-1795 [pp.107,134-135] 129400
- Trailed (describe in comments) 129006
- North Devon Sgraffito (1680)c.1650-1710--incised dec [pp.104-105] 129100
- American Brush Trailed (describe in comments) [p.99] ... 127500
- American Brush Trailed w/ copper green dec [p.99] 127508
- Other Coarseware Attributes (describe in comments) 120009

Refined Earthenwares 130000

Tin Glazed Earthenware 112000
- White Glazed (1720)c.1640-1800 (may have blue tint) [p.109] 112011
- Blue Dash Chargers (1670)c.1630-1720--rim dec [pp.108-109] 112012
- Identifiable Design Motif (describe in comments) 112013
- Manganese stippling (green or brown stipple dec) 112016
- Blue on White (other) 112017
- Polychrome Pallette (describe in comments) 112018
- Other (describe in comments) 113200

CERAMICS (CONT.)

HIGHLY FIRED REFINED WARES (these types of ceramics are under debate as to whether they are earthenware or stoneware) . 250000

Black Basalt (1785)c.1750-1820--dry, black body [pp.121-122] 2361XX
Rosso Antico (1733)c.1690-1775--dry, red body; sprig molded [pp.121-122] 236252
Engine Turned (1769)c.1763-1775--dry, red body; incised lines [p.121] 236251
Jasper (1774 to early 19thc) dry, color tinted; sprig molded 236352
Lead Glazed Refined Redware 2365XX
Jackfield (1760)c.1740-1780--red to purple body, black glz [p.123] 2370XX
Astbury (1738)c.1725-1750--red body, white sprig molding [p.123] 238052
Shaw (1741)c.1732-1750--red body, int wht slip [p.118]. 2390XX
Ironstone (1870) c.1840-1900, [p.131] 136000
Undecorated 136020
Rockingham (19thc) hard, buff body, mottled br glz 137500
Undecorated 137520

STONEWARE

Coarse Stonewares 200000
Gray Bodied 220000
rhenish blue and gray (1668)c.1650-1725--w/manganese dec [pp.280-281] 221047
rhenish blue and gray 221048
rhenish blue and gray (1713)c.1650-1775--incised [pp.280-81] 221050
rhenish blue and gray (1738)c.1700-1775--stamped or geometric designs [pp.284-285] 221048
American blue and gray (mid 18th-19thc) thick cobalt dec [p.101] 211000
w/albany slip (int slip--indicates later ware)[p.101]. 213000
Hohr (1700)c.1690-1710--plain gray, incised or sprig molded [p.284] 220050
Other gray bodied (describe in comments) 220009
Frechen (1625)c.1550-1700--Bellarmine Bottles [pp.55-57] 222000
Brown Bodied **229999**
English Brown (1733)c.1690-1775 [pp.112-14] 230000
Burslem (1738)c.1700-1775--crouch ware [p.114] 232000
Fulham (1733)c.1690--1775--mugs and tankards [pp.112-114] 233000
American Brown (mid 18thc) [p.100] 212000
Other Brown Bodied (describe in comments) 230500

HANDPAINTED DECORATIVE ATTRIBUTES

No further analysis 00
Undecorated 20
Blue on White 21
18thc. pallette (peasantware) 22
19thc. pallette (reds, etc...) 23
Stenciled 24
Sponged 25
Luster Glazed 26
Finger-trailed 27
Mocha 28
Banded 29
Overglaze Painting 30
Gold Gilding 31

TRANSFER PRINTED DECORATIVE ATTRIBUTES

No Further Analysis 00
Overglaze Transfer Print 32
Underglaze Black 33
Underglaze Blue 34
Underglaze-other 18thc colors 35
Underglaze-19thc colors 36
Flow Blue 37
Decalcomania 38
Underglaze Green 39
Underglaze Red 40

OTHER DECORATIONS

Incised/applied design 50
Engine-turned 51
Sprig-molded, relief dec 52
Molded rim (identify design) 53
Molded 54
Incised 55
Applied 56

GLASS

Glass general 600000

Flatglass 609999
Window 610000
Bull's eye 610001
Mirror 660000

Bottle Glass 629999
Wine/Liquor Bottle (dk olive green) 630000
wine/liquor neck 630001
wine/liquor base 630002
wine/liquor frag 630003

Round Bottle (whole) 630084
round neck 630081
round base 630082
round frag 630083

Case Bottle-square (whole) 630074
case neck 630071
case base 630072
case frag 630073

Medicinal Phial-18thc.).....621000-16*
Medicinal Bottle-19thc. (see Hume, p.73).....620017-21*

Blown-in-Mold Bottle (whole)..... 631000
blown-in-mold neck 631100
blown-in-mold base 631200
blown-in-mold frag 631300

Machine Made Bottle (whole)..... 632000
machine made neck 632100
machine made base 632200
machine made frag 632400

Drinking Glass 640000
Wineglass (whole) 641000
wineglass frag 641090
wineglass bowl 641091
wineglass stem 641050-75*
wineglass base 641085-89*
(see Noel Hume, p.190)

ARCHITECTURAL MATERIALS

Nails General	710000
Handwrought	711000
rose head	711001
L-head	711002
headless	711003
Cut	712000
Modern (wire)	713000
Plaster	720000
Shell Tempered	721000
Shell Tempered, painted	721001
Shell Tempered, lath marked	721002
Horse Hair Tempered	721003
Modern	722000
Mortar	730000
Shell Tempered	730001
Modern (concrete goes here)	730002
Stone	
Stone, Natural (bog iron goes here)	750000
architectural or landscape	
worked	752000
paving	752001
step or landscape	752002
other building related	752003 Slate
Worked for Flints	752004
Worked, other	752005
Prehistoric Materials	880000
Stone debitage	752006
Stone Tools (specify)	752007
Stone Tool Fragment	752008
Brick	
Brick General	760000
wall brick	760001
well brick (curved)	760002
coping brick	760003
marked	760004
paving brick	760005
fire brick	760006

Organic Materials (cont)

Worked or Shaped Bone	881500
form identifiable	881501
Worked or Shaped Horn	882000
form identifiable	882001
~~Coal/Clinker~~ Slag	870004
Coal	870005
Clinker	870006
Bog Iron (same code as stone, natural)	750000

Metal Materials ~~(Slag)~~ 900000

Iron	910000
form identifiable (other than nails)	910001
Brass	920000
form identifiable	920001
Pewter	930000
form identifiable	930001
Lead	940000
form identifiable	940001
debitage-puddles	940002
printing type	943000
Copper	960000
form identifiable	960001
Silver	970000
form identifiable	970001
Other Metal	950000
form identifiable	950001

Synthetic/Recent Materials 980000
Synthetic/Recent Samples 981000

Mixed Materials	990000
form identifiable	990001

Forms Key

0000-1000 = General Ceramic Attributes

5000-5999 = Glass General/Table Glass

6000-6999 = Storage Vessels

7000-7999 = Cooking

8000-8999 = Misc. Ceramics and Glass

9000 = Misc Artifacts

- 9100-9199 = Architectural/Hardware
- 9200-9299 = Kitchen
- 9300-9399 = Clothing
- 9400-9499 = Personal
- 9500-9599 = Tools
- 9600-9699 = Weapons
- 9700-9799 = Harness
- 9800-9899 = Decorative
- 9900-9999 = (unassigned)

Form codes below may be grouped by material rather than numerically i.e. Flower Pot appears under ceramic.

ABBREVIATIONS CONTINUED

METALS

Aluminum -- Al
Copper -- Cu
Gold -- Au
Iron -- Fe
Lead -- Pb
Magnesium -- Mg
Silver -- Ag
Tin -- Sn

SPECIFIC PATTERNS/EDGE DECORATIONS

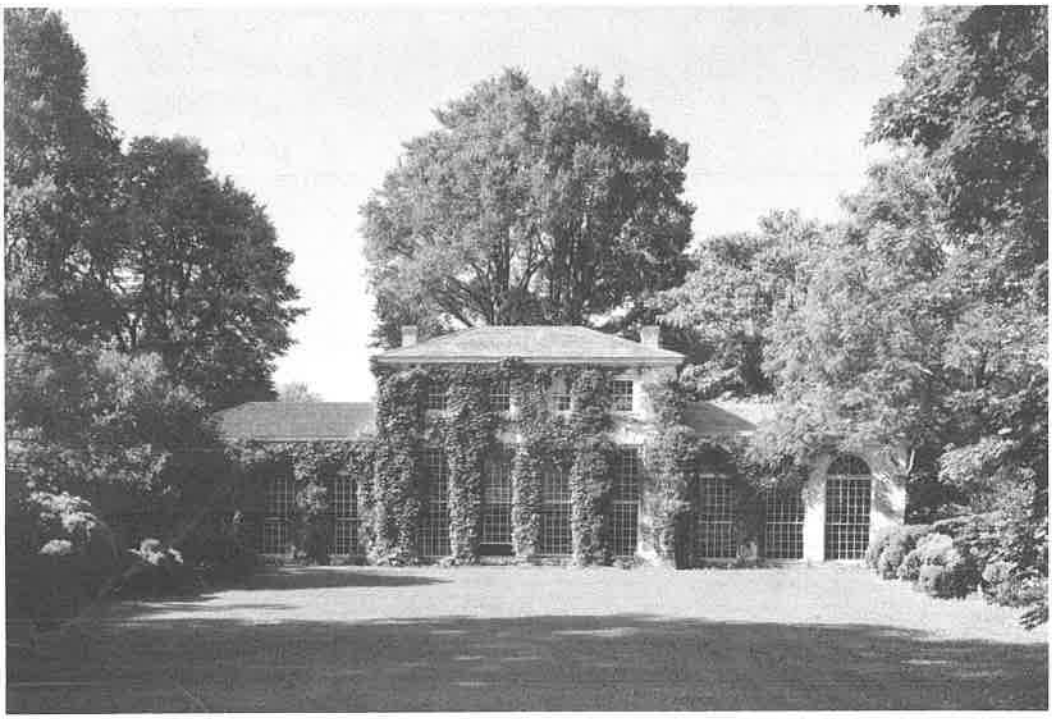
Barley Pattern -- Brlypttrn
Basketweave -- Bsktwve
Bead and Reel -- B&R
Beaded -- Bead
Diamond -- Dimnd
Dot, Diaper, and Basket -- D.D.B
Feather Edged -- Fthredg
Fluted -- Flut
Queen's Shape -- Qshp
Royal Pattern -- Rylpttrn
Scalloped -- Sclpd
Shell Edged -- Shledg
Spearhead -- Sprhd
Wheat Pattern -- Wheat

PLACE CODES

Removed for Conservation -- RFC (02)
Removed for Exhibit -- RFE (03)
Removed for Study -- RFS (04)
Removed for Crossmending -- RFM (06)
Water Screen -- WS

University of Maryland
Field School in Urban Archaeology
ANTH496/696

FIELD AND LABORATORY MANUAL



Historic District of Annapolis and Wye House

Summer 2012

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(Cover Image: Historic American Buildings Survey Jack E. Boucher, Photographer June 1963 SOUTH (FRONT) ELEVATION, HABS, MD,21-EATO.V,2A-4, accessed via http://memory.loc.gov)

subdivided this land and initiated its urban development. Over the subsequent years, the area filled in with dwellings that also served as artisanal workshops, taverns or boarding houses.

During the last decades of the 19th century, and the first quarter of the 20th century, there was an increase in new building construction, as well as an increase in homes and boarding houses built to house working class Annapolitans in this portion of the historic district. During this time many of the larger 18th century lots were subdivided into smaller parcels, with narrow street frontages, on which attached row houses were built. The houses at 99 East Street and 9 and 11 Cornhill Street reflect this development. During the late 19th and early 20th century, East and Cornhill Streets were occupied predominantly by African American residents, and the area became a well known African American enclave in the City. At this time, Annapolis was a legally segregated community and Jewish people also faced restrictions and were not allowed to buy homes in certain neighborhoods[1].

The James Holliday House (99 East Street)

The property at 99 East Street, Annapolis, Maryland, was originally part of the land surveyed and designated for Governor Francis Nicholson in 1696. After the land records were destroyed in 1704, Thomas Bordley claimed part of Nicholson's land. In 1770, Charles Wallace bought from Bordley the land extending from the foot of Church Street to State Circle. In that same year, a portion of the land from Cornhill Street and extending through East Street, designated as Lot 3, was leased to William Curie for 99 years. This is the land that corresponds to 97, 99 and 100 East Street. The land remained undeveloped and was sold to Joshua Frazier in 1784. The property passed to Richard Frazier in 1799, and in 1819, the Frazier family was assessed for two lots improved by two buildings and worth a total value of $1000. One of those houses was most likely the house at 99 East Street, which means that the building was most likely built between 1799 and 1819. In 1820, Walter Cross bought Lot 3 after Richard Frazier died. Five years later, 99 and 97 East Street were sold to Harriet Selby and in 1826 101 East Street was sold to Eliza Gassaway. Harriet Selby's property was then sold to James Iglehart in 1847. On August 14, 1850, James Iglehart sold 99 and 97 East Street to James Holliday, a freed African American man who was working for the Naval Academy, for $650. Four years later, Holliday purchased 101 East Street for $100 (MIHP 1967 AA-492).

James Holliday was born c.1809 and was a slaved owned by Nicholas Watkins until October of 1819 (Maryland State Archives; Freedom Records, Certificate of Freedom 1831-1845, p. 343). Holliday appears to have worked for Colonel John B. Walbach for a period of time before he started working for the U.S. Naval Academy (Anne Arundel County Court, Land Records WSG 26, 1841-1843, f. 0298, MSA CE 76-70; 1842). James Holliday worked for the Naval Academy as a steward messenger for every superintendent from 1845, when the Academy opened, until his death in 1882. His wife, Matilda Simms Holliday, was born in 1821, and was a slave who was manumitted by Richard Wells in 1826 (Anne Arundel County, Register of Wills, 1841). The

[1] Jopling, Hannah (1998) Remembered Communities: Gott's Court and Hell Point in Annapolis, Maryland, 1900-1950. In *Annapolis Pasts: Historical Archaeology in Annapolis, Maryland*, ed by Paul A. Shackel, Paul R. Mullins, and Mark S. Warner. Knoxville: University of Tennessee Press.

daughter Eleanor, and 99 East Street, known as "the Home Place" to Eleanor and Lucy Louis (Anne Arundel County, Register of Wills, File No. 3303, OBD 3 190, 1923).
Lucy Louis Briscoe married Joseph Anthony Brown in 1923 at St. Mary's Catholic Church in Annapolis (St. Mary's Catholic Church Archive, Marriage Book #3). Joseph Brown was a custodian at St. Mary's whose family had been members of the church since at least 1878 (correspondence with Dee Levister, March 3 2010; St. Mary's Catholic Church Archives, Baptism Records). Lucy Briscoe Brown was a public school teacher and lived at 99 East Street her entire life (1920 Census).

Figure 2: Joseph Anthony Brown (c. 1912)
Photograph Courtesy of St. Mary's Catholic Church, Annapolis, MD

Eleanor Briscoe was a dressmaker, like her mother, and married Cosme Portilla, a Filipino cook who worked for the US Navy, in 1919 (St. Mary's Catholic Church Archives, Marriage Book #3; 1910 Census, 1920 Census; e-mail correspondence with Dee Levister March 3 2010). Eleanor and family lived at 99 East Street until Eleanora sold her portion of the house to her sister in 1926 for $10 and moved to Pennsylvania (Anne Arunel County, Circuit Court, MSA CE 59-344, WMB 34, 1926-1926 f. 0356-7). This gave Lucy and her husband Joseph Brown total ownership of the property.

Lucy Briscoe Brown died in 1959, leaving the house to her husband Joseph (Anne Arundel County, Register of Wills, File No. 10190 HSC 2 549, 1959). Joseph Brown deeded 99 East Street to M. Michael Portilla, who was Lucy Briscoe Brown's godson, and his wife, Eva, in April of 1960, with the condition that Joseph Brown could use and live on the property until he passed away (Anne Arundel County, Circuit Court, Land Records, GTC 1385, 1960, f. 0562, MSA CE 59-1729). Finally, Eva and Marcellus Michael Portilla left 99 East Street to their daughter Dolores (Dee) Portilla Levister, who owns the property today (e-mail correspondence from Dee Levister to the author, 2009-2010).

1. The nature of James Holliday's relationship with the Naval Academy, particularly what his specific duties and responsibilities were and how that affected the family's consumption patterns, their financial situation, and their relative position in the African American community in Annapolis.
2. Is there a visible Filipino component to the archaeology of this property and how does it relate to the relationship between African American and Filipino communities in Annapolis? How did this relationship with the Filipino community in Annapolis influence the identities of the rest of the Holliday family? Why has the Filipino community in Annapolis not been explored further in Annapolis, or on the East coast? Is there an interest among the descendent community to explore this history?
3. How do the consumption patterns of the Holliday family and their descendants compare to other African Americans in 19th and early 20th century Annapolis? How is race and class seen through these patterns and is their a stronger parallel within classes or within races? Do consumption tactics of middle class African Americans in Annapolis reflect a strong identification with the African American community or do they reflect a relationship with the larger middle class in Annapolis?

9 and 11 Cornhill Street

Although Archaeology in Annapolis field schools have excavated on Cornhill Street in the past, this will be the first field season at the properties of 9 and 11 Cornhill. The land Between State Circle and the City Dock, on which East, Fleet, and Cornhill Streets sit, was reserved for Colonial Governor Francis Nicholson in his 1695 plan for Annapolis, but it is unclear how the land was used until it was sold to Charles Wallace in 1770. A local merchant and builder, responsible for the construction of the existing Maryland State House, Wallace subdivided this land and initiated its urban development. After Charles Wallace died, Nicholas Brewer sold his estate. The land that contained 9 and 11 Cornhill was sold to George and Kathina Anne Schwar. A portion of this land was then sold to Frederick Mopp and his wife Julia Anne, in 1846 and four years later, Frederick and Julia Anne Mopp sold the land to Anne Lambden (Liber JHN 2 f. 142; Liber JHN 5 f. 144). Anne Lambden's property was transferred to Anne and John J. Mattison and sold to Joseph S. Basil for $1,350 in 1879. This property encompassed the south side of Cornhill Street bounded by Schwar's Alley.

In the mid to late nineteenth century, there was a single structure, oriented north-south, on this property. It is unclear if this structure would represent 5 or 9 Cornhill, but either way, this structure appears to have been occupied by renters, rather than the property owners. These renters were white fishermen, and lived with their families (1880 Census, p. 10, 13).

In 1985, Joseph Basil and his wife Margaret sold the property to Martin M. Smith for $4,000 (Liber JCB 4 f. 28). The Smith family owned the property for most of the end of the 19th and beginning of the 20th century and are likely responsible for destruction of the previous building on the property, which is still present in an 1891 map, and the construction of the townhomes on the property. When they were first built, these two properties were numbered 5 and 7 Cornhill Street, but by 1903, the numbers had changed to their current numbers of 9 and 11 Cornhill.

Even though this is a new site, we are able to use historical documents to gain a perspective on the properties' pasts and who occupied these houses. From this, we can begin to form research questions to guide our excavations and keep in mind as we analyze the artifacts that we uncover from 9 and 11 Cornhill Street. These include:

1. Are the ethnicities of the immigrants and first-generation Americans visible in the archaeological record? How?
2. What can we learn about working-class American life in the early 20th century during the period of incredibly high immigration before World War I?
3. How was this property used prior to the construction of the late 19th century rowhouses?

Excavations at Wye House Plantation in Easton, Maryland

Introduction

In the summer of 2005, Archaeology in Annapolis and the University of Maryland Field School in Historical Archaeology began an archaeological and historical project at Wye House, specifically in the area called the Long Green, a commons area that contained multiple slave quarters and work buildings.

Prior to our explorations, we consulted various historical, architectural, and archaeological studies that preceded our interest. We also introduced our project to some members of Wye House's descendant community in Unionville. This section of the field manual explains the progress we have made so far, and will introduce our plans for future work.

Historical and Archaeological Research

The historical sources we have consulted, as well as our discussion with the descendant community of the Wye House slaves in Unionville, MD helped to define this project's research approach. Archaeological projects focused on plantations regularly result in the collection of materials pertaining to slave quarters and work buildings. Especially in the last ten years, these materials have been used to reconstruct practical details of enslaved life on plantations, including the cultural practices of enslaved workers. These practices seemed to be of particular interest to the congregants of St. Stephens AME, in founded in Unionville. Some of the specific questions asked included;

1. How did the Lloyds help the slaves (or fail to help them) achieve freedom?
2. How would have the enslaved perceive the plantation landscape and how is this different than how the Lloyds would have perceived it?
3. What were the spiritual practices of the slaves like?
4. How did the Wye House slaves live on a day-to-day basis?
5. What was family life like at the Long Green?

> substantial, stood in the center of the plantation life, and constituted one independent establishment on the premises of Col. Lloyd (1855; 66)."

Another very important work relating to this site and this project is titled "Praise the Bridge that Carries You Over", a memoir compiled by Joseph Sutton (a descendant of Wye House slaves) with anthropologist Shep Krech[3]. Sutton recalls, in this collection, much of the daily reality of the lives of Blacks, enslaved and free, in the late 19th and early 20th centuries. He provides several examples of activities that were outside the purview of the White planters. The threat of violence, harassment, distraction was ever-present, and being caught gathering secretly was guaranteed to be punished, usually by physical violence, and sometimes by murder: "... they couldn't have any enjoyment at night. They couldn't have a gathering. If they had em, they had men round here called theirself white caps or night riders, they'd come break it up" (Krech 1981:6).

Sutton's recollections continue the narrative begun by Douglass, and provide another perspective on this site, one that bridges the time period from antebellum through emancipation and into the 20th century. It is unusual (and we are very fortunate) to have two primary sources that offer analysis and history from the black community's perspective. Douglass was the first scholar to write about this site, and it makes sense to take cues from him as we explore the site anew in the 21st century. As we continue this project, we hope to be able to provide some sense of the lives of the people who left no written accounts, only material remains. We also hope to include more oral histories like that provided by Joseph Sutton, by continuing to work with the descendants in the Unionville area.

Wye House Farm represents only a portion of the nearly 43,000 acres of holdings (in various counties of Maryland and Delaware) left by Edward Lloyd III to his heirs. The Lloyd family occupied Wye House (home and farm) in Talbot County, Maryland for many generations, starting in 1650 and continuing into the 20th century. Among the generations of Lloyd family occupants were many statesmen, soldiers, and otherwise influential figures, including three who served as Maryland state governor. The property was inherited by Edward Lloyd IV (Talbot County Historical Society Webpage, 2005). According to a map drawn by architect Henry Chandlee Forman, which cites a plat dated 1784, Wye House had a designated area for work-related buildings and slave quarters called the Long Green. The slave quarters, icehouse, carpenter's shop, smithy, and other working structures that once stood in the Long Green are either gone, or have been replaced by modern barns and sheds.

Through the fieldwork done by the University of Maryland/Archaeology in Annapolis field school we can see that Douglass' description appears to be highly accurate. We uncovered brick foundations of three separate structures, and during the 2011 field season identified the foundations of two additional structures. The summer 2012 field season will continue excavations on these structures.

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[3] Krech, Shepard III (1981) *Praise the Bridge That Carries You Over: The Life of Joseph L. Sutton.* Schenkman Publishing Co., Cambridge, MD. Cited in-text throughout.

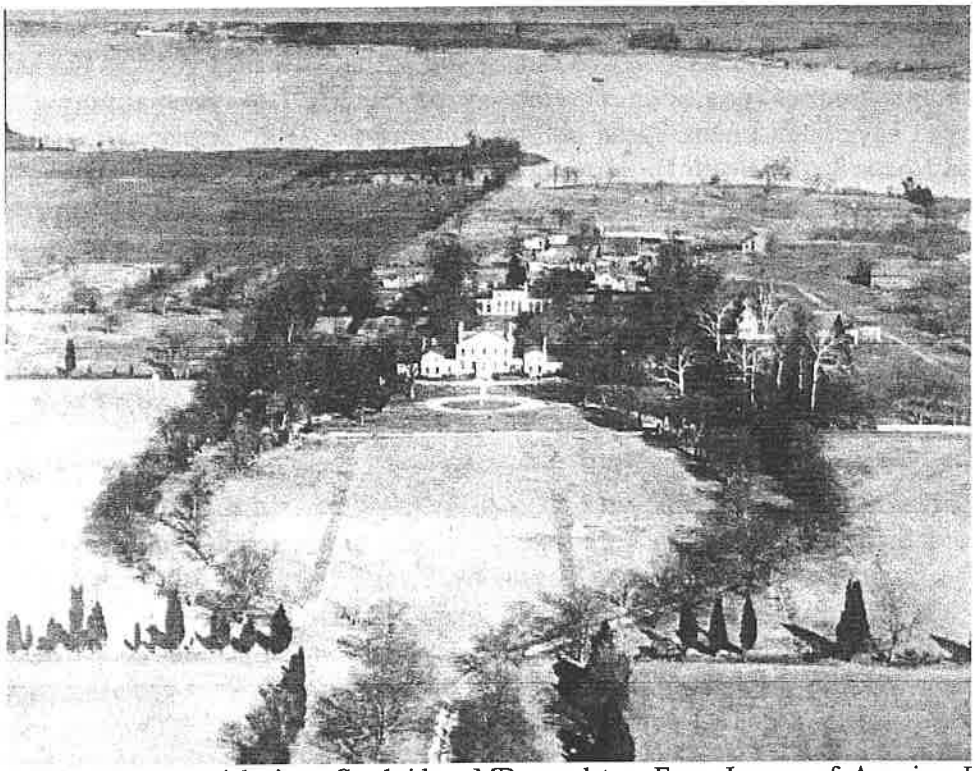
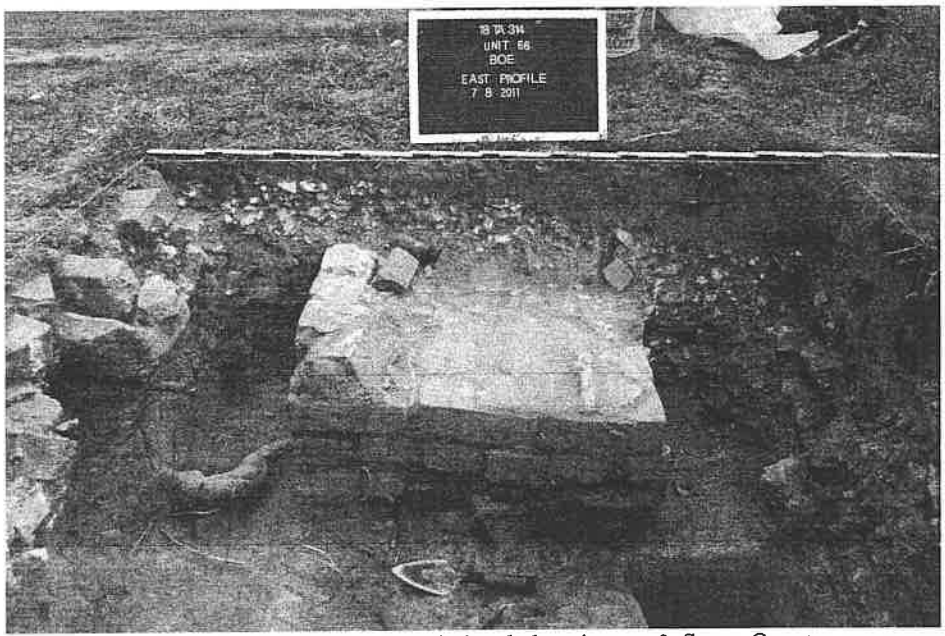


Image Source: Wye House, aerial view, Cambridge, MD, no date. From Images of America: Lantern Slide Collection. GSD lantern slide 197119 accessed through http://memory.loc.gov

One of the goals of the survey of the Long Green will be to further explore foundations of the structures known to be still intact, and to locate any features within the buildings' contexts that might be recovered.



Test Unit 66, East Profile. Showing brick pier foundation belonging to 2 Story Quarter uncovered during 2011 excavations.

methods. The rest of this manual is devoted to the discussion of standardized operating procedures that are important, not only to these sites, but to any general understanding of archaeological excavations.

It would be impossible to create a manual that could explain every possible scenario that might be encountered while excavating an archaeological site. In this way, archaeology is much like any other trade or craft, and field school is often seen as the beginnings of one's apprenticeship. This manual attempts to explain much of the logic behind archaeological fieldwork. Look to it as an explanation of skills and tools with which to approach archaeological sites. The specifics of how these tools and skills are applied will, of course, vary with each particular situation encountered, but the generalizations often remain constant. Looking at archaeology as a craft, it takes time and experience to really "master." Learning these generalities, however, will help in generating an understanding of how archaeologists approach the past and how that approach affects the nature of the past.

We start with the basics such as naming the site and laying out a grid system. To those new to archaeology, the emphasis on recording may come as a surprise. But those who have participated in field work know that archaeology is in many ways a destructive discipline. Digging dismantles a site, disturbing materials laid down hundreds (or even thousands) of years ago. The physical evidence of what once happened there is destroyed in the process. When the dig is over, there is only one way that the site can ever be reassembled, and that is on paper. Unless the records of the excavation are complete and accurate, there is no hope of understanding the pasts that they represent.

Naming the Site

Every archaeological site in the United States is identified and registered with a state-level administrative agency, usually something like the State Historic Preservation Office. This procedure allows the state to oversee the excavation and analysis of the state's archaeological resources, keeping a check on the quality of work. It also provides a convenient way to label each archaeological site in a systematic manner. The Maryland Historical Trust is the agency here in Maryland. To identify a site the Trust provides a unique code for the site, identifying the county or township where the site is located and numbering sites within counties in the sequential order in which they are found or recorded. The site at Wye Hall for instance (the subject of one of our readings for the course) is called 18QU977, "18" because Maryland is the 18th state alphabetically, "QU" for Queen Anne's County, and "977" for the 977th site surveyed within that county. We used this code as shorthand when taking notes, identifying bags, labeling artifacts, and practically any other reference to the site in the field and the lab. Because our project and the lab work on several sites at a time, this identifier is extremely important. It helps ensure that materials from different sites to not become confused.

The Site Grid

Within a site, one of the most important aspects of archaeological recording is the ability to pinpoint and record objects in space, particularly the horizontal relationships between remains.

The datum point is often chosen to mark the center of the grid, but it also is placed to establish a more permanent marker. This provides future researchers with a way of locating earlier excavations long after the temporary survey stakes have disappeared. The elevation of the datum point is also recorded, so that vertical measurements may also be reconstructed at a later date.

Mapping

Once a grid has been laid over the site, the mapping of contours and visible archaeological remains is simplified. Visible remains can be subtle or almost non-existent on a site such as this one, which has been extensively modified because of continuous occupancy since the eighteenth-century, but various clues such as surface undulations and above ground features such as plantings and architecture, may be helpful. All important surface features will be plotted and then be assembled into a composite map of the site called the SITE PLAN. Today this plan is frequently assembled, and exists only on computer. In addition to surface features, the site plan will also contain information from surface collection, remote sensing, and excavation. Understanding the changes in the design and pattern of the site is a very important part of this year's study. The site plan provide us with a base map to work with in making assessments of changes and can be compared with other historical maps.

Metric vs English Scales of Measurement

Archaeologists differ on the use of these distinct scales. Today, most use metric measurements (centimeters and meters) in mapping and documentation of the site. Many historical archaeologists, however, have held on to the use of English measures (inches and feet).

Metric measures are currently used in most nations around the world. It provides ease in doing arithmetic calculations (being based on tens). Archaeologist suggest that because the metric system is a 20th century development–one not based on human measures–it provides a less biased unit of measurement that allows for a more objective measure. English scales, on the other hand, were supposedly based on a more human scale (the foot for an obvious example). If one were doing a survey testing an area for unknown historic sites—regularly testing every 50 feet—one could potentially miss sites because of using the same scale with which the sites were laid out. Metric scales, being different than English measures, would randomize the tests and perhaps avoid this problem.

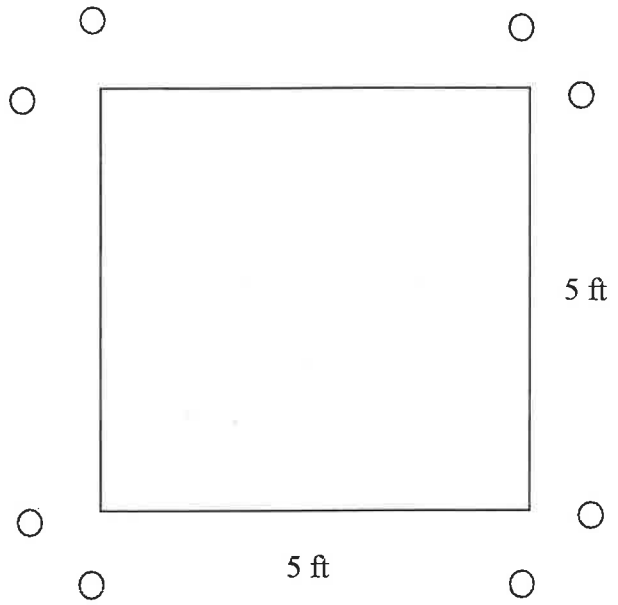
Several historical archaeologists, however, choose to continue to use English scales precisely because it is the same scale used in setting up the historical sites. If one encounters an outbuilding, it is far easier to measure and refer to that building as an 8 or 12 ft building than as a 2.47 or 3.9 meter building. Using the same scale also provides some predictive advantages (e.g. there should be a building corner 12 feet away from this exposed corner).

out of the ground. Doing so would disrupt materials which you are about to take great pains to record and then carefully remove. Therefore all vegetation, whether it be grass, saplings, or weeds, should be cut off at ground level. An area somewhat larger than that intended for excavation should be cleared, at least one or two feet beyond the limits of excavation. The cut material should then be carried (not dragged) well clear of the site.

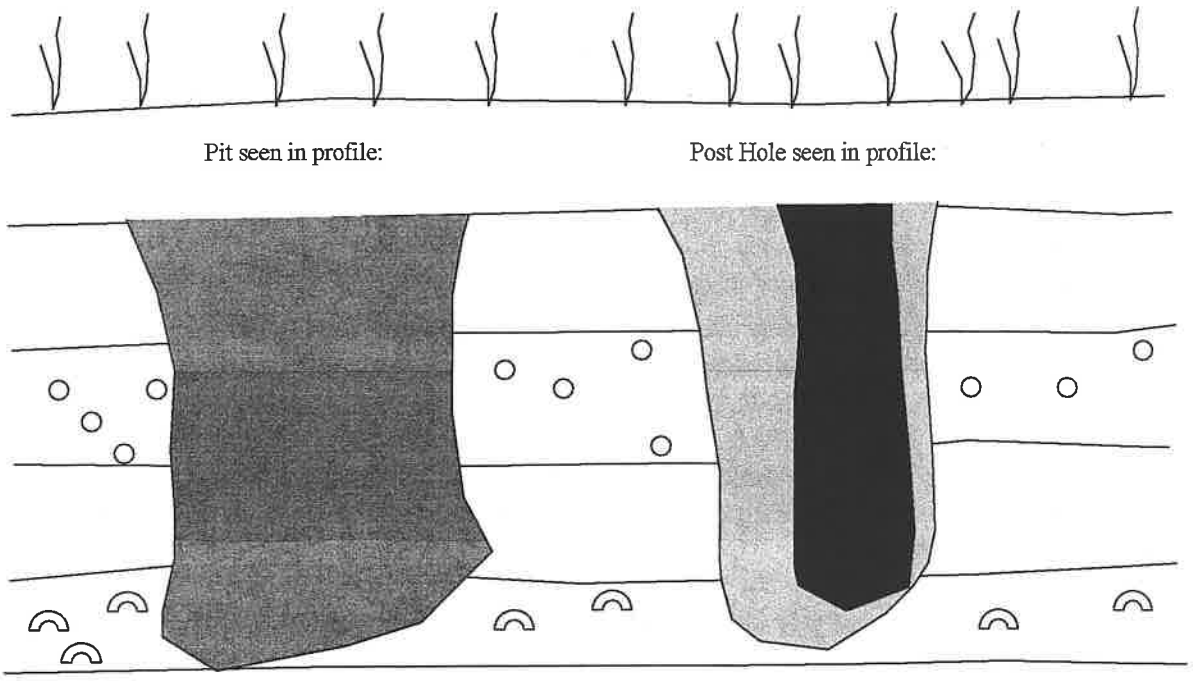
During this entire operation, as well as at all other times, keep foot traffic to a minimum. Unnecessary movement compacts soil, creates subsurface damage, and encourages erosion. Avoid it. Stick to well-defined paths and use board walks if they have been set up in sensitive areas. Do not take short-cuts between excavation areas; use the paths instead.

On Safety and Foot Traffic: It is tempting to discard rocks, roots and other non-cultural debris nearby and adjacent to a unit that you are excavating. This can have disastrous results, as this material accumulates on the ground and comprises a significant hazard. Students have suffered ankle and wrist injuries by slipping or tripping on small stones or roots while carrying buckets laden with soil. These things should be gathered near the backdirt pile!

If the corners of your excavation are marked by nails or stakes, you do not want to undermine these corner points by removing all the soil that supports them unless they are judged



inconsequential. You can preserve the points marked at the corners of your unit by leaving "balks" of soil to support them. Simply indicate on your unit plans where these balks have been left and that you are digging a lesser volume of soil than a 5-foot square would actually contain.



The above is by no means an exhaustive list of deposit types, or even of the characteristics of those types listed. Even experienced excavators continually find themselves confronted by new and perplexing material. In addition to the fact that even the simplest structure can be built in a variety of ways, it is important to remember that such a structure may go through a complex series of changes before the archaeologist ever sees it. What we see are not remnants of the past from a point frozen in time. The remains were used by people, and those uses varied and changed through time. Once abandoned, the remains are subjected to other varieties of change, both through nature and through secondary human disturbance. Thus the challenge is not just to excavate and explain the structural remains, but to explain the human behavior associated with them and the processes of accumulation, modification, and destruction which they underwent.

Because remains can take so many varied forms and because even the smallest observations can be of importance, it is a good rule to always assume that levels and features are equally significant until you can definitely prove otherwise. There are many forms of subtle evidence which will be missed otherwise. All sites have their share of subtle and faint remains, and the most obvious ones are not always the most important or informative.

Tools for Excavation -- An Introduction to Shovels and Trowels

Deposit type and context will determine what kind of tool you use to dig. Plowed soils have already been disturbed and will generally be taken out with a flat-bladed shovel. Unlike ditch-digging or gardening, the idea is to peel back the soil in flat, even increments. If you keep a flat, level surface, and keep all of the loose dirt out of the way, you will be able to quickly see

strata, as well as those abutting the wall, may yield clues as to both its construction and destruction (see "foundation trenches", below). However, not all walls were constructed of brick and stone, and these can be more difficult to trace. Log structures, or other buildings where the major portion of a wall rested on ground surface, may have left behind only impressions, stains where wood rotted, slots dug for timbers, or holes for corner posts (see "posthole" below). Some buildings were raised off the ground on piers, and these will leave only the remains of those piers with which to trace wall locations.

Foundation, or builder's, trenches were usually dug for the subsurface portion of brick or stone walls. These generally remained open while the building was under construction, after which they were backfilled with all of the trash that had accumulated during the meantime. (Take a look at any construction site today and you'll see the same type of phenomenon). Artifacts contained within that backfill can provide clues to the construction date of the building. Foundation trenches generally appear first as a soil discoloration abutting and paralleling the wall. They may have their own internal stratigraphy and deserve careful attention. Buildings with cellar holes may not have foundation trenches, as the lower wall courses could be laid - from inside - up against the sides of the excavated cellar hole.

Other installations include drains, hearths, ovens, and the like. These are generally easily recognized, although drains on temporary or some industrial sites may be nothing more than unlined trenches. There are also more specialized installations such as forges, mills, and other industrial features. These sometimes require specialized methods of excavation.

Floors and surfaces were generally associated with walls, but may have taken a number of forms. Wood floors may leave little evidence other than flooring nails, but beaten earth floors were common even in houses from the historical period. Beaten or trampled earth surfaces may also be encountered outside structures and along pathways. There are a variety of clues which can aid in identifying and tracing earth surfaces (provided they have not been plowed under).

- Compaction may still be present, making it possible to "peel" overlying strata away from the floor or surface.

- Nails, buttons, ceramics, or other items may be found lying on a horizontal plane.

- Patches of plaster, glass, ash, charcoal, etc., may lie upon or be ground into the surface. Surfaces sometimes impart a "greasy" feel.

- Brick, stones, or debris from the destruction or decay of the building may be found resting on a common level - the surface onto which they fell.

Care should always be taken when surfaces are suspected - careless movement by excavators squatting in a unit can create newly-trodden surfaces, and inexperienced excavators often create similar "surfaces" by their scraping.

characteristics, emerging patterns of stone or artifacts, and similar clues. Some useful suggestions for identifying and separating them are:

- Keep your excavation area clean. Excavate only a small amount of soil before putting it into a bucket, and do not allow buckets to get too full. Keep loose dirt swept up and off freshly excavated surfaces. Changes can't be seen if they're covered with loose soil.

- Work systematically. Assuming a relatively level surface, always try to work at a common level, excavating to a constant depth. Dig systematically from one side of the unit to the other, without wandering about, taking the levels down in shallow increments.

- Work backwards across the units being excavated, so that loose dirt is kept off freshly excavated soil and changes may be quickly seen. In other words, pull loose soil towards you, put it in a bucket, the back up and repeat. This allows you to see and feel changes quickly.

- The most recently deposited level or feature deposited must always be the first to be removed. This rule is a logical extension of the observation that, although chronologically early artifacts may be found in recent contexts (heirlooms and antiques are kept for many years, hardware and bottles can be reused, etc.), more recent materials should not be found in earlier levels (Coke cans are the last thing you would expect to find in a Revolutionary War garbage pit). The latest or uppermost level must always be removed first in order to protect early, lower levels from contamination by later artifacts.

    - When dealing with superimposed layers, always remove the top layer completely. When in doubt, it is better to dig slightly into the lower layer and include material with that recovered from the upper layer - do not risk including later artifacts with material from an earlier level. (Remember, the most recent artifact from a given layer is used to date it).

    - Never pull up artifacts, stone, or brick which have not been completely exposed. They may be resting on or embedded in a lower level, or be part of an emerging architectural feature.

- If in doubt as to whether or not you are seeing a change of some sort, stop and assign a new level. It is better to have too many levels than too few - it is easier to lump similar levels together after the fact than it is to divide one level in two after excavation.

- Artifact bags, which also receive numbers (described below), can be used to further control and break down the level. If three-dimensional coordinates are noted for each bag (elevations and grid coordinates), provenience can often be controlled even if a level change was missed and a new number not assigned. Questionable boundaries between levels can also be handled in this manner.

Principles of Stratigraphic Excavation

Earlier in this manual the principle of stratification was defined. This is the idea that within any depositional sequence, the bottom levels of soil were deposited first, and the upper levels were deposited last. Mixed in with these soils, of course, are the debris of human occupation, so through careful separation and excavation of each of these levels, archaeologists can understand how a site changed through time.

On historic sites we are often able to accurately date many of the artifacts that are recovered during excavation (coins and ceramics are but two examples). Thus the principle of stratification is accompanied by an equally logical idea: each layer or stratum must have been deposited after the manufacture date of the most recent artifact in it. If three coins, dating 1820, 1840, and 1903 were found in a layer, the layer obviously could not have been deposited before 1903.

Our job therefore seems pretty straightforward. All we need do is take apart these man-made and natural soil levels in the reverse order in which they were laid down, and then date the artifacts that came out of each level. The problem is that the picture is rarely so simple - as noted earlier, various forces disrupt the layers, resulting in a confused and perhaps incomplete picture. Archaeological methods are designed to keep this confusion to a minimum and sort out the complexities of the archaeological record; the methods are based on several simple rules.

The first of these is that one always digs each layer separately from all others. The reason is simple - each layer may be from a different time period or activity, and the artifacts associated with that level are used to interpret that layer. If you are trying to assign construction dates to various levels, for example, you do not want the 1955 coin from an upper level to be accidentally mixed in with material from a lower level which was laid down in 1900. Such an accident would lead to believe that the 1900 level was actually deposited a half century later!

Any mixing of later material with that from earlier deposits will completely skew the interpretation of the area. An important goal of excavation, then, is recognition of different levels and the separation of the artifacts from these different levels. It is worth repeating that each soil or level change may represent a distinct act of a person sometime in the past. Our job is to recognize all of those differences, to record and dig them separately, and then try to reconstruct exactly what happened at the site. This can't be done if we dig with a backhoe or shovel blithely away looking for artifacts; it's the subtle clues that will tell the tale.

Strata

How is it that one can tell when one layer ends and another begins? What clues indicate whether a buried soil was laid down by humans, as opposed to nature? The answer to these questions become more obvious with experience, but there are certain general clues anyone can look for. There are basically two keys to understanding soil change, color and texture. Colors are identified in the notes following a soil color chart called the Munsell, we will return to this later

changes which may suggest a new level. This is easiest if you keep the blade of the shovel sharp and skim through the dirt in even peels.

As you dig, be extremely careful not to dig beyond the limits of your square or trench. The side walls of the excavation (the profile) will be used to see soil changes and strata, so they must be kept clean and perfectly vertical. This is difficult to do with a shovel, so you should probably dig to within an inch of the section and then finish making the vertical cut (more on this below) by hand with a trowel.

Once you get into an undisturbed context, you should probably shift to a trowel for excavation. Using a trowel is better learned through practice or demonstration, since it can be used in a variety of ways. But, in general, you should use it with a scraping motion towards your body. As with shovels, keep the blade sharpened, and it will slice through roots and leave a clean cut in which soil changes can be quickly seen. The point of the trowel, however, is rarely used, and stabbing motions to loosen soil should be avoided. Experience will tell you how much pressure to use, and you will eventually find that soil changes can sometimes be felt before they are seen. As you dig, the soil should be scraped back into a dustpan and dumped into a bucket. Once the bucket is full, you'll take it to a screen and sift it make sure that you didn't miss any small artifacts.

A few general rules of trowel use might be helpful:

- Dig only one level or feature at a time - this should always be the uppermost layer.
- Trowel only until a change is noticed. This means a change of any kind, regardless of whether it is only millimeters below where you started.
- Move backwards across the deposit being excavated. Do not kneel on freshly excavated surfaces. This way soil changes can be seen quickly.
- Never walk on excavated surfaces (unless absolutely necessary -- and then they must be lightly scraped clean again).
- Trowel in a consistent and systematic direction.
- Whatever you are using to transfer excavated soil into a bucket (usually a dust-pan), let only a small amount accumulate before dumping it into a bucket.
- *DIG FROM THE KNOWN TO THE UNKNOWN.* Things will start to make sense.

A number of tools may be used in addition to the trowel, including dental picks, spoons, ladles, palette knives, and the like, but one of the most useful tools is the hand-brush. Brushes are particularly helpful in removing loose soil from over surfaces and from around rocks, bricks and artifacts. Brushes can be over-used, however, especially in either very dry or wet conditions. Brushing of wet soils (or dry clay) tends to polish them, while excessive brushing of very dry

All artifacts will fall into one of two categories: they are either classified as "small finds" and bagged individually, or they are part of a general bag of artifacts.

Small Finds & General Finds

On many sites all of the artifacts recovered from a given level are bagged together in a general lot. A smaller percentage of the artifacts are often recognized as significant enough to be treated individually and the exact location in which they were found is accurately recorded.

If original surfaces have not been disturbed, then patterns of nails, pane glass, and other materials can yield clues to architecture. The patterns of other debris can provide evidence of where specific activities took place, showing how the site was used by people.

Horizontal patterning of remains is not adequately recovered if one records only the level from which artifacts come. Artifacts recovered from the floor of a room, for example, might all fall into one level. However, different portions of the room may have been used for different purposes, and the pattern of artifact distributions across the room may provide evidence of these differences. The only means of recovering this data is to routinely point-provenience finds.

These small finds each receive a unique small finds' artifact number (assigned sequentially within each excavation unit and recorded in the supervisors notebook) and are bagged separately, but they retain the same bag number as the level or feature in which they are identified. Three-dimensional coordinates are also recorded for the object, so that its precise relationship to other finds and to excavated levels and features is known. Elevations are usually taken with a line level, and the find's coordinates according to the site grid are noted.

There are situations in which a supervisor may feel that such precise treatment is not necessary. Point-proveniencing of extremely common and wide-spread artifacts may not be worth the effort, although you will not know initially what specific artifacts will fall into this category. Whenever this is done, however, it is worth recording in general terms in your notes where each significant artifact was within a level or feature. If you have erred in your assumption that the material does not warrant precise proveniencing, the situation can still be salvaged.

Precautions in Bagging Artifacts

Regardless of whether a bag contains small finds or a general lot, care should be exercised so that artifacts are not mixed up or extraneous matter introduced into bags. (Remember the earlier discussion of dating and interpretive problems if you mix up material from different strata.) The following precautions will minimize the possibility of mix-ups.

- Whenever a new level or feature is begun, label a new bag before starting to dig. Never work without a bag, and never use an unlabeled bag.

record, profiles should be kept perfectly straight and absolutely vertical. There are a number of guidelines which should be kept in mind when cutting profiles.

- Never pull anything out of a profile because a) it may cause a collapse of the profile and b) the texture of the levels should be preserved.

- Leave a pedestal of earth beneath protruding rocks or other items so large or heavy that they would fall out of the profile without some support.

- Strings marking the edge of the excavation unit should be constantly checked when cutting profiles so that a straight line may be kept and excavation remains within limits.

- A plumb-bob should be used to keep profiles vertical. Do not trust your eyes.

- Do not undercut the edge of excavation, even in pursuit of artifacts. This is easy to do, but impossible to undo.

- Keep profiles trimmed down to the level you are excavating, as trimming introduces the possibility of contamination from artifacts in an upper level. Moist soil also trims more cleanly than dry soil.

- Never trim a profile close to an area where contamination is a danger.

- Scraping tends to smear the interface of layers. Use a sharp trowel and a chopping motion to trim.

- ***Do not walk or sit too close to a profile***, since you may cause it to collapse. When working in tight quarters, be particularly careful not to hit the profiles with your feet or elbows.

Many projects use an excavation system in which a grid of relatively small squares is excavated (usually about 2 meters or 5 feet square), and walls of earth (balk) are left between the squares. There is a certain advantage in this, in that it leaves a regular system of cross-profiles across the site. On the other hand, this method can make it difficult to excavate horizontally and clear large areas in phase. In many situations horizontal clearing is the only way in which certain patterns can be seen, and balks may obscure these patterns. For part of this season's excavation we will use a more flexible approach, often digging in somewhat larger units, or trenches, for horizontal clearing.

When digging in trenches and emphasizing horizontal clearing, one is still faced with the need for profiles at intervals within the confines of the trench or through specific features. When such a need arises, a cumulative profile may be used. This method is more easily demonstrated than described, but a line (or lines) is laid where the profile is needed. Excavation then proceeds up to the line and stops. Right at the line, you will at this point have exposed a cross-section of that level. This exposed profile is drawn, and then excavation continues beyond the line until the

quality of the photographs. Therefore the photographer will make the decision as to whether the area is clean enough or needs more attention.

- Be certain that photos are taken of areas both before and after excavation.
- The supervisor must see that all important levels/features, relationships, and methodologies are photographed.
- Remember to photograph all sections.

Keeping the Record

Aside from artifacts and the various samples collected during fieldwork, all evidence and data collected from the work are in the form of verbal descriptions, drawings, or photographs. These constitute the only record of what was encountered on the site. It is therefore worth repeating an observation made in the beginning of this manual: when a site is excavated it is being systematically destroyed. In the process, material and relationships which have been in the ground for hundreds or thousands of years are reduced to a series of paper records. These are the only means through which the site can be understood and thus deserve all possible care. The computer maxim "garbage in, garbage out" applies to archaeology as well. Our interpretations of the past can only be as good as the information we record during excavation.

There are four basic types of field records: field notes, standardized recording forms, scaled drawings, and photographs. Each of these is described in detail in the sections that follow. Briefly, field notes consist of a running commentary on day-to-day field operations, covering objectives, methodology, descriptions of everything encountered and possible interpretations. Standardized records are kept of important aspects of fieldwork, and insure consistency and completeness in recording. A variety of different drawings may be done of excavated areas, but all are done to scale and should be as accurate as possible. All of these records are supplemented with photography, which offers a quick and flexible recording medium, capable of recording from a variety of angles.

A number of important points must be considered when designing a recording system and when completing records:

- Records must always be kept up-to-date and as complete as possible. The importance of keeping records current is best understood by thinking the unthinkable - what would happen if you were hit by a truck tomorrow? Would someone else find your records complete and easy to use?
- Linked to the above, records should be clear and complete enough that anyone can understand them, even many years in the future.

Daily Notes

The daily notes are one of the major segments of the recording system. The notes should provide a running account of everything that is happening in the on going excavation, particularly of progress and strategy of excavation. Because even small points may later be crucial to explaining some aspect of the work, it is best to record as much potentially relevant information as possible.

The bare minimum of information that should go into field notes includes weather and work conditions, names of people present, the objectives of excavation, methodology used and the reasons behind use, and a complete description of findings.

Guidelines for taking Field Notes
By Jenn Babiarz and Lisa Kraus

ALWAYS INCLUDE THE FOLLOWING INFORMATION:

1) **Site Name and Number**
2) **Names (Your name, the names of the people working in the unit with you)**
3) **Date**
4) **Weather conditions (BE SPECIFIC: Cloudy? Sunny? Cloudy then sunny? Partly/mostly cloudy/sunny/rainy/stormy etc??)**
5) **Unit #, or, if you are not working on a unit, the name or # of whatever it is you ARE working on**
6) **Where the unit/feature/whatever is located on the site. Include both grid coordinates of the NE corner and a physical description of the location (ie, "next to the well".)**
7) *THINK.*
8) **Describe the day's events. Use the following topics as a guide:**

    a. **How many levels were excavated today?**
    b. **Include information about any decisions (yours, your colleagues', and your supervisors') that were made concerning this unit**
    c. **How have perceptions about this unit or feature changed from yesterday?**
    d. **Did anyone make any observations about anything pertaining to this unit? If so, include these comments (yours, your colleagues', and your supervisors')**
    e. **Were there any notable finds? If not, note that artifacts were consistent, or that no artifacts were found.**
    f. **Mention any associated features.**

Sample Field Notes:

June 15st, 2006
18QU977 Wye Hall - Field School 2006
Lisa Kraus, Jenn Babiarz, Matthew Palus
Field Notes

This morning was cloudy and looked like rain, but things cleared up around noon and it's been very sunny the remainder of the day.

Unit 1, N1100 E1285, just north of Structure 1

Today we opened Unit 1. Jenn and Matt thought it would be a good idea to place this unit slightly to the North of the remains of Structure 1, to see if we could define a corner of that structure.
We excavated 5 levels today. Before we excavated, there were no artifacts apparent on the surface. Level 2 contained a high percentage of ash and charcoal, and we all felt it looked like the remains of a significant fire. No identifiable artifacts were found in that layer.
In Level 5 we found ten pieces of tin-glazed earthenware and twenty pieces of porcelain, along with...(etc... We get an A!!).

Level and Feature Report Forms

Just as levels and features are the basic units of stratigraphic excavation, the level and feature report forms are the basic unit of the recording system. The report form should contain all of the data necessary for an understanding of its particular level or feature. It provides space for a description of the deposit, including its location and measurements; the process and progress of excavation; its stratigraphic relationship to other deposits; the materials recovered; an index to other sources of information about the deposit; and an interpretation of the dating and function of the level or feature.

The level report form is a two sheet form which is pre-printed on front and back. The headings on the form are designed to standardize the recording and remind the excavator of the kinds of information that should be recorded. They are not, however, all-inclusive, and a second page will sometimes be necessary for additional information or where large numbers of artifacts are

Interpretation. Identification of the deposit should be made, along with analysis of origin and function. When such interpretations are made, the evidence upon which they are based must also be noted. Dating and interpretation based on artifact content may be discussed. In general, the cultural and archaeological significance of the level should be addressed here. Basically offer a field assessment of the deposit you have just removed. Was it fill or, perhaps, subsoil? Was it a post-hole, or a builder's trench?. Was it sheet deposit with yard scatter? These are only a few of the many possibilities of interpretations for deposits. You will become familiar with the many types in the field.

Terminus Post Quem (TPQ). TPQ means the date after which the level was deposited. Usually we use key datable material like ceramics or glass to offer TPQ's in the field. Always make at least a best guess. This will allow you to see how intact the strata are as they should, ideally, have earlier and earlier TPQ's as you continue to descend. A list of TPQ's for several artifact types is included in this manual.

The bottom of the form allows for the report form to be easily cross-referenced with other recorded data. At the close of every level and feature photos are taken. In this space please record the roll and frame numbers given to you by the supervisor who takes the shots. Please note whether a soil sample was taken in the process of excavation. Record the drawing numbers, if any, that refer to this level or feature. Also indicate what pages in the daily notebook correspond with this form.

On the back side of the level forms and the front of the feature forms there is a 5" by 5" grid. In this space you will make a scale plan drawing (1":1') of the base of the deposit being recorded. Please be sure to indicate north and fill in any of the spaces allotted for information on you, the unit and the level. Techniques of drawing are presented below.

Labeling Artifact Bags

Artifact bags have no preprinted label for you to fill out like some of the other paperwork, however there is a standardized way to record the provenience of collected artifacts. Without the following information, the value of artifacts as data is dramatically diminished. In fact, artifacts without the following kinds of information are rarely worth collecting or worth holding onto. Labels should be marked on the bag with an indelible marker (a Sharpie) in the following manner:

Be sure to include all of the following information:

Bag Number (in the upper right corner)
Site Number, Site Name
Date
Initials of all excavators
Unit #, Grid Coordinates
Unit Level

which simply cannot be captured on film. There are two major types of field drawings, namely plan and profile drawings.

PLANS record excavated areas as seen from above. They provide a measured record of the horizontal relationships between parts of an entire excavation unit. PROFILES are drawings of stratigraphy along a vertical plane. The four sides of each excavation unit are usually drawn, providing a stratigraphic record of four vertical slices through the site. Additional profiles will be drawn within a unit when stratigraphy that does not show up in the main section must be recorded.

Plans

Plan drawings must be done at intervals as excavation progresses, showing every important feature from above. Thus they are the most numerous type of drawing. When excavation is moving quickly, it may be necessary to drawn new plans at the beginning of each day. Major elements from the previous day's plan may be traced, however, so the process is not quite as time consuming as it might appear. All plans should be done on the level forms or on graph paper.

Always label drawings before you start to draw. After the drawing is labeled, label all corners of the unit with their respective grid coordinates and note any datum points in use, along with their elevations. Elevations can be placed right on the drawings with the place of measurement marked with a triangle (e.g. 3.42'). Make sure that the instrument Height is noted. North should be placed at the top of the page and indicated with an arrow.

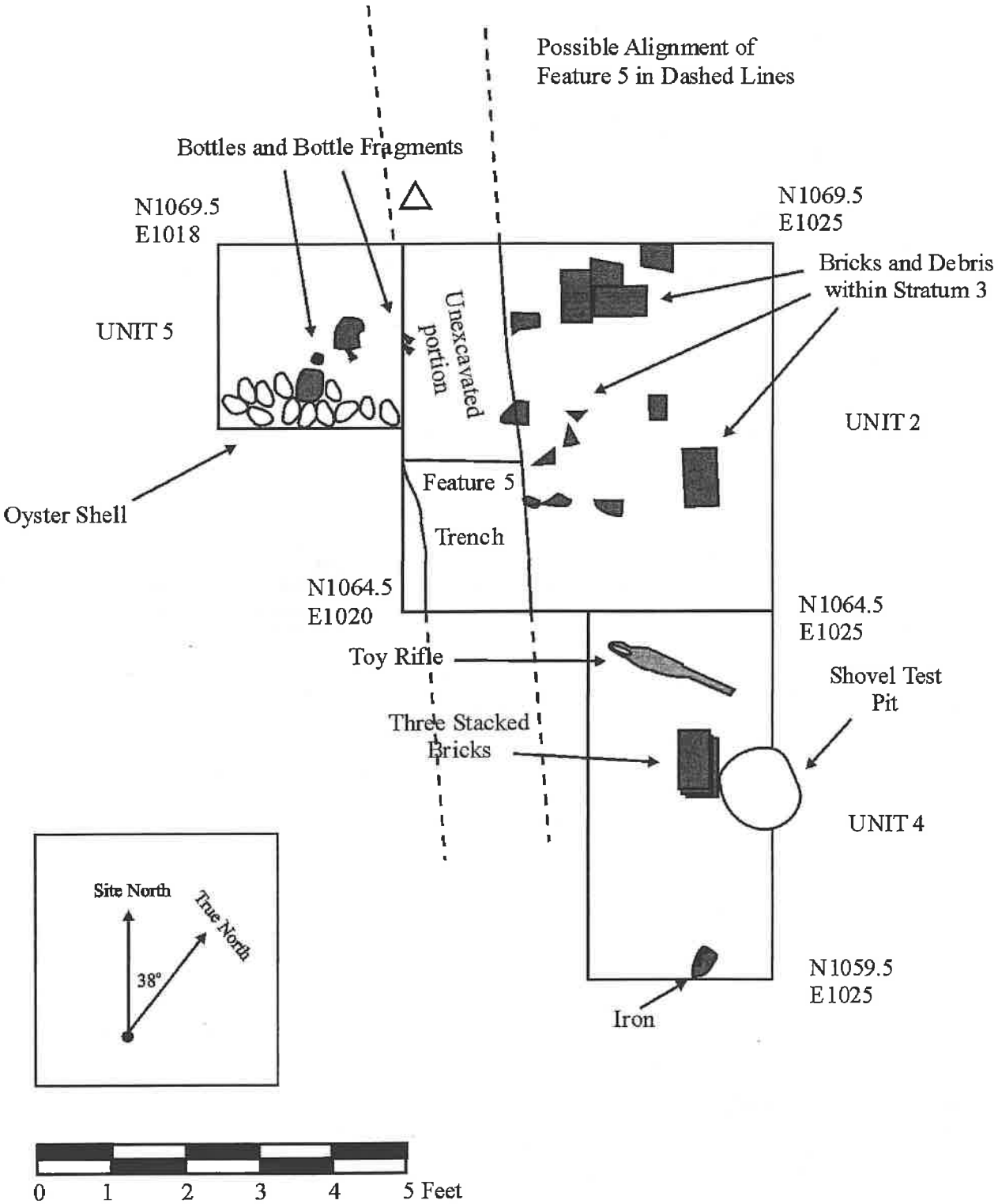
Measuring points to be drawn

In addition to plotting the perimeters of level or feature on a plan, all rocks, tree roots or other items bigger than one or two inches in diameter are drawn. It is not enough to simply sketch these items in; a number of points must be measured for each item so that it can be accurately plotted. There are a number of ways of taking these measurements.

Trilateration - Another method of plotting is trilateration. Here two or three tape measures are stretched from different corners of the unit to the point and the distance noted. Tapes must always be held level, with no slack. Hang a plumb-bob down to the point and read the measurement at the point where the line of the plumb-bob intersects the tape. Once the two or three measurements have been taken, a compass is used by the person drawing to swing arcs the correctly scaled distances on the drawing from each corner. The point at which the arcs intersect is the point measured. Three measurements are more accurate than two, but two are adequate as long as the angle formed by the intersection of the tapes over the point is neither too acute nor too obtuse (because the arcs will tend to overlap, rather than intersect).

Offsets - Another method of preparing a plan is to use "offsets". Here a tape measure is stretched along one edge of the excavation unit. Another tape is then used to measure distances from this edge of the unit to points you want drawn. If you hold one tape at a right angle to the edge of the

Sample Plan Drawing 1



Profiles

Profile drawings are set up the same way plans are, and labeled with the same information. Make sure that you clearly specify which side wall of the unit is represented.

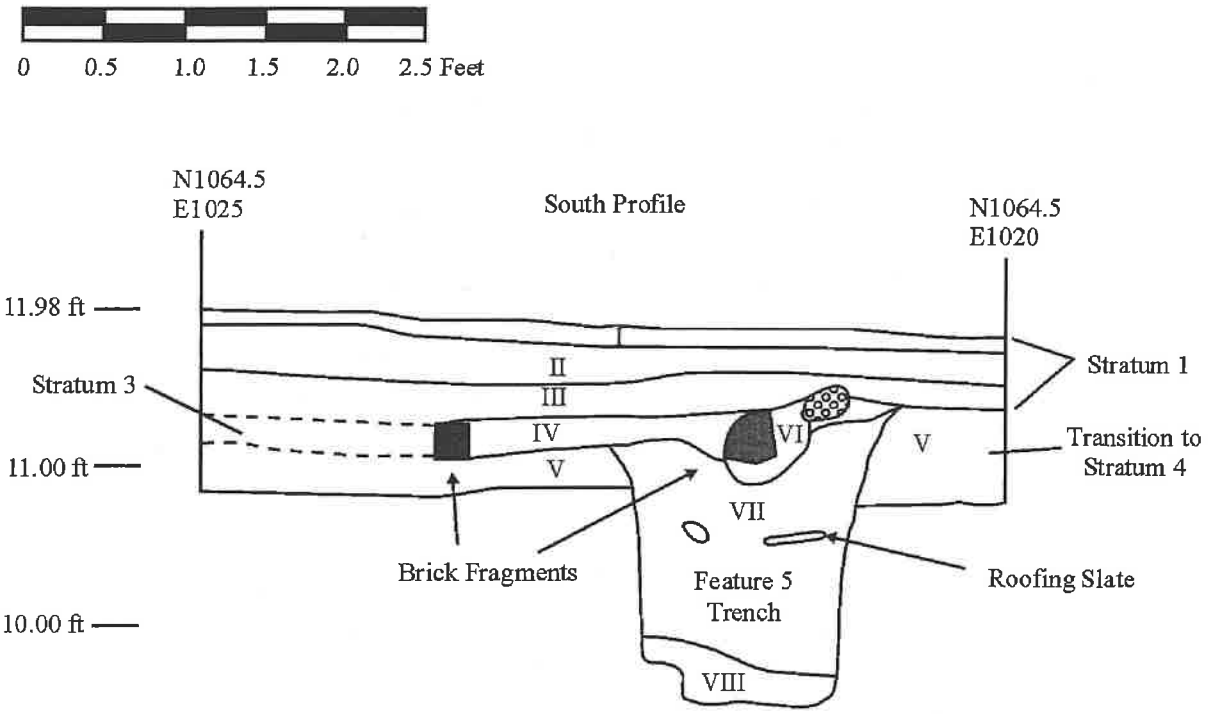
Before a section can be drawn, a datum line must be established across the face of the section. Usually two nails are put into the section, one at either end, and a level tape is stretched between them. This datum line should be noted on the drawing by lightly drawing an "x" at each nail. One end of the datum line will start at zero on the tape, and if this line is matched up with the gridded underlay, the graph marks can be used as a guide for plotting measurements. Sections are drawn at a scale of 1":1'.

The limits of excavation are then marked off and the top or ground surface of the profile is plotted. The usual procedure is for two people to work together, one taking and calling measurements to the other, who does the drawing. Each level is drawn in, one at a time, as well as any rocks, artifacts, or other inclusions which appear in section. The caller uses a tape or folding rule to measure down or up from the datum line to each point plotted. She or he first calls the distance measured along the datum line and then calls the distance up or down to the point from the datum line. Measurements should be taken at intervals close enough to give an accurate picture of the section. One foot is normally the largest interval you should use, although you will often have to take measurements at closer intervals. There is a tendency for profile drawings to end up looking like connect-the-dot pictures. This usually means that not enough points are being called, or that the person drawing is not keeping an eye on the profile as it is drawn. It is not enough to simply plot the points and connect them. The drawing should look like the section it is supposed to record.

It's worth emphasizing that profile drawings represent a vertical cross-section through the site, along a vertical plane. Since you are drawing what is theoretically a vertical plane, contours of rocks should not be noted, and objects which protrude from the section must be measured at their intersection with the section face. In order to draw accurate sections, sections should be cut cleanly and as nearly vertical as possible.

All levels and features should be labeled on the profile. At the bottom of the drawing a key should be inserted, which describes all of the deposits and explains any symbols which are used on the drawing. Profiles are drawn as they are seen, so strata which are drawn may not always perfectly correspond with levels as excavated. Such situations should always be explained in the margin. Since strata are drawn as they appear at the time of the drawing, arbitrary levels within one stratum should be noted with dashed lines.

Sample Profile Drawing 1



I Topsoil - 10 YR 4/4 dark yellowish brown loam
II Fill Layer - 10 YR 4/6 dark yellowish brown clay loam with occasional brick flecks, low artifact content
III Buried Topsoil - 10 YR 3/2 very dark grayish brown silty loam, soot-stained
IV Demolition Layer/Feature 2 - 10 YR 3/3 dark brown mottled with 10 YR 4/6 dark yellowish brown loam, containing brick, concrete, coal and oyster shell
V Transition to Subsoil - 10 YR ¾ dark yellowish brown sandy loam
VI Fill - 10 YR 4/4 dark yellowish brown sand around brick fragments above Feature 5
VII Feature 5 Fill - 10 YR 3/3 dark brown mottled with 10 YR 4/4 dark yellowish brown jumbled loam
VIII Lower Feature 5 Fill - 10 YR 4/3 brown silty loam, possible alluvial deposit

5. Input instrument height - *shift* 7
6. Input target height – *shift* 8
7. Input datum coordinates – *shift* S-O > 1
8. Input backsight coordinates – *shift* S-O > 2
9. Put target on backsight
10. Sight target – *shift* 6
11. Set to distance Mode - *shift* RCL – set to fine, repeat
12. Now you are ready to shoot in a point
13. Put target on point
14. Press 4

*Note * You can check the signal by pressing *shift* light bulb

15. Record the point (or make sure it was captured by the data collector)

HISTORIC ANNAPOLIS ARCHAEOLOGY PROJECT
LEVEL REPORT

Example Only

Site: 18AP45
Square: N20W15
Stratum: B

Date: 7/15/87 - 7/16/87
Excavator(s): Carey O'Reilly, John Dacto

I.H. 5.03

Opening Elevations: NE 3.61 1.42 AD; NW 3.64 1.39 AD
Measurement: B.S. (tape) ☐ B.D. (transit) ☑
x_2C 3.82 1.21 AD; y_3SE 3.92 1.11 AD; SW 3.94 1.09 AD

I.H. 5.03

Closing Elevations: NE 3.69 1.34 AD; NW 3.72 1.31 AD
Measurement: B.S. (tape) ☐ B.D. (transit) ☑
x_2C 3.88 1.15 AD; y_3SE 3.95 1.08 AD; SW 3.95 1.08 AD

Description

Stratum Definition:

10YR 4/4 dk y br sandy clay loam in west ½ of unit level is under A and above C

Feature Association:

F29
F32 } found at base of level "B"

Artifacts (Diagnostic):

Bag# 379 Styrofoam, coal, brick, shell frags, ironstone, coarse earthenware (glazed), clear glass curved, clear window glass, pull tab from alum can, 1959 nickle.

Interpretation:

Thin level of recently deposited sandy clay loam, just under "A" in west ½. Stopped with find of F32 + 29. Could probably have been included with level "A" but soil was slightly more yellow than A

1962 (styrofoam, pull tab)
terminus post quem

Photographs: B + W ☐ Color ☑

Recorder: Carey O'Reilly
Checked: E Reid

HISTORIC ANNAPOLIS ARCHAEOLOGY PROJECT
FEATURE REPORT

Site: 18AP45 Example Only

Square: N20 W15

Feature: 32

Stratum (or strata): a

Date: July 15, 1987

Excavator(s): Carey O'Reilly
John Dacto

. H. 5.03

Elevation (at top): NE ____ NW ____ C 3.78 SE ____ SW ____ 1.25 AD

Measurement: x, B.S. (tape) ☐ B.D. (transit) ☑

I.H. 5.03

Elevations (at bottom): NE ____ NW ____ C 3.88 SE ____ SW ____ 1.15A

Measurement: x, B.S. (tape) ☐ B.D. (transit) ☑

Feature Description:

Small circular depression filled with 10YR 7/3 v. pale br silty ash

Artifacts (diagnostic):

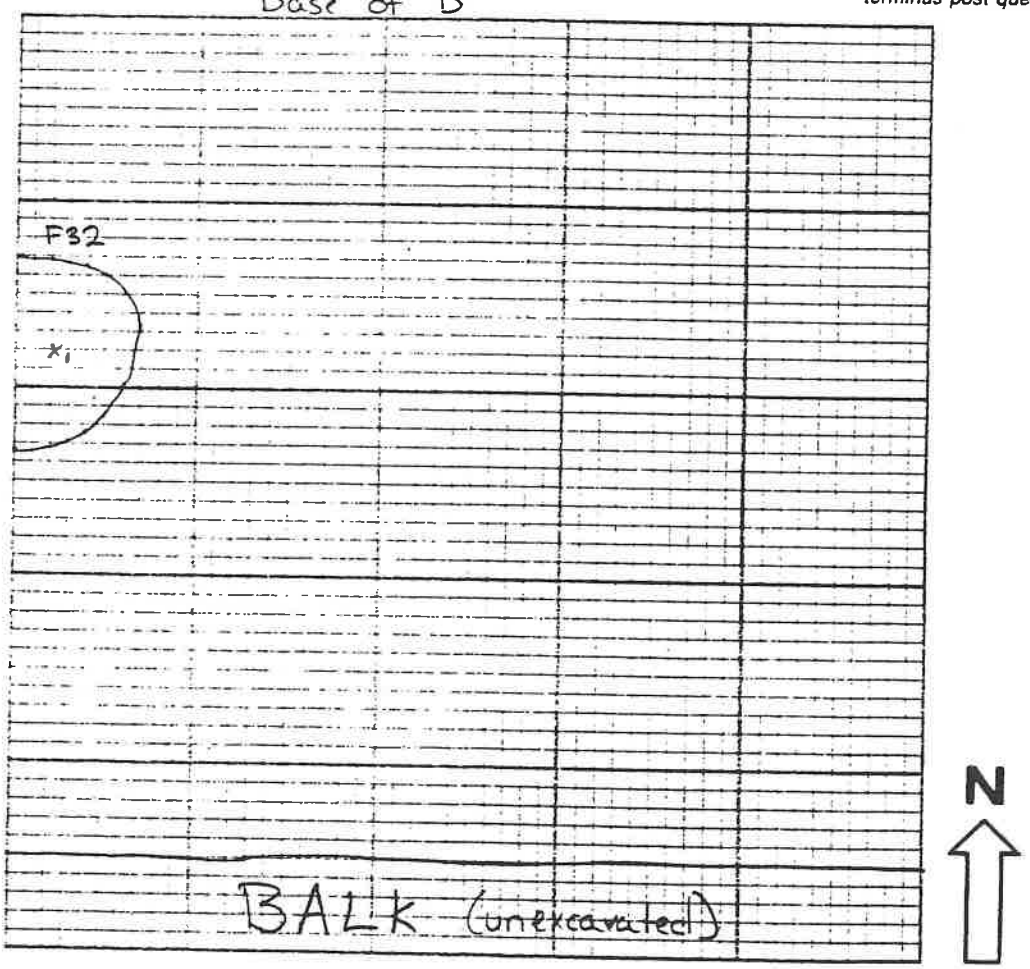
Bag # 387 many coarse earthenware flower pot sherds (molded), aluminum foil, whiteware porcelain, brick frag, coal flecks, clear glass

Interpretative Comments:

planting hole mid-20th cent. - plants visible in 1950s photos may be from this area,

profile drawn - drawing # 53

1940 (alum foil)
terminus post quem



Scale: 1/10 foot

Photographs: B + W ☐ Color ☑ Cross-Section: Yes ☐ No ☐

Recorder: John Dacto

Checked: E. Reid

Example Only

EXCAVATION UNIT SUMMARY FORM AP45

Unit: N20W15 **Date Opened:** 7/14/87 **Date Closed:** 8/5/88

Objective of Unit Excavation:

Unit is expansion of N15W15 and N20W10 to locate the western extent of possible Carroll cellar and to expose further structural remains

Level or Feature	Comments on Level and Relationship to Surrounding Units	Level above	Level below	TPQ and Dag #'s	Elevations opening	Elevations closing	Munsell and Soil Description
A	Topsoil - overlying "B" in west ½ and "C" in east ½ (1968 penny)	surface	B, C	1968 370	1.56 / 1.06 AD	1.46 / .99 AD	10YR 3/2 dk gr br sandy loam
B	thin lens in west ½ under "A" and above "C"; poss. from water carried erosional deposit, no artifacts	A	C	late 19th / 20th C 379	1.42 / 1.09 AD	1.34 / 1.08 AD	10YR 4/4 dk y br sandy clay loam
C	Sandy loam w/coal flecks throughout unit. Under "A" + "B" + over "D". Ended as soil became lighter + mottled. Assoc. w/ F29a + F32a.	A, B	D	late 20th 385	1.38 / .98 AD	1.13 / .85 AD	10 YR 3/3 dk br sandy loam
F29a	clay "blob" in south wall and in N15W15. probable planting hole	in "C"		20th 384	1.22 AD	.89 AD	10YR 6/8 br y clay
F32a	small, shallow circular feature along west wall with flower pot sherds - planting hole	in "C"		20th 387	1.25 AD	1.15 AD	10YR 7/3 v. pale br silty ash
D	Destruction layer of greenhouse (structural debris of mortar, brick, + glass frags) c. 1912 ended w/increased mortar + brick content + looser, sandy soil.	C	E	early 20th 402	1.13 / .85 AD	.77 / .55 AD	10 YR 4/4 dk y br sandy loam

Example Only

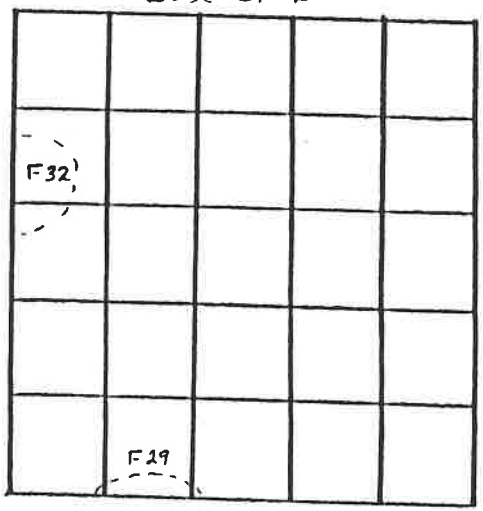
Example only

Unit Status:
In Progress ☐ Excavated ☐ Backfilled ☑

Drawings:

Number	Subject	Comments
# 52	F29 profile	(8-1-87)
# 53	F32 profile	(8-1-87)
# 60	North wall profile	(8-6-87 7-8-88)
# 63	West wall profile	(8-7-87 7-8-88)

Base of B



Scale:
1 square = 1 foot

Summary Paragraph:

N20W15 was opened to locate and excavate the cellar continued from units to north and east. No western or southern edge was identified. Other than 2 20th C. planting features, no features were found. The stratigraphy was simple: recent deposits on top of c. 1912 Redemptorist greenhouse destruction level w/ lots of glass & brick. The greenhouse rubble overlay a thin deposit of mid-19th C. Frame House destruction rubble (the sm. amount suggests the cellar area was somehow protected such as with a floor or partition). The underlying "cellar" deposit was very rich in 18th C. ceramics, particulary porcelain. It's shallowness suggests it may simply be a below floor deposit rather than a cellar, although it is possible it is the bottom of a thicker deposit which was stripped during demolition. Similar stratigraphy as N25 W15, N25 W10, & N20 W10.

Example Only

HOW TO PREVENT HEAT STRESS

1. Avoid dehydration --

   You must replace the fluid your body has lost. Drink plenty of fluids all day long. When the temperature is extremely high, you should drink a glass of water or juice about every half hour. Don't depend on your thirst to signal when and how much water you should be drinking.

2. Eat right, eat light --

   Eating light meals and avoiding hot, heavy, calorie-laden meals is a good way to help prevent heat stress. Fruits and vegetables are not only high in water content, they also contain vitamins and minerals to replace those that are depleted when you sweat heavily.

3. Dress sensibly --

   Wear loose-weave, light-weight, cotton clothing which allows perspiration to evaporate, keeping you cooler. Light colored clothing reflects the sun's rays rather than absorbing them. Wear a hat to shield your head and face.

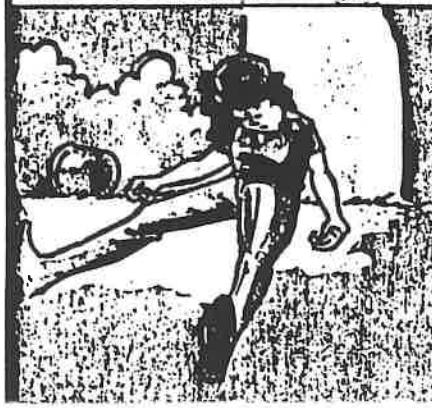
The Three Most Common Forms of Heat Illness

Heat cramps

Have you ever gotten severe muscle cramps while working—or playing—in very hot weather? Painful muscle spasms can occur when you are sweating heavily in high heat. Any muscles may be affected, but most often it's the muscles you've been using.

Heat exhaustion

A more serious condition, heat exhaustion involves a variety of symptoms, including weakness and nausea (and often heat cramps are the first warning sign). Heat exhaustion results when your body loses too much water through heavy sweating.



Heatstroke

The most serious form of heat stress, heat stroke occurs when the body's regulatory system simply breaks down. This can happen with very little warning, and if not treated, can lead to loss of consciousness and death.

TREATMENT

Condition	Symptoms	How to Treat
Heat Cramps	Painful muscle spasms. Sweaty skin. Normal body temperature.	Sit or lie down in shade or away from source of heat. Drink cool water. Gently stretch and massage cramped muscles. 
Heat Exhaustion	Sweating; moist, clammy skin Weakness and fatigue. Nausea, vomiting. Slightly elevated temperature. Headache. Disorientation.	Remove victim from heat. Apply cool wet cloths. Fan victim. Stop if victim develops goose bumps or shivers. Get medical attention if no improvement. 
Heatstroke 	Hot, dry skin. Red or spotted skin. Extremely high body temperature. Mental confusion. Convulsions. Loss of consciousness.	Remove person from heat. Remove clothing and place victim in a cool bath or apply cool compresses to body. Get medical attention immediately. 

Field characteristics of the major textural classes

Soil Textural Class	Characteristics: Feel (moist)	Ability to: Form Stable Ball	Ribbon out	"Soils" Hands	Plastic Prop.	Sticky	Consistence: Moist	Dry
SAND	Very gritty	No	No	No	No	No	Loose	Loose
LOAMY SAND	Very gritty	No	No	Yes (slight)	No	No	Loose	Loose
SANDY LOAM	Gritty	Yes (easily deformed	Yes (dull surface; poorly formed)	Yes	No	No	V. friable	Soft
LOAM	Gritty	Yes	Yes (dull surface; poorly formed)	Yes	Yes (slight)	Yes (slight to mod.)	Friable	Soft
SILT LOAM	Velvety	Yes	Yes (dull surface; poorly formed)	Yes	Yes (slight to mod.)	Yes (slight to mod.)	Friable	Soft
SILTY CLAY LOAM	Velvety and sticky	Yes (very stable)	Yes (shiny surface; wall formed)	Yes	Yes (mod.)	Yes	Friable to firm	Slightly hard
CLAY LOAM	Gritty and sticky	Yes (very stable)	Yes (shiny surface; well formed)	Yes	Yes (mod.)	Yes	Firm	Slightly hard to hard
SANDY CLAY LOAM	Very gritty and sticky	Yes (very stable)	Yes (well formed; shiny surface)	Yes	Yes (mod.)	Yes	Friable to firm	Slightly hard to hard
SILTY CLAY	Extremely sticky with slight grittiness	Yes (very resistant to molding)	Yes (well formed; very shiny surface)	Yes	Yes (strong)	Yes (very sticky)	Firm to extremely firm	Hard to very hard
CLAY	Extremely sticky and very smooth	Yes (very resistant to molding)	Yes (well formed; very shiny surface)	Yes	Yes (strong)	Yes (very sticky)	Firm to extremely firm	Hard to very hard

ANTH 496/696 Field School in Urban Archaeology

Conventions for Writing Unit Summaries for Archaeological Site Reports

Here are some notes that came to me after reading the first drafts:

1. Avoid passive writing—try to write in an active voice ("We observed…" rather than "There was a…", etc.). Also, write in the present tense for descriptions ("Level A is contemporary turf and topsoil…" not "Level A was the turf and topsoil"), past tense for narrative ("We observed at the bottom of Level A," rather than "We can see at the bottom of Level A…"). Voice and tense are tricky—watch for random tense changes in the middle of a paragraph.

2. In addition to the description of each level, include at least one paragraph that presents an overview of stratigraphy in the unit before you get into describing each individual level.

3. Munsells—the format for a Munsell color definition is as follows: give the code, followed by the description in parentheses, as in "Level A is a 10 YR 3/3 (dark greyish brown) sandy loam." Also, color is an adjective and cannot be the subject of a sentence! You do not find or observe at 10 YR 3/3, you find or observe a SOIL that is 10 YR 3/3. The soil is the subject of this sentence.

4. Write out numerals less than twenty, and always write out numerals if they start a sentence. Also, always write out "nineteenth" and "twentieth" for centuries.

5. "Level" should be capitalized if it is proper, i.e. "Level A".

6. Even though you don't have elevations, write a dummy sentence that works in your text where someone could insert elevations for level descriptions.

7. As far as methodology is concerned, you do not need to be too specific about tools, screens, etc. There will be a separate methodology section in the report. Just say that the unit was hand-excavated.

8. Compound words, especially adjectives like in the section above, need an n-dash. For example, describing a "twentieth-century fill," or a "one-story addition." Try it out.

9. Some word suggestions: instead of saying "dug", try "excavated". Instead of "saw," "find" or "found" try recovered, observed, noted, identified, etc.

10. The "which hunt": the words which and that are not interchangeable—which is only used appropriately after a comma or within parentheses. Use "that" in all other cases, which is just good grammar.

ARCHAEOLOGY IN ANNAPOLIS
ARTIFACT CATALOG COMPUTER CODES

(Where XX appears, substitute codes from attribute list)

CERAMICS

Earthenware 100000

Coarse Earthenware 120000
- Unglazed (describe in comments) 120001
- Aboriginal (describe in comments) 123000
- Iberian Storage Jars (1763)c.1745-1780--ext wash,int clear glaze [p.143] 124000
- Interior Lead Glazed (describe in comments) 120002
- Exterior Lead Glazed (describe in comments) 120003
- Int/Ext Lead Glazed (describe in comments) 120004
- Black Glazed Redware (only true black glaze) 127100
- Staffordshire Manganese Mottled (late 17th, early 18thc) buff body streaked brown glaze, very porous..... 126000
- North Devon Gravel Tempered Ware (1713)c.1650-1775--red to gray body, apple green glaze 121100
- Buckley Ware (1746)c.1720-1775--streaked body, black glaze [pp.132-133,135] 122000
- Coarse Agate (1780)c.1750-1810--marbled body--date excludes doorknobs, [p.132] 129500

Slipwares 129000
- Slip Combed (1733)c.1670-1795 [pp.107,134-135] 129005
- Combed + Dotted (1733)c.1670-1795 [pp.107,134-135] 129400
- Trailed (describe in comments) 129006
- North Devon Sgraffito (1680)c.1650-1710--incised dec [pp.104-105] 129100
- American Brush Trailed (describe in comments) [p.99] ... 127500
- American Brush Trailed w/ copper green dec [p.99] 127508
- Other Coarseware Attributes (describe in comments) 120009

Refined Earthenwares 130000

Tin Glazed Earthenware 112000
- White Glazed (1720)c.1640-1800 (may have blue tint) [p.109] 112011
- Blue Dash Chargers (1670)c.1630-1720--rim dec [pp.108-109] 112012
- Identifiable Design Motif (describe in comments) 112013
- Manganese stippling (green or brown stipple dec) 112016
- Blue on White (other) 112017
- Polychrome Pallette (describe in comments) 112018
- Other (describe in comments) 113200

CERAMICS (CONT.)

HIGHLY FIRED REFINED WARES (these types of ceramics are under debate as to whether they are earthenware or stoneware) . 250000

Black Basalt (1785)c.1750-1820--dry, black body [pp.121-122] 2361XX
Rosso Antico (1733)c.1690-1775--dry, red body; sprig molded [pp.121-122] 236252
Engine Turned (1769)c.1763-1775--dry, red body; incised lines [p.121] 236251
Jasper (1774 to early 19thc) dry, color tinted; sprig molded 236352
Lead Glazed Refined Redware 2365XX
Jackfield (1760)c.1740-1780--red to purple body, black glz [p.123] 2370XX
Astbury (1738)c.1725-1750--red body, white sprig molding [p.123] 238052
Shaw (1741)c.1732-1750--red body, int wht slip [p.118]. 2390XX
Ironstone (1870) c.1840-1900, [p.131] 136000
Undecorated 136020
Rockingham (19thc) hard, buff body, mottled br glz 137500
Undecorated 137520

STONEWARE

Coarse Stonewares 200000
Gray Bodied 220000
rhenish blue and gray (1668)c.1650-1725--w/manganese dec [pp.280-281] 221047
rhenish blue and gray 221048
rhenish blue and gray (1713)c.1650-1775--incised [pp.280-81] 221050
rhenish blue and gray (1738)c.1700-1775--stamped or geometric designs [pp.284-285] 221048
American blue and gray (mid 18th-19thc) thick cobalt dec [p.101] 211000
w/albany slip (int slip--indicates later ware)[p.101]. 213000
Hohr (1700)c.1690-1710--plain gray, incised or sprig molded [p.284] 220050
Other gray bodied (describe in comments) 220009
Frechen (1625)c.1550-1700--Bellarmine Bottles [pp.55-57] 222000
Brown Bodied 229999
English Brown (1733)c.1690-1775 [pp.112-14] 230000
Burslem (1738)c.1700-1775--crouch ware [p.114] 232000
Fulham (1733)c.1690--1775--mugs and tankards [pp.112-114] 233000
American Brown (mid 18thc) [p.100] 212000
Other Brown Bodied (describe in comments) 230500

HANDPAINTED DECORATIVE ATTRIBUTES

No further analysis 00
Undecorated 20
Blue on White 21
18thc. pallette (peasantware) 22
19thc. pallette (reds, etc...) 23
Stenciled 24
Sponged 25
Luster Glazed 26
Finger-trailed 27
Mocha 28
Banded 29
Overglaze Painting 30
Gold Gilding 31

TRANSFER PRINTED DECORATIVE ATTRIBUTES

No Further Analysis 00
Overglaze Transfer Print 32
Underglaze Black 33
Underglaze Blue 34
Underglaze-other 18thc colors 35
Underglaze-19thc colors 36
Flow Blue 37
Decalcomania 38
Underglaze Green 39
Underglaze Red 40

OTHER DECORATIONS

Incised/applied design 50
Engine-turned 51
Sprig-molded, relief dec 52
Molded rim (identify design) 53
Molded 54
Incised 55
Applied 56

GLASS

Glass general 600000

Flatglass .....
  Window 609999
   Bull's eye 610000
  Mirror 610001
  660000

Bottle Glass 629999
  Wine/Liquor Bottle (dk olive green) 630000
   wine/liquor neck 630001
   wine/liquor base 630002
   wine/liquor frag 630003

  Round Bottle (whole) 630084
   round neck 630081
   round base 630082
   round frag 630083

  Case Bottle-square (whole) 630074
   case neck 630071
   case base 630072
   case frag 630073

  Medicinal Phial-18thc. 621000-16*
  Medicinal Bottle-19thc. (see Hume, p.73).....620017-21*

  Blown-in-Mold Bottle (whole)..... 631000
   blown-in-mold neck 631100
   blown-in-mold base 631200
   blown-in-mold frag 631300

  Machine Made Bottle (whole)..... 632000
   machine made neck 632100
   machine made base 632200
   machine made frag 632400

Drinking Glass 640000
  Wineglass (whole) 641000
   wineglass frag 641090
   wineglass bowl 641091
   wineglass stem 641050-75*
   wineglass base 641085-89*
       (see Noel Hume, p.190)

ARCHITECTURAL MATERIALS

Nails General 710000
- Handwrought 711000
  - rose head 711001
  - L-head 711002
  - headless 711003
- Cut 712000
- Modern (wire) 713000

Plaster 720000
- Shell Tempered 721000
- Shell Tempered, painted 721001
- Shell Tempered, lath marked 721002
- Horse Hair Tempered 721003
- Modern 722000

Mortar 730000
- Shell Tempered 730001
- Modern (concrete goes here) 730002

Stone
- Stone, Natural (bog iron goes here) 750000
- architectural or landscape
  - worked 752000
  - paving 752001
  - step or landscape 752002
  - other building related 752003
- Worked for Flints 752004
- Worked, other 752005
- Prehistoric Materials 880000
  - Stone debitage 752006
  - Stone Tools (specify) 752007
  - Stone Tool Fragment 752008

Brick
- Brick General 760000
  - wall brick 760001
  - well brick (curved) 760002
  - coping brick 760003
  - marked 760004
  - paving brick 760005
  - fire brick 760006

Organic Materials (cont)

Worked or Shaped Bone	881500
form identifiable	881501
Worked or Shaped Horn	882000
form identifiable	882001
Coal/Clinker	870004
Coal	870005
Clinker	870006
Bog Iron (same code as stone, natural)	750000

Metal Materials (Slag) 900000

Iron	910000
form identifiable (other than nails)	910001
Brass	920000
form identifiable	920001
Pewter	930000
form identifiable	930001
Lead	940000
form identifiable	940001
debitage-puddles	940002
printing type	943000
Copper	960000
form identifiable	960001
Silver	970000
form identifiable	970001
Other Metal	950000
form identifiable	950001

Synthetic/Recent Materials 980000
Synthetic/Recent Samples 981000

Mixed Materials	990000
form identifiable	990001

FORMS

Identifiable Ceramic Fragment Attributes

Spout	0030	Lid	0036
Handle	0031	Cup	0037
Rim	0032	Plate	0038
Hollow Body Frag	0033	Bowl	0039
Flat Body Frag	0034	Figurine	9801
Base	0035	Flowerpot	8500

Identifiable Glass Fragment Attributes

Hollowware	5998	Jar	6300
Flatware	5999	Canning Jar	6951
Bottle	6200	Jar lid liner	6952
Bottle finish	6201	Lamp Globe	8761
Carboy	6970	Lamp Base	8763
Perfume	9416	Lamp Chimney	8762
Patent medicine	6960	Candle sticks	8760

Identifiable Attributes

Window Came	9110	Thimble	9340
Hinges gen or type unknown	9125	Wig Curler	9345
door	9126	Coin	9410
furniture	9127	Comb	9415
other	9129	Jewelry	9420
Locks general	9135	Key	9430
door	9136	Doll/Doll Parts	9441
Keyhole	9146	Marble	9442
Screw	9150	Game Piece	9443
Upholstery Tacks (brass)	9176	Slate Pencil	9445
Wire	9180	Toy	9446
Insulator	9181	Writing Implement	9460
Drain/Sewer Pipe	9102	Toothbrush	9406
Cutlery	9201	Bead	9401
Buckles	9305		
shoes	9306	Spring	9550
other	9308		
Button	9310		
1-piece	9311	Weapon Related	
2-piece	9312	Gunflints	9640
Collar button	9426	Shell Casing	9660
Clothing Fastener	9316	Shot, Ball, Bullet	9661
Pin	9320		
handwrought	9321	Harness Related	
machine made	9322	Horse shoe	9726
Safety	9323		
Scissors	9335		

Add Shoes
Regular tack ?

ABBREVIATIONS CONTINUED

METALS

Aluminum -- Al
Copper -- Cu
Gold -- Au
Iron -- Fe
Lead -- Pb
Magnesium -- Mg
Silver -- Ag
Tin -- Sn

SPECIFIC PATTERNS/EDGE DECORATIONS

Barley Pattern -- Brlypttrn
Basketweave -- Bsktwve
Bead and Reel -- B&R
Beaded -- Bead
Diamond -- Dimnd
Dot, Diaper, and Basket -- D.D.B
Feather Edged -- Fthredg
Fluted -- Flut
Queen's Shape -- Qshp
Royal Pattern -- Rylpttrn
Scalloped -- Sclpd
Shell Edged -- Shledg
Spearhead -- Sprhd
Wheat Pattern -- Wheat

PLACE CODES

Removed for Conservation -- RFC (02)
Removed for Exhibit -- RFE (03)
Removed for Study -- RFS (04)
Removed for Crossmending -- RFM (06)
Water Screen -- WS

FORMS

Identifiable Ceramic Fragment Attributes

Spout	0030
Handle	0031
Rim	0032
Hollow Body Frag	0033
Flat Body Frag	0034
Base	0035
Lid	0036
Cup	0037
Plate	0038
Bowl	0039
Figurine	9801
Flowerpot	8500

Identifiable Glass Fragment Attributes

Hollowware	5998
Flatware	5999
Bottle	6200
Bottle finish	6201
Carboy	6970
Perfume	9416
Patent medicine	6960
Jar	6300
Canning Jar	6951
Jar lid liner	6952
Lamp Globe	8761
Lamp Base	8762
Lamp Chimney	8762
Candle sticks	8760

Identifiable Attributes

Window Came	9110
Hinges general or type unknown	9125
door	9126
furniture	9127
other	9129
Locks general	9135
door	9136
Keyhole	9146
Upholstery Tacks (brass)	9176
Wire	9180
Insulator	9181
Drain/Sewer Pipe	9102
Cutlery	9201
Buckles	9305
shoes	9306

Glass Container Analysis

Paul R. Mullins

March 20, 1989

Introduction

One of the most common artifact types from historical archaeology sites is bottle glass. The use of bottled products extends to every social and economic class, and, because bottles were relatively inexpensive and fragile, they are well-represented in the archaeological record. Bottles represent a very wide range of products and behaviors, are sensitive chronological markers, and reflect complex marketing patterns and consumer choices.

Nevertheless, most archaeological analyses fail to capitalize on the interpretive potential of bottles, primarily because of the fragmentation of archaeologically recovered glass and the late production dates of most bottles. Bottles which appear in archaeological literature are most commonly used as chronological indicators to date an archaeological context. Most of the attention of historical archaeologists has been directed at ceramics, which are generally more visually appealing, easier to reconstruct, and numerous in archaeological contexts. Glass assemblages, in contrast, are often very fragmented and composed of overwhelming numbers of very similar sherds, generally making bottle reconstruction a less efficient analytical strategy than ceramic reconstruction. Because the real boom in bottle production occured during the nineteenth century, bottle assemblages with great variety usually don't occur in archaeological contexts before the second quarter of the nineteenth century. Historical archaeology, however, has traditionally spent most of its attention on colonial contexts.

The glass reconstruction system developed for Archaeology in Annapolis is designed to refine the information which comes from cataloging sherds. Some assemblages will require modification of these procedures because of factors such as assemblage fragmentation, sample size, or time constraints, and some research questions will require an adjustment of the reconstruction procedure. Obviously, every assemblage will not yield a reliable minimum vessel count, but artifact recostruction isn't simply intended to make a vessel estimate, rather, it's a method for organizing our information and directing interpretive strategies. Even on highly fragmented assemblages, reconstruction data provides a concise record of all the available information such as mend proveniences, embossing, and vessel portions and identified forms. These data make interpretation and inter-site comparisons considerably more effective. To make the system effective, each assemblage needs to be evaluated in terms of its composition, our research questions on the assemblage, and practical concerns, such as time and funding.

Bottles

The reconstruction and vessel analysis of glass assemblages has adapted many of the methods used for ceramic assemblages. However, because the interpretation of bottles and the nature of bottle assemblages is somewhat different from that of ceramics, there are also a few techniques which have been tailored to the interpretation of bottles.

There are several reasons to study glass with methods which differ from those used for ceramics. First, the consumer behaviors reflected in bottles are quite different from those of ceramics, because a bottle is not a product in the way a ceramic is. Consumers went to a

technique, thousands of small, regional breweries, dairies, and pharmacists produced bottles identifying their product. The embossed trademarks and designs on bottles have been well-researched and can be used to study what types of brands the market is providing (e.g., local or national brands), and the functional types of bottled products available on these markets. The glass reconstruction and cataloging system emphasizes the interpretation of embossed glass marks.

Fourth, bottles are often very fragmented in archaeological contexts, typically more than ceramic assemblages, so the reconstruction process can be quite different from that for ceramics. Discrete contexts such as wells or trash pits can yield bottle samples with very high percentages of mends and reliable vessel estimates, but most field contexts are less pristine and yield highly fragmented glass assemblages. A yard context, for example, will often yield few glass mends; people probably would not have tolerated glass underfoot. After initial discard, glass is very readily re-broken and scattered, so small sample areas sometimes yield few mends. The process of mending and trying to identify a minimum number of vessels in these assemblages can be an ungratifying task. To be realistic, many glass assemblage reconstructions are not designed to yield a highly reliable vessel count, rather they are intended to reflect our reliable perceptions of the assemblage. When we begin to develop impressions of factors such as functional nature of the assemblage, the spatial distribution of the sherds, and the quantity of vessels recovered, we can refine further interpretations of the assemblage.

Glass Reconstruction

The system we're developing here is designed to evaluate bottle assemblages regardless of their extent of fragmentation, size, or period of production. Rather than ignore the potential of highly fragmented assemblages or small samples, we've developed a system which will evaluate the effectiveness of mending all our assemblages. The information we get from the analysis of discrete features is certainly very important to our interpretations of consumer behavior, but the less glorious and more common glass samples provide a wealth of data which needs to be studied in a comparable framework.

These procedures are intended to standardize our record system and increase our information on an assemblage without sacrificing efficiency. Because the basic framework of this system is a reflection of my own experience with archaeological glass collections, we may find that some of these procedures or terminologies need to be modified for the types of collections we work with. Don't hesitate to point out procedures which are unclear or ineffective.

Glass vessel reconstruction

Vessel number:_____-_____

Glass type

container:____ table:_____ lighting:_____ unknown:____

Sherd count total:_____

base:_____ body:_____ rim/lip:_____ complete ve

Dimensions

Height:_____

Rim Diameter:_____

Body diameter:_____

Base diameter:_____

Fragment size:_____ (if other vessel dimensions unk

Provenience(s):_____

vessel form/bottle type:_____

technology

molded:_____ free blown:_____ machine made:_____ u

mold type:_____

embossing:_____

leaded:____ non-leaded:____ not fluoresced:____

other decoration:_____

comments:_____

Table vessels

bowl
carafe/decanter
cruet castor
mug/cup
pitcher
plate
salt
goblet
tumbler
creamer
vase
salver/compote
other stemware
closures
other (e.g., napkin rings, toothpick holders, etc.)
unknown

Bottle technologies

free-blown
dip molded
two-piece molded
two-piece molded with separate base
Ricketts-type molded
turn molded
pattern molded
optic molded
press molded
machine made

Table technologies

free-blown
contact molded
press molded
pattern molded
optic molded
turn molded
machine made

C. The vessel's exterior should be symmetrical, however the interior is often uneven. There are commonly embossed designs on these bottles.

D. This mold type was commonly used to produce flasks, soda bottles, and pharmaceutical vessels.

5. **Two-piece mold with separate base part**: These vessels are produced in a two-piece mold with a separate base mold. This mold can be used to produce a vessel's finish, but it is still usually done manually. Vessels in unusual shapes, usually tableware forms, also occur using a three- or four-piece mold with a separate base, however they are quite unusual.

A. Mold seams extend along the body from the finish to the base, where it will extend around the vessel's exterior heel.

B. As with other two-piece molds, these vessels have symmetrical exteriors and are often embossed.

6. **Ricketts-type molds**: Ricketts-type molds are three-piece molds which incorporate a dip mold to form the body and two matching molds to shape the shoulder and neck of the bottle.

A. A horizontal mold seam runs around the vessel's shoulder. Vertical mold seams on opposite sides of the vessel extend from above the shoulder seam, usually no further than partially up the neck.

B. Embossing may appear on the vessel's shoulder, but it will not be found on the bottle's body. Separate base parts, which will leave a seam, may also have molding.

C. These vessels were commonly produced as wine and liquor containers.

7. **Turn-molded**: The inside of a mold is coated with paste and hot glass is inserted into the mold and rotated as it conforms to the mold. This process can only be used for circular vessels.

A. The mold leaves no mold seams, rather it leaves indefinite horizontal lines on the exterior surface which formed as the vessel was turned. The vessel's surface will have a polish which would be unusual in a molded bottle.

B. The vessel will have no embossing unless a separate base part is embossed.

C. The vessel will be symmetrical.

8. **Pattern-molding**: A partial-sized mold is used to give a vessel a recurring design, but the final vessel form is free-blown and hand-finished to a final shape. In Canadian contexts, containers using this technology are usually flasks; tableware forms such as tumblers are often produced using this technique.

Decorative types

1. **Molded motif**: These motifs are typically geometric designs, such as diamonds or panels. A detailed listing of types of motifs is provided in Jones, et.al.(1981:58), but for purposes of the catalog procedure, the comment molded motif is generally adequate. If the mold motif is identifiable, such as a molded eagle on a flask, this should be described in decorations.

2. **Air twists**: Air bubbles are drawn out within a vessel, virtually always a goblet stem.

3. **Opaque twist**: Canes of opaque glass are twisted inside clear glass stemware. These twists sometimes appear in combination with air twists.

4. **Applied glass decoration**: Glass is superimposed on a glass vessel in any of a wide variety of techniques. For example, threads of glass can be laid onto the body or laid into designs cut into the vessel's body. Jones, et.al. (1981:52) discuss the complete range of design techniques, but recognizing the design as applied glass is sufficient for our catalog system.

5. **Gilding**: A preparation containing gold is painted directly onto the vessel exterior; these preparations tend to wear off, particulary after burial.

6. **Enamelling**: Metallic oxide is ground into an oil base paint which is applied to the vessel. The enamels tend to fuse with the vessel's body when it is fired in a kiln, however poorly fired enamel will wear off. Technically, paint is different from enamel (paint is smoother and more transparent than enamel), but for our purposes we will not make this distinction.

7. **Acid etching**: A vessel is coated with wax, a design is cut into the wax, and acid is applied to the vessel to dissolve the design into the glass. The resulting design will be very bright if a strong acid si used, but diluted acids produce a distinctive gloss. If the acid is diluted with ammonia, the design is somewhat obscure and has a frosted appearance.

8. **Engraving**: Small wheels or a diamond are used to engrave designs into a vessel. Diamond engraving can be done in the form of scratched or stippled designs which are formed of very thin, fine lines. Wheel engraving cut designs into glass, leaving a rough, unpolished surface in the space which is cut. Jones, et.al. (1981:56) characterize these designs as typically being crudely executed naturalistic motifs or curved lines used as tumbler borders.

FIGURES 6-8: PRODUCTION TYPES
Dashed lines denote mold seams

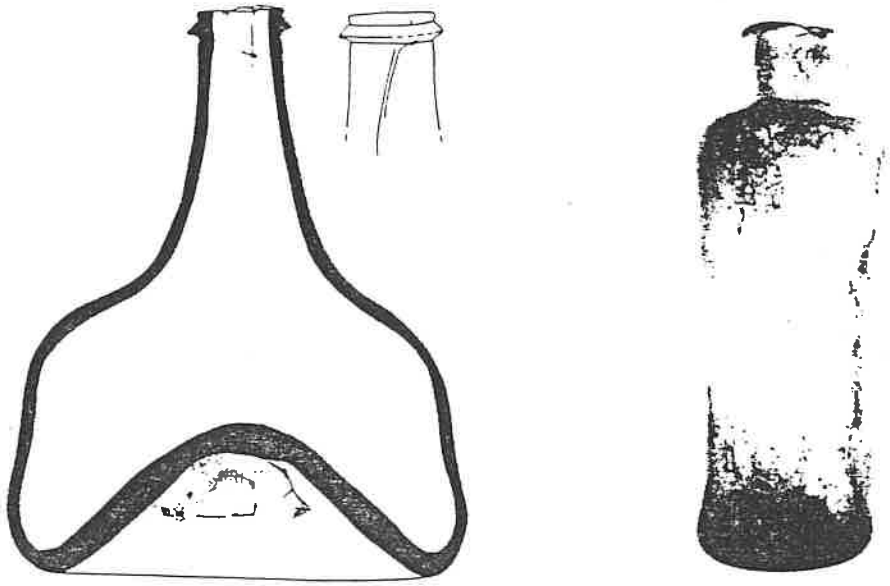
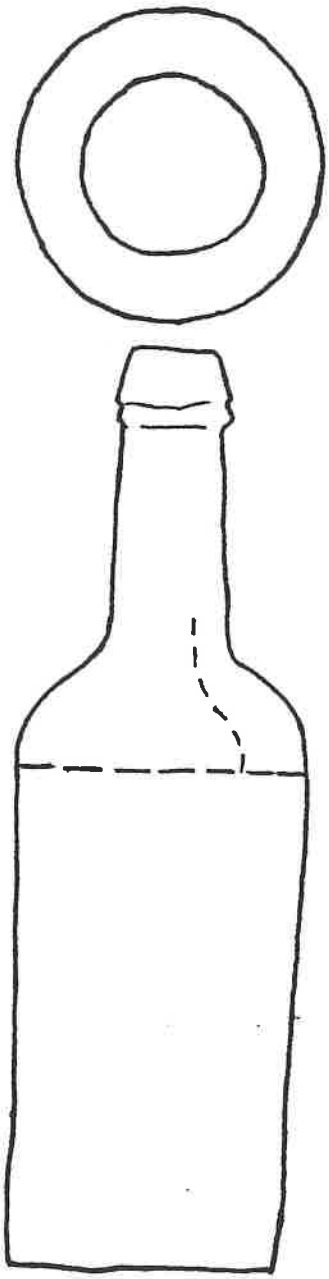


Figure 6: **Free-blown vessels**

Figure 7: **Dip-molded bottles**



Photographs fom Jones, et.al. 1981
NOT TO SCALE

FIGURES 12-16: BOTTLE FORM EXAMPLES
(Drawings from Baugher-Perlin 1982)

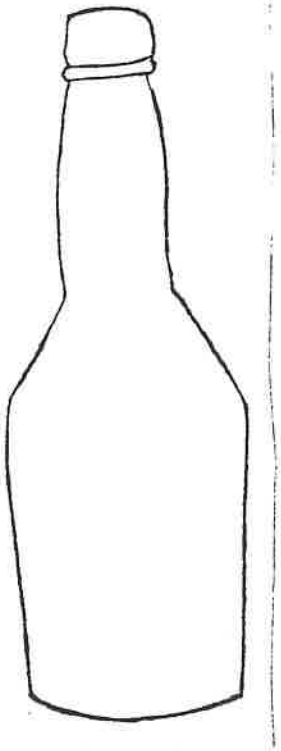


Figure 12: Beer bottle

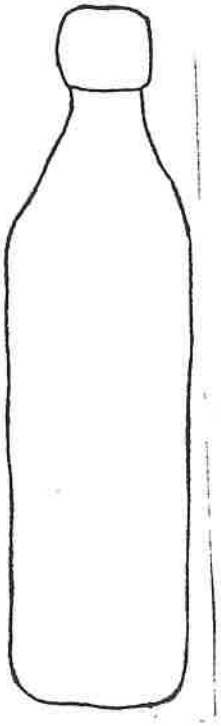


Figure 13: Soda bottle

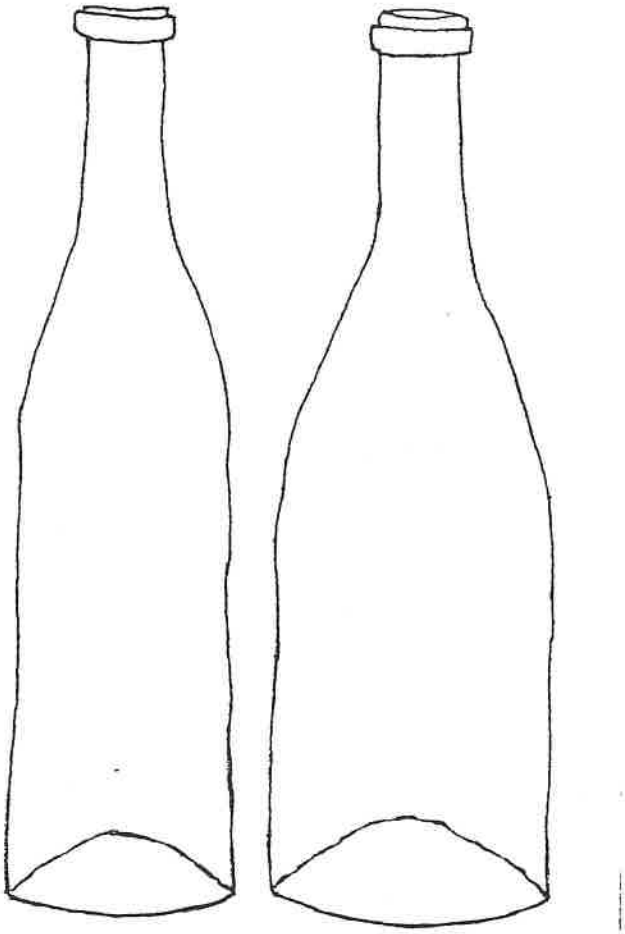


Figure 14: Wine bottle (left) and champagne bottle (right)

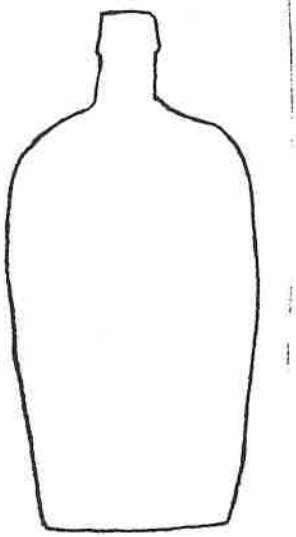


Figure 15: Liquor flask

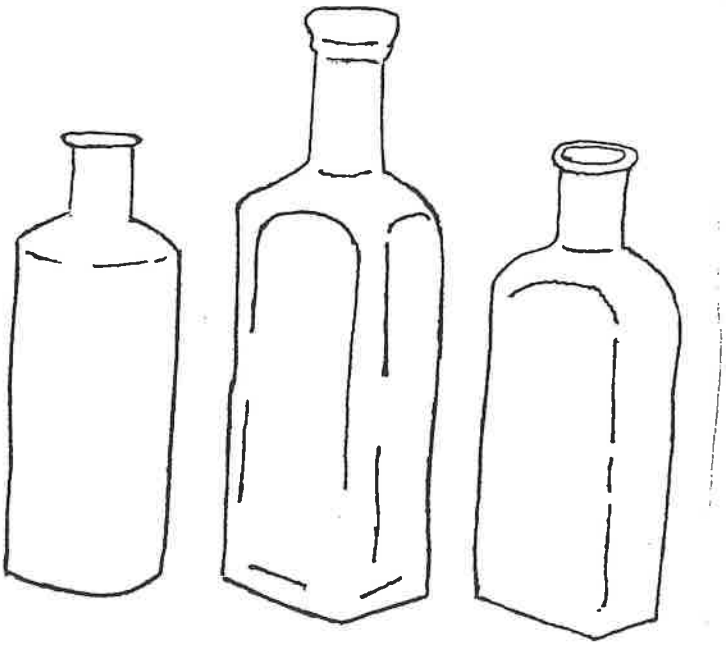


Figure 16: Pharmaceutical bottles

NOT TO SCALE

Blogging

As part of your course requirements, you will be asked to construct a blog post on any topic you would like pertaining to the work that you are doing at the time. If you aren't sure what to write about, explain what you did that week as though you were describing it to a member of the public who happened to visit our site. This will appear on the AiA Blog, managed by Beth Pruitt, and will be visible to the public.

1. Go to http://blog.umd.edu/aia, and log in at the bottom of the page using your UMD username and password. If you have trouble logging in, let me know. On the left side after successfully logging in, you'll see your options.

2. First, go to "Authors and Users" under the "Users" tab. Find your username and click "Edit." Type your name where it says "Nickname" and choose this as the name to display publically. Click the update button. "Posted by Beth Pruitt" looks far more human than "Posted by epruitt."

3. To create a post, go to "Add New" under the "Posts" tab. The title will go in the first text box and the post content in the one below that. There are two tabs, "Visual" and "HTML," just like you'd see with many e-mail clients. If you don't know HTML, use the Visual option. I would recommend typing the bulk of your post in a word processor, then copying and pasting after you've edited it. *Remember: save early, save often.*

4. On the right side, you have options to assign Tags and Categories to your post. These make the blog a little more organized and allow users to view particular topics of interest. The Category for your posts will be "Field School." Add tags that would be useful keywords for users browsing the blog. Choose, or create, tags that summarize what your post is about. They should be single words or short phrases, and should be general enough that others would also use them, but not so general that every post would have that tag. (Example: an "Archaeology in Annapolis" tag would be silly, since everything posted on the AiA Blog will in some way be about Archaeology in Annapolis.) Please use the "student post" tag for your posts.

5. I would encourage you to include pictures with your post. We maintain a Flickr account (http://flickr.com/annapolisarch), and we will be adding the pictures that you and others in the field school take to it throughout the summer. Wordpress will not allow you to add images without an administrator's approval, so just add the URL of the image from Flickr or another source if you wish it to appear with your post.

6. When you're finished, click the "Save Draft" button. The post will be published once it's approved by a blog administrator.

7. Feel free to comment on your fellow students' posts.

8. To ask questions about the blogging (including and up to "I've broken everything, what do I do?") send an e-mail to epruitt@umd.edu.

Ceramic vessel form definitions

Tableware

Baker: concave, rectangular vessel; comes in various sizes which stack into each other for storage; primarily late 18th and 19th century, refined wares

Basket: pierced-wall, concave vessel; often imitate silverwork of castor stands; refined ware from dating after late 18th century

Bowl, table: concave, circular vessel with footring, ranging in size from half-pint to several gallons; table bowls are made of refined wares, manufactured in all time periods

Centerpiece/epergne: vessels can take many configurations with tiers or multi-component serving divisions; refined wares, all time periods

Flatware: plate or platter of unknown or unusual shape (e.g., relish dishes); all wares and time periods

Loving cup: two-handled, bulbous cup; colonial ware, usually refined stoneware (figures 27 and 28)

Mug/tankard: single-handled, straight-walled drinking vessel with height exceeding width, capacity in excess of 1/4 pint; all wares and time periods (figures 25 and 26)

Plate: circular vessel with brim; refined white earthenwares should be cataloged by size when possible; all wares and time periods

- **Muffin**: 6" or 7" plate
- **Twiffler**: 8" plate
- **Supper plate**: 9" plate
- **Table plate**: 10" plate

Plate, oval: oval plate of less than 10" width or length; all ware types and time periods

Platter: oval or rectangular vessel with brim, over 10" in diameter; all ware types and time periods

Salt/condiment vessel: concave rectangular or oval vessel, often with pedasteled feet; sometimes in other shapes (e.g., hexagonal, octagonal), generally wider than it is shallow; all wares and time periods (figure 43)

Sauce boat: vessel with gutter and single handle at opposite ends of unlidded vessel; refined wares, usually post-1750 (figure 34)

Serving ladle: deep spoon usually designed for use with matching tureen; refined wares, all time periods

Sillabub/posset pot: circular, two-handled concave vessel with a spout exiting from near vessel's base or mid-section; 17th and early 18th century form, usually coarseware (figures 29 and 30)

Tureen: concave serving vessel, usually lidded, often with handles at opposite ends of vessel's long axis; range in size from single serving to several gallons, usually oval or rectangular shape; refined ware form dating to after last quarter of 18th century (figures 32 and 33)

Veilleuse: tall, hollow stand with circular opening on top onto which a covered bowl or teapot rests to be warmed; 18th and early 19th century refined ware form (figure 31)

Food preparation

Bottle: unhandled bulbous or straight-walled vessel with narrowest vessel diameter at rim; coarsewares, all time periods (figures 44-46)

Bowl: concave, circular vessel without footring, wide range of sizes; coarsewares, all time periods

Churn: straight-walled vessel with equal rim and base diameter and ledge for lid; separate lid has hole in center; vessel sometimes have single loop handle; usually range in capacity from three to six gallons; typically coarse stoneware, all time periods

Colander: handled pan with perforated bottom; 17th and early 18th century coarsewares (figure 35)

Crock/jar: bulbous or straight-walled vessel with rim diameter no greater than base diameter; preserving jars have small mouths, sometimes with ledge for lid; wide-mouth jars, sometimes known as butter pots, have rim diameter roughly equal to that of base; coarsewares, all time periods

Flask: bulbous vessel with narrow neck and two strap handles rising from vessel's shoulder; coarsewares, most common in 17th and 18th centuries (figure 42)

Galley pot: cylindrical vessel with slightly flared rim and base; tin-enameled ware, ca.1600-1800

Jug: one- or two-handled bulbous or straight-walled, narrow necked vessel, sometimes with pouring gutter; sometimes colonial jugs have cylindrical neck rising from a pronounced shoulder; coarsewares, all time periods (figure 39)

Pan: concave, circular vessel in shape of inverted truncated cone, without footring; coarsewares, all time periods (figure 38)

Pipkin: single-handled cooking pot with feet; sometimes vessels have two loop handles at vessel rims; 17th and 18th century coarsewares (figures 36 and 41)

Personal

Basin: concave vessel of greater rim than base diameter, with everted or rolled rim; can be oval or circular, has no footring; all wares and time periods

Bedpan: flat-based oval vessel with open top and flaring upward spout; usually late 19th century Rockingham ware

Chamber pot: single-handled, bulbous vessel with everted or rolled rim; later vessel sometimes have lids; all wares and time periods

Spitoon: circular vessel with vessel's top in form of trunctaed cone with hole in center; vessels sometimes have a pour-off hole somewhere near vessel's base; coarsewares, all time periods

Toothbrush holder: vertical or horizontal vessel with drain-holes at vessel's base; shouldn't be confused with celery drains, which are usually horizontal and open at both ends; refined wares, usually 19th century

TERM OPTIONS

Ware

see catalogue sheet

Vessel Form

see separate sheet

Primary decorative technique

undecorated
pierced
molded
slip decorated
incised design
fluted
combed slip
sprigged
engine turned
dipped
mottled colors
sponge/splatter
sponge stamped
shell edge
hand painted, overglaze
hand painted, underglaze
transfer printed, overglaze
transfer printed, underglaze
lustre
gilded
enamel painted
other

Style (in comments)

- Chinese
- Historical
- Pastoral
- Floral
- Rococo
- Romantic
- Geometric
- Rococo/ Chinese
- Biblical
- Gothic
- Natural
- Nautical
- Silver form

Technology (in comments if known)

- wheel thrown
- slip cast
- turned
- pressed
- other
- unknown

Shape (in comments)

- oval
- bell
- globular
- bulbous
- rectangular
- square
- octagonal
- hexagonal
- 10 sided
- 12 sided
- 14 sided
- 16 sided
- cylinrical
- double curve
- other (see comments)

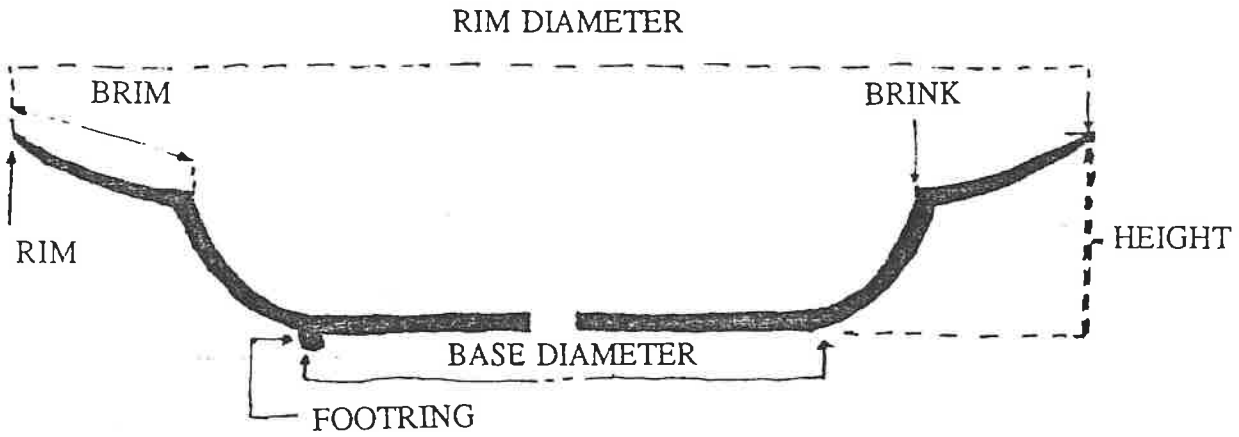


Figure 1: Plate morphology
(each side of this profile represents a different plate)

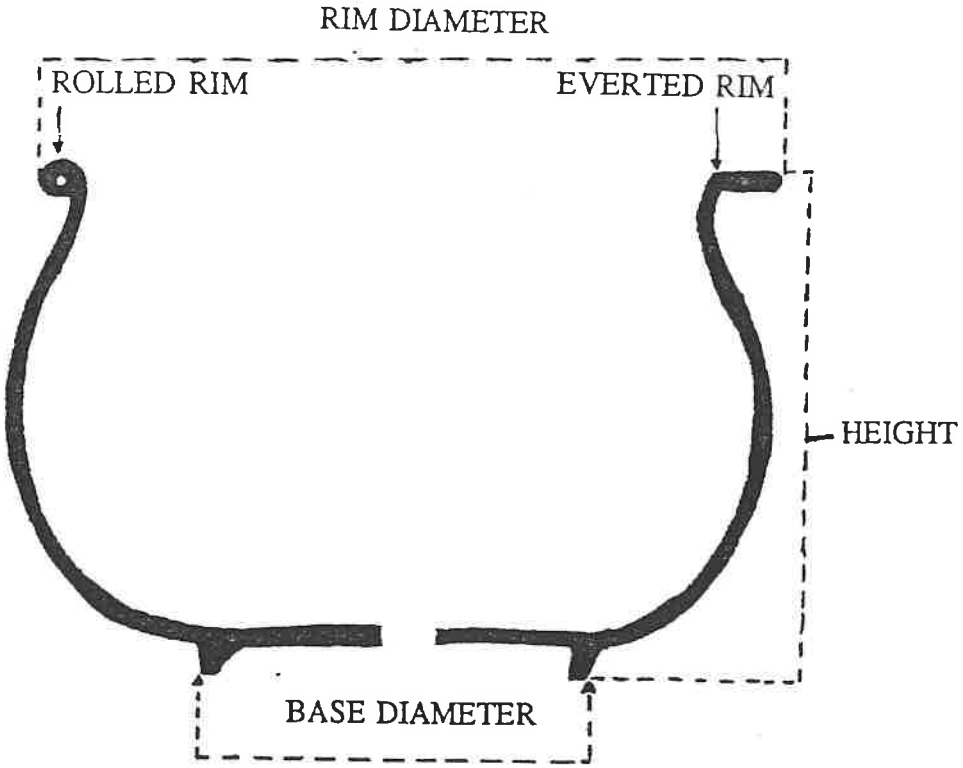


Figure 2: Chamber pot morphology
(each side of this profile represents a different vessel)

FIGURES 19-34: CERAMIC VESSEL FORMS

Figure 19: Pitcher (18th century)

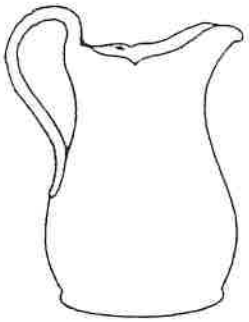


Figure 20: Pitcher (1855)

Figure 21: Coffee pot (1757)

Figure 22: Coffee pot (1770)

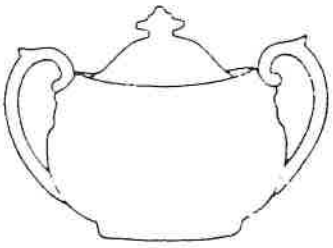


Figure 23: Sugar bowl (1815)

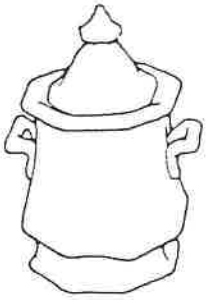


Figure 24: Sugar bowl (1850)

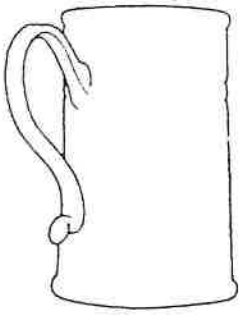


Figure 25: Tankard (1724)

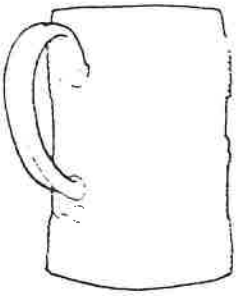


Figure 26: Tankard (ca. 1690)

Figure 27: Loving cup (1740)

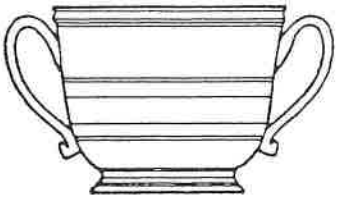


Figure 28: Loving cup (1740)

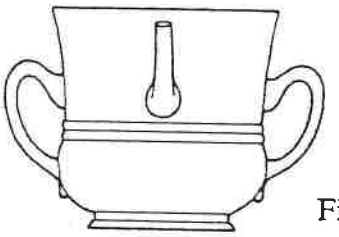


Figure 29: Sillabub/posset pot (1700)

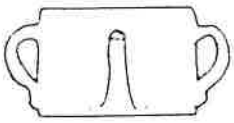


Figure 30: Sillabub/posset pot (17th century)

Figure 31: Veilleuse (ca. 1815)

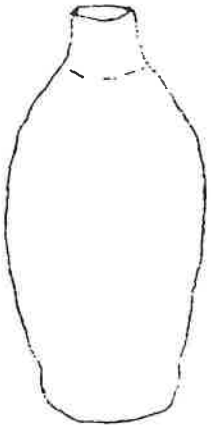
Figure 32: Tureen (1775)

Figure 33: Tureen and stand (1810)

Figure 34: Sauce boat (1814

NOT TO SCALE

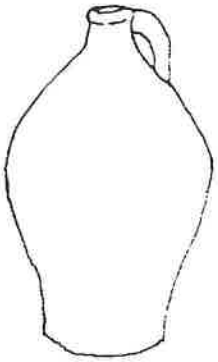
(NOT TO SCALE)



47

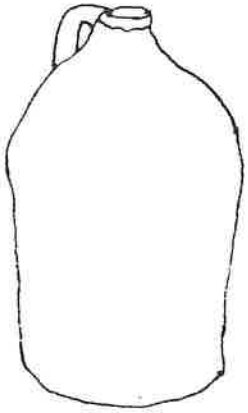
Bottles

48



49

Jugs



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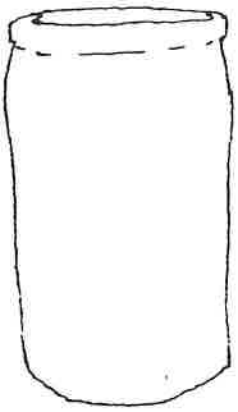
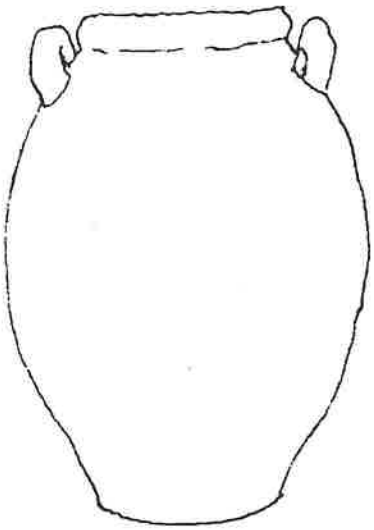


51

Jars



52

FIGURES 61-64: CERAMIC VESSEL FORMS (NOT TO SCALE)

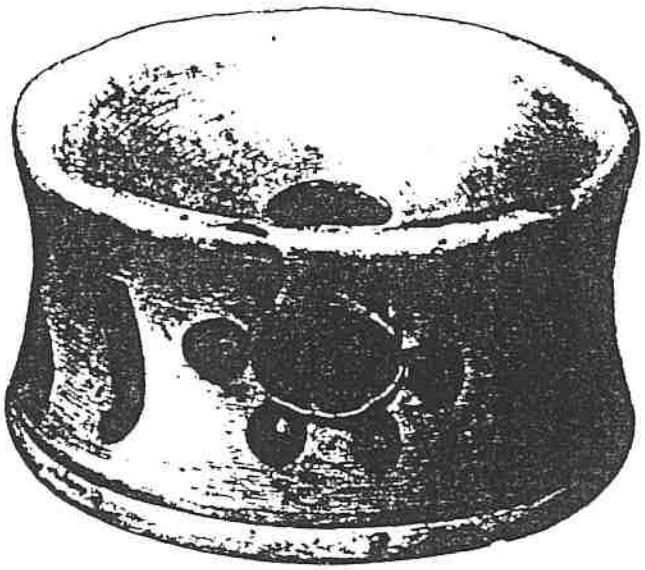


Figure 61: **Spitoon**

Figure 62: **Churn**

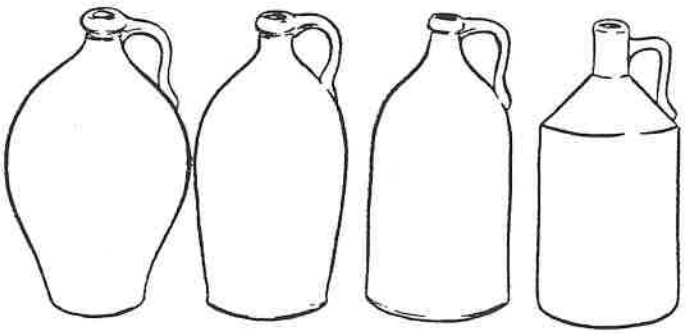


Figure 63: **Jugs; earlier, bulbous forms are to left, more recent, straight-walled forms are to right**

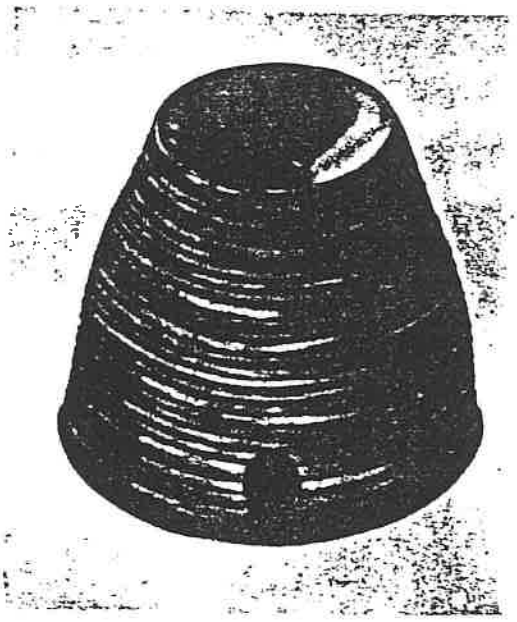
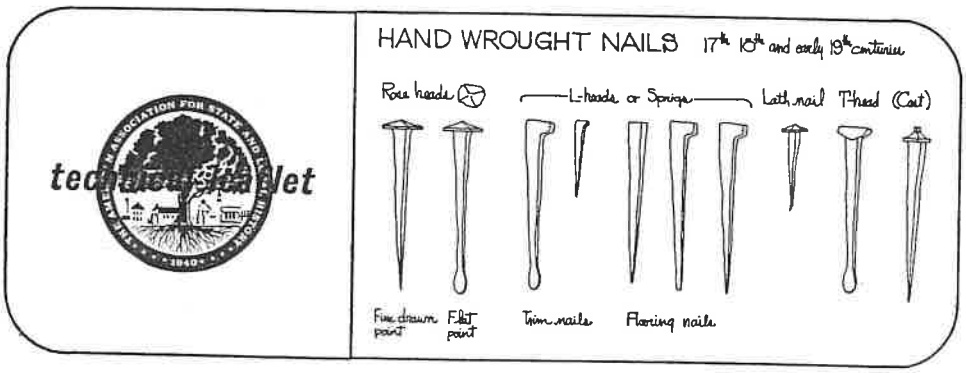


Figure 64: **Roach trap**

EARTHENWARE ROACH TRAP made in Pennsylvania about 1840. The bottom hole was corked and the trap was partially filled with a mixture of molasses and water used as bait. The insects attracted by the scent would climb the unglazed, ribbed outside wall up to the funnel-shaped well, which was glazed, and upon reaching the top they would slide into the well and be trapped. H.4¼" T.3" B.5⅛" N. Y. C. Cer. 50.



NAIL CHRONOLOGY

as an aid to dating old buildings

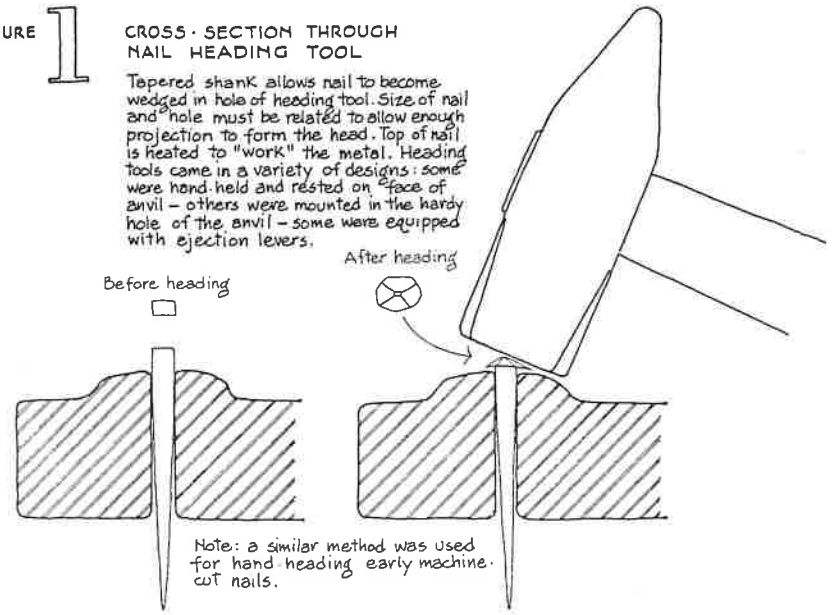
By Lee H. Nelson
National Park Service

The National Park Service in its historic structures restoration program has developed some research techniques in the general field of nail chronology as an aid to dating old buildings. This paper was prepared for a National Park Service Historic Structures Training Conference held in July, 1962. The paper was published, along with a paper on "Paint Color Research and Restoration" by Penelope Hartshorne Batcheler, as Technical Leaflet 15 in the December, 1963, issue of History News. *The Nail Chronology paper has been revised, and put in the new format, and published here in the hope that it will continue to be of use to other restoration projects and that it will stimulate further contributions to these studies. The Paint Color Research paper was revised and reprinted by itself as Technical Leaflet 15.*

Dating old buildings from their nails is not a precise technique, but when used with discretion, it has proved generally reliable and useful, for example, in Independence Hall which has been subjected to a complex series of alterations from 1750 to the present time. If a sufficient number of samples are taken from all parts of the building they can be a good indication that (1) the building was built entirely at a given time, or (2) the building has been subjected to additions, alterations, or simple maintenance measures. Nails can help to define the extent of these changes. For this reason we believe it worthwhile to discuss briefly the various nail types that are generally found in American buildings. They are (1) hand-wrought nails, (2) cut nails, and (3) wire nails. Within these major groups there is a surprising variety with subtle differences

FIGURE 1 CROSS-SECTION THROUGH NAIL HEADING TOOL

Tapered shank allows nail to become wedged in hole of heading tool. Size of nail and hole must be related to allow enough projection to form the head. Top of nail is heated to "work" the metal. Heading tools came in a variety of designs: some were hand-held and rested on face of anvil – others were mounted in the hardy hole of the anvil – some were equipped with ejection levers.



smiths and nailors working at various times and a typical entry from his accounts reads:

Supr.						Cr.		
1778	Size	Qutÿ. to the Pound	Weight	Total Number	Price of Making		Amount	
Jan.	10d	58	23	1334	@2/6/Pc	100	1	12 15
25	3d			5000	@1/9/D°		4	7 6
26	10d	63	14	882	@2/6/D°		1	2
28	20		40		1/3/Pc		2	10

It is important to emphasize that wrought nails continued to be used for several decades following the introduction of the cheaper cut nails. In the 1820s Philadelphia newspaper advertisements of "Nails, Brads and Spikes" often included both cut and wrought nails with prices for each in their respective sizes.[7] Wrought nails continued to be superior for certain purposes, especially where they required clinching or for trim work. For this reason it is not uncommon to find a few hand-wrought nails used well into the nineteenth century. It is interesting that many buildings of this period utilized both wrought and cut nails in their original construction. The Old Town Hall (built 1798-1800) in Wilmington, Delaware, for example utilized hand-headed machine-cut brads for flooring and crude, machine-cut lath nails, but all the finish woodwork was held with wrought nails.

The several characteristics of wrought nails are illustrated in the drawing in the center of this Leaflet. Included is a cast nail which perhaps does not properly belong in this group but is known

[7] See also a nineteenth century English metal trades catalog which includes wrought joiners sprigs, floor stubs, lath nails, etc. Catalog No. E.121-1896, *Old English Pattern Books of the Metal Trades*, Victoria and Albert Museum, Pub. No. 87 (1913), 32-33.

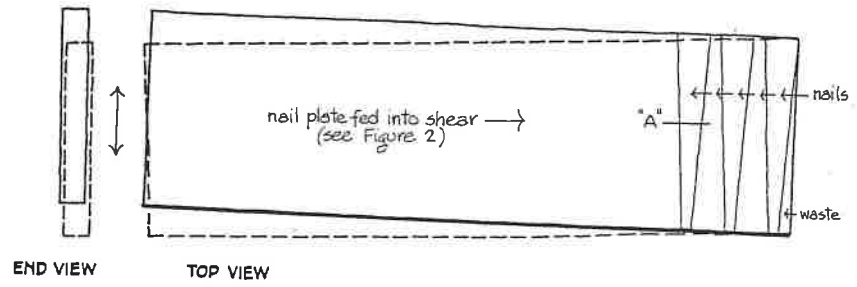
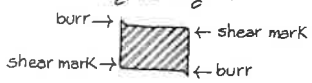


FIGURE 3 SIMPLIFIED DIAGRAM SHOWING HOW NAIL PLATE WAS WIGGLED BACK AND FORTH TO COMPENSATE FOR TAPERED SHAPE OF NAILS

One face of nail plate always remained "up", i.e., nail plate always cut from same side.

Wiggling the nail plate produced nails with: burrs and shear marks on diagonal edges.

Cross-Section through nail: "A"



inventions remains rather vague.[9]

Unfortunately the Patent Office Record's fire of 1836 destroyed a vast amount of primary source material with respect to the invention of cut nail machines. Some of this information has been collected and appended to the scholarly biography *Jacob Perkins* by Greville and Dorothy Bathe.[10] This book provides an excellent background on the development of nail machines and includes a list of 88 patentees between the years 1791-1815. It would appear that the most important contributions were made by Perkins, J. G. Pierson, Jesse Reed, Mark and Richard Reeve.

The rapid development and sale of these machines made it possible to manufacture nails on a wide scale in the early nineteenth century. Thomas Jefferson for example, purchased a machine in 1796 and produced nails (for sale) until 1823. Prior to that time (1794-1796) Jefferson manufactured nails that were wrought by hand. His interest in this endeavor is reflected in a letter: "I am myself a nail-maker. . . . my new trade of nail-making is to me in this country

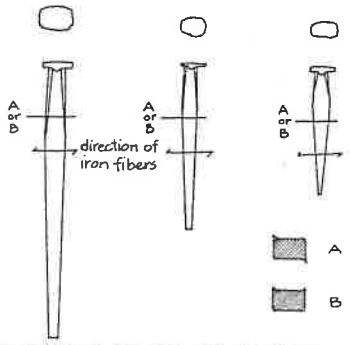
[9]For mention of a sixteenth century "instrument for making of Nails," see Greville and Dorothy Bathe, *Jacob Perkins, His Inventions, His Times, and His Contemporaries* (Philadelphia, 1943), 172, but it seems unlikely that this was in any way related to a cut nail machine.

[10]For a more complete listing of inventions and events relating to the evolution of nail-making, see H. R. Bradley Smith, "Chronological Development of Nails," supplement to *Blacksmith's and Farriers' Tools at Shelburne Museum* (Shelburne, Vermont, 1966). See also a general history of nail-making by Arthur S. Tisch, "Modern Wood Construction, only as good as its fastening!" reprinted as Bulletin No. 1, by the American Society of Precision Nail-makers, 630 Third Avenue, New York.

EARLY MACHINE-HEADED CUT NAILS

1815's to late 1830's

Common Nails · See Sprigs and Brads for early cut finish nails

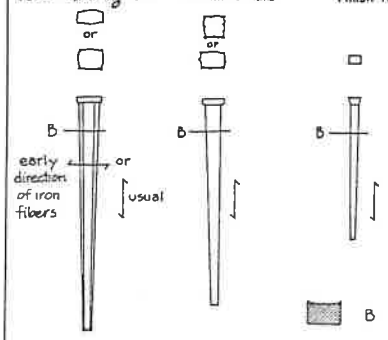


Nails of this period are distinguished by their irregular heads, which vary in size and shape, usually eccentric to shank, though they were more uniform by 1850's. Nails were irregular in length and width, but more uniform at end of period. Nails generally have a rather distinct rounded shank (under head), caused by wide heading clamp. These nails were more readily available than finishing nails, and were often locally modified by hammering the sides of the heads, thus making them into finish nails which could be countersunk. The direction of iron fibers also distinguishes nails of this period from later nails.

"MODERN" MACHINE-CUT NAILS

late 1830's to present

Box or flooring nails · Common Nails · Finish Nails



Heads tend to be uniformly convex on each side, and uniform in size and shape, depending on nail style. After c.1840, cut nails were generally made with the iron fibers running lengthwise (and later were annealed), which made them capable of clinching without rupture, thus almost completely displacing the hand-wrought nail for building construction. There are many "modern" nail styles not illustrated here; but after the 1840's, cut nails are not readily distinguished from those made today, so that other factors, i.e., decorative details, etc., are better indicators for dating purposes.

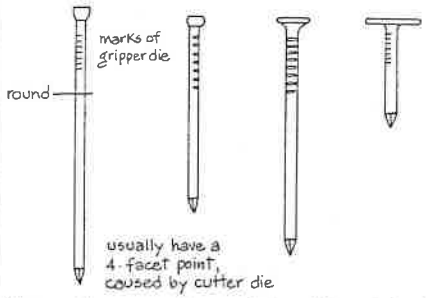
The sets of nail drawings on these two pages are organized together so that the user will have a visual comparison when he is trying to identify a nail. The cast nail in the right hand corner of the upper drawing on the opposite page may not properly belong in the group but it is known to have been used in the eighteenth century and well into the nineteenth.

MODERN WIRE NAILS

not common until 1890's

c. 1850's to present

Flooring Brads · Finish Nails · Common Nails · Roofing



These nails are usually manufactured from steel wire, which is held in gripper dies and headed (producing gripper marks on shanks); then wire is advanced and sheared to length with cutter die; and wire stock is then advanced to repeat operation. Earliest wire nails were only available in very small sizes (for picture frames, etc.). Larger sizes were not widely available or used in American building construction until the third quarter of the 19th century. By the late 1880's, they were fast superceding cut nails because of their relative cheapness. Wire nails are not readily datable, though early examples have bulbous heads that are eccentric to shank. In more recent years, wire nails have been made in a great variety of sizes, head shapes and shank designs (e.g., threaded nails), although cut nails continue to be made for specific purposes.

ing. Note: *Cut nail improvements were first applied to the smaller sizes. For example, lath nails were perfected before the larger framing nails.*

6. No attempt should be made to date a building on the basis of a single nail.

7. Cut nails manufactured after c. 1830 are virtually undistinguishable from those made today.

8. Wrought nails were competing with cut nails until at least 1820.

9. Some naileries were contemporaneously offering a more advanced product than others. For example, in 1820 Pierson's nails (New York) were considered superior to those made at the Phoenix Works (Pennsylvania).

10. Urban areas responded to improved products more readily than did rural areas. The foregoing generalizations and dates are tentative and subject to correction and contributions by others interested in the subject.

In general, the study of cut nails has been quite useful in distinguishing alterations within Independence Hall. In the Assembly Room for example, extensive changes took place both in 1816 and 1831, but the evidence is easily discernible because of the vast improvement in cut nails in the interval.

WIRE NAILS

The introduction and development of wire nails has not been adequately studied. It appears that several manufactories were established in New York during the 1850s, following an earlier development in England, France, and Germany. The first American production of wire nails was from machines either imported or adapted from existing European models.[11] The earliest wire

[11] Clark, *History of Manufactures in the United States* (New York, 1949), Vol. I, 518. See also the transcript of an unidentified magazine article (dated 23 April 1896) by John Hassall, entitled "The Early

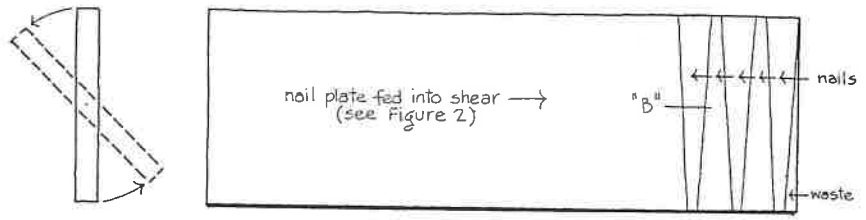


FIGURE 4 SIMPLIFIED DIAGRAM SHOWING HOW NAIL PLATE WAS FLIPPED OVER TO COMPENSATE FOR TAPERED SHAPE OF NAILS

Nail plate was alternately cut from opposite sides.
Flipping the nail plate produced nails with: burrs or shear marks on common edges.

Cross-Section through nail: "B"

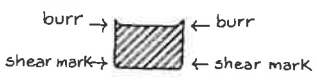
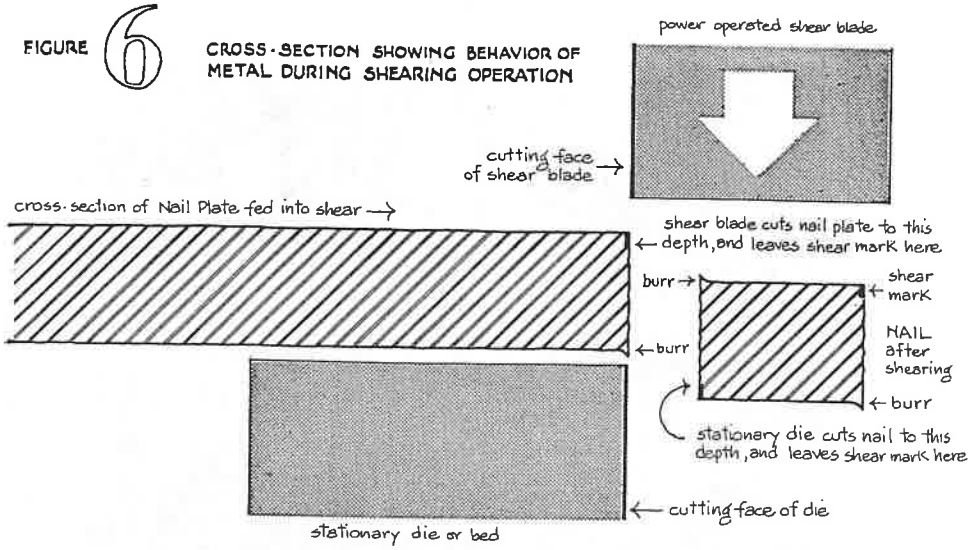


FIGURE 6 CROSS-SECTION SHOWING BEHAVIOR OF METAL DURING SHEARING OPERATION



The shear blade and die create equal and opposite forces. Simultaneously, the blade starts to cut the top of the nail plate, while the die starts to cut the bottom of the projecting portion (nail). With this action, the metal stretches beyond its elastic limits — the nail breaks off, and leaves shear marks and burrs on diagonal corners of nails.

LEE H. Nelson 13 Aug 68

1880s, a series of experiments on the adhesion of nails was carried out by the Watertown Arsenal, Massachusetts. These tests confirmed this advantage, but the relative cheapness, ease of handling and the variety of specialized wire nails gave them a gradually increasing preference.[17] The earliest wire nails can be distinguished from their modern counterparts by their "heads" being bulbous and generally eccentric with respect to the shank. There is not the clearly defined evolution of development that makes the cut nail so useful in dating buildings. As a generalization, the presence of wire nails indicates late nineteenth century repairs, alterations or maintenance, and to that extent they are useful "dating tools." Although wire nails are in common usage today in a multitude of varieties, cut nails continue to be used by some carpenters for specific functions, such as flooring nails, boat nails, and masonry nails.

[17] See "Adhesion of Nails, Spikes, and Screws in Various Woods, Experiments on the resistence of cut-nails, wire nails (steel), spikes, wood-screws, lag screws," published in the *Report of the Tests of Metals and Other Materials for Industrial Purposes made with the U.S. Testing Machine at Watertown Arsenal, Mass., 1884* (Government Printing Office, Washington, 1886), 448-71. This interesting publication was brought to the writer's attention by Orville W. Carroll, restoration architect, National Park Service.

INTRODUCTION

The purpose of this section is to provide archaeologists with a manual for a standard approach to arriving at historical artifact function and chronology. The purpose of defining artifact chronology and function is to assign a function and occupation range to historic sites. This section provides a means for preliminary identification only and is not intended to be complete or exhaust the subject of historic artifacts.

Also, the level of intensity of analysis may not be necessarily commensurate with the nature and complexity of the site. Estimates of numbers of various artifact types may be more appropriate for large sites rather than detailed descriptions which are more appropriate to small sites.

The specific artifact classes represented here are the most common to be found on historic sites and are generally the most diagnostic.

Evaluations of any site should not be dependent solely on surface features and artifacts, but must be complimented by historical documentation.

The basic intent of this section is to provide source material for identification and dating of historic artifacts and to refer user to references cited.

hardwood floors. It was also probably early in this period that large cut nails were pretapered in rolling mills, the nails then being cut with parallel rather than diagonally opposing strokes of the knife.

Rocky Mountain Area Nail Chronology and Notes (from Buckles et al. 1978:438-440).

Prior to 1790, nails were hand forged. Invented about this date, machine cut square nails were widely in use by 1830, although hand forged continued to be used, particularly in frontier areas. Although introduced as importations of small nails in the 1850s, wire nails did not dominate the market until the 1890s. A general rule is that the larger the percentage of square cut nails, the older the site. Machine cut square nails are still manufactured for limited usage.

Many sites in Colorado were occupied in the late 19th Century during the transition period from cut to wire nails. Inferences from production figures of cut and wire nails cited by Clark (1949, Vol II:351-355 and Vol. III:125-127) indicates the rapidity with which wire nails replaced cut nails in availability. The first wire nail made in the United States was in 1873 but large scale production did not begin until the 1880s. By 1884 six manufacturer's were producing wire nails, although in 1886 'cut nails' were dominant. By the 1890s wire nail production far exceeded cut nail production as the following figures, cited by Clark (1949, Vol. III:125-127), indicate:

Nail Production in the United States

Year	Nail Type	Amounts
1886	Cut Nails	8,161,000 kegs
	Wire Nails	No figures
1894	Cut Nails	2,425,000 kegs
	Wire Nails	5,682,000 kegs
1900	Cut Nails	1,573,000 kegs
	Wire Nails	7,234,000 kegs

It can be postulated that since nail production averaged 8,000,000 kegs a year for the years cited, the great majority of nails available in 1886 were cut nails. A 'Rubicon' was possibly crossed about 1890 when wire nails were in the majority. This allows tentative dating for sites as follows:

1886 --- cut nails
1890 --- 50% cut, 50% wire nails
1895 --- 25% cut, 75% wire nails
Post-1895 --- greater than 75% wire nails

471 - TIN CAN TYPES

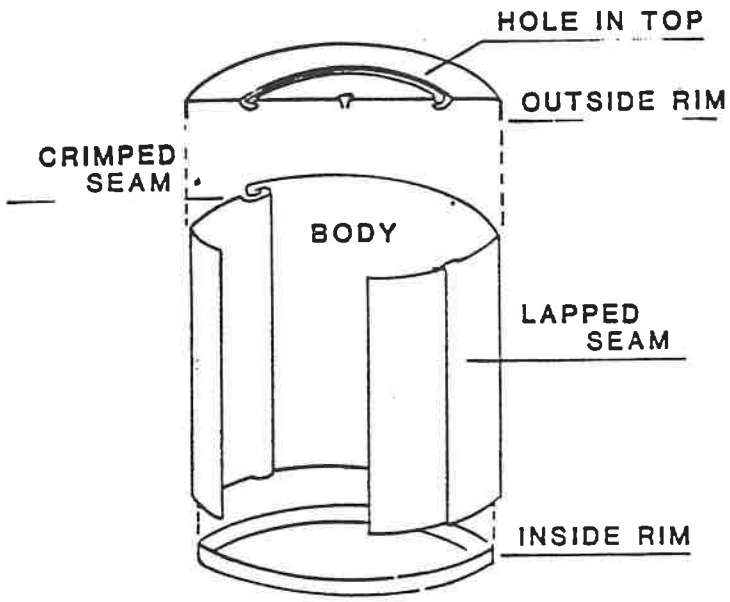
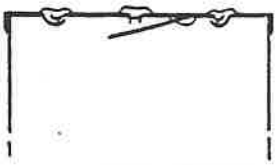
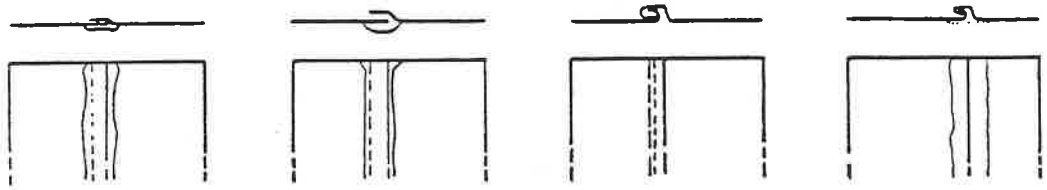


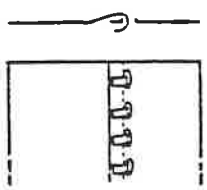
DIAGRAM OF CAN

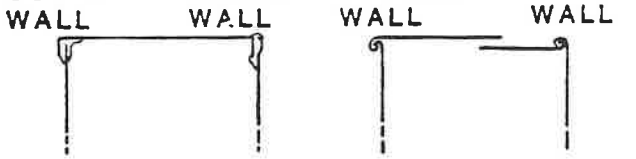
NORMAL HOLE IN TOP CLOSURE



SALMON TYPE HOLE IN TOP CLOSURE







number of cans with different types of opening should be estimated.

There are other variants of can openings which can be used. These openings are useful for insights into can functions. Key opened, removable lids, paint lids and pry out lids, as an example, contained relatively non-perishable items such as tobacco, cocoa, and others. Each is traditionally associated with a particular product type. Key openings are associated with lard cans, potted meats, sea foods and others. A special type of hole-in-top can with an inside flap was used in the salmon canning industry (Bitting 1912:67-68). It is not an opening, but a variant of the hole-in-top can construction. Cans which have either puncture holes, spouts, or have been opened with a "church key" all probably contained liquids, thus requiring small openings to remove the contents. Cans cut completely around and X-Cut lids are indicative of fruit or vegetables which require larger holes for removal of the product.

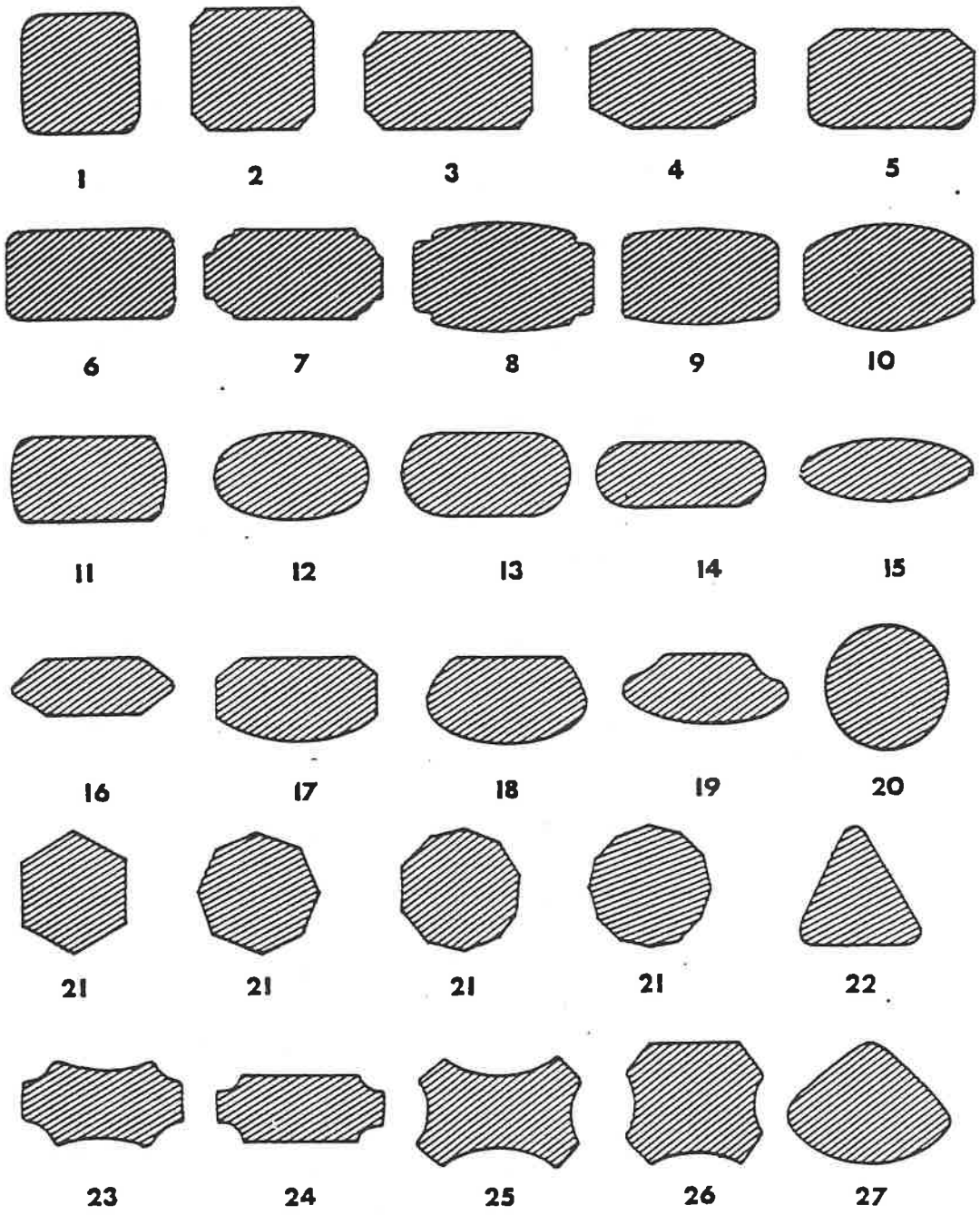
2) Can Contents and Sizes: (from Buckles et al. 1978:416)

Another method of determining the possible contents of cans stems from traditional use of can sizes within the industry of canning. No set governing standards as to either can sizes or contents can be applied across the board due to the fact that the canning industry itself was not standardized.

Can Sizes have been standardized in practice, to degrees, and can be classified by numbers or names used by grocers.

Number or Name	Height	Diameter	Contents
5 oz.	2-7/8"	2-1/8"	
6 oz.	3-1/2"	2-1/8"	
8 oz. regular	3"	2-11/16"	Fruits & fruit cocktail
8 oz. tall	3-1/4"	2-11/16"	
Picnic, Oysters	4"	2-11/16"	
No. 300	4-7/16"	3"	Tomato & pineapple juice
No. 300X	4-9/16"	3"	Tomato juice
No. 1 tall	4-11/16"	3-1/16"	Fruits, tomato juice, pineapple juice
No. 303	4-3/8"	3-3/16"	Tomato & pineapple juice
No. 2 flat	2-1/4"	3-7/16"	
No. 2 short	4"	3-7/16"	Peas, corn, string beans, fruits
No. 2	4-9/16"	3-7/16"	
No. 2 1/2	4-11/16"	4-1/16"	Fruits
No. 3	4-7/8"	4-1/4"	
No. 10	7"	6-3/16"	Fruits
Gallon	8-3/4"	6-3/16"	Limited extent for olives, fruits & vegetables
No. 1 square	3-1/2"	3 x 3-1/2"	
No. 2 1/2 square	6-1/4"	3 x 3-1/2"	

472.2C BOTTLE BASE PROFILES
(from Fike n.d.)



BASE PROFILES: 1 HOPKINS SQUARE; 2 FRENCH SQUARE; 3 BLAKE (VARIANT 1); 4 BLAKE (VARIANT 2); 5 BEVELED IDEAL; 6 EXCELSIOR, WINDSOR OVAL OR ROUND CORNERED BLAKE; 7 OBLONG PRESCRIPTION; 8 UNION OVAL; 9 CROWN OVAL; 10 SALAMANDER OVAL; 11 MONARCH OR ERIE OVAL; 12 PLAIN OVAL; 13 ELIXIR OR HANDY; 14 SLENDER HANDY; 15 OVAL; 16 IRREGULAR POLYGON; 17 HUB OR GOLDEN GATE OVAL; 18 BUFFALO OR PHILADELPHIA OVAL; 19 CLAMSHELL; 20 ROUND; 21 POLYGON; 22 TRIANGLE; 23 FLUTED OBLONG (VARIANT 1); 24 FLUTED OBLONG (VARIANT 2); 25 CONCAVE; 26 FLUTED SQUARE; 27 SPHERICAL TRIANGLE *(Berge, 1980; Dominion Glass Co. Catalog, n.d.; James, 1967 (1902, Whitall Tatum Glass Co. Catalog Reprint); Putnam, 1965 (1911, Illinois Glass Co. Catalog Reprint,); 1907, Peter Van Schaack & Sons Drug Catalog).*

Pertaining to amber glass, Kendrick (1966:59-61) states:

> With the advent of World War I, our main source of manganese (German suppliers) was cut off. In the U.S. bottle industry, selenium became the predominant chemical used to bleach out the unwanted iron-produced aqua color from the glass. A change-of-color event takes place in this glass which has a high selenium content. With exposure to sunlight its clear appearance changes to an amber hue, or, as I would describe it, the color of ripened wheat. It never gets any darker than a good grade of honey, and there is no need to confuse it with a brown bottle.

A characteristic embossing that takes place after 1933 is described by Ferraro and Ferraro (1966:56-60):

> At the time of repeal of prohibition in 1933, the evils characteristic of the pre-prohibition era were well remembered and fresh in the minds of legislators, such antics as a saloon putting cheap whiskey in a bottle with a superior brand name or even bootleggers and moonshiners paying janitors of apartment buildings for empty liquor bottles. As a result, almost every conceivable safeguard or device which would avoid recurrence of those practices was included in Federal legislation. One of the basic changes which was brought about by repeal of prohibition was the type of packages which could be used at the consumer level. The new legislation restricted the sale of distilled alcoholic beverages at the retail level to glass containers of one gallon capacity or less. To avoid or prevent tax evasion, misbranding and adulteration, the law provided that liquor containers must bear the phrase "Federal Law Prohibits Sale or Reuse of This Bottle". The new legislation prohibited absolutely the reuse of liquor ware in any manner. Implemented in 1933, the law was in effect until 1964.

1940-Present

Most of the glass in common use today is one of three types:

(1) Lime glass:

> Contains a large proportion of lime and soda or other alkalis. Between 80 and 90 percent of all glass used in the home is of this durable, inexpensive variety. Drinking glasses, milk bottles, jars and containers, and window panes are just a few examples of its varied applications.

(2) Lead glass:

> Contains a substantial amount of lead oxide and potash or other alkalis. Most often used for more expensive, quality tableware and decorative pieces.

Base Marks:
pre-1840-ca. 1870----Pontil or snap marks
1904-present---------Cut-off scars
1930s-1940s----------Valve marks (milk bottles)

Lip Forms:
1810-1840------------Sheared lips
1840-1920------------Applied lips
  1840-1860----------hand applied lips
  1880-early 1900s------fired lips

Lipping Tool Marks:
1870±-1920-----------Smooth-lipped

Closures:
1870s-1900-----------Inside screw (whiskey bottles)
1879-1915------------Hutchinson stopper
1882-1920------------Lightning stopper
1892-present---------Crown Cap
  1892-present-------with cork liner
  1955-present-------with plastic liner
1924-present---------Roll on cap

3) Definitions of Mold Seams and Accessories:
(from Berge 1980:61-66)

The types of bottle mold seams described herein are illustrated below. Illustration is taken from Berge (1980:63).

Changes that took place in the growing bottle industry during the nineteenth century resulted in many subtle characteristics found on the container. By 1800 the most widely used method of making bottles and other glassware was by blowing; glass produced by this method is termed hand-blown, free-blown, or off-hand-blown (Lorrain 1968:35).

Lorrain (1968:35) states:

> Surfaces of hand-blown pieces are smooth and shiny and are without impressed designs or letters. Design may be art, engraved, or etched into off-hand-blown pieces after they are cooled but these are not an intrinsic part of the glass. Decorative globs or threads of molten glass may be added to the object before it is cooled but they will also have smooth, shiny surfaces.

Other characteristics of this technique of glass manufacture are the presence of a pontil mark, asymmetry and lack of mold marks.

wash water regularly. Check water tubs for small artifacts. When you change the water pour it through the sieve in the sink to catch any artifacts and keep the sludge from going down the drain.

Rebagging: Before rebagging any washed artifacts get the Bag Log and put your initials next to the bag number you are going to rebag.

After artifacts have dried at least 24 hours they are placed in plastic bags. Each individual provenience/bag is rebagged separately. Each artifact class within a provenience should be placed in an individual ziplock bag according to material (i.e. ceramic in its own bag, mortar in its own bag, nails in their own bag etc.) Every ziplock bag must be punched with small holes to allow air to circulate around the artifacts and keep the artifacts from mildewing. Archival quality plastic bags (4 mil thickness) are used for artifact storage.

Each individual bag is labeled in black indelible ink with all the provenience information (i.e. site number, bag number, unit, level, and/or feature, excavators initials, and date excavated.

All individual bags of artifacts from one provenience are placed in one large bag (that must be at least 8" x 10".) The large provenience bag must also be labeled with the provenience/bag information in black indelible ink and be punched with holes.
If more than one large bag is required for one provenience the large bags are labeled with the provenience information and 1/2, 2/2 etc.

The original paper bag label should also be cut out of the paper bag and placed in the large provenience bag. After rebagging, all bags are stored in acid-free boxes so they can be labeled.

Labeling: Before labeling artifacts from any particular provenience/bag put your initials on the Bag Register next to the bag number you are going to label. Artifacts from every provenience must be labeled with permanent (water-proof) black or white ink and placed in archival quality plastic bags. The plastic bags must also be labeled with permanent black ink.

Most artifacts are labeled directly on the artifact, while others are placed in ziplock bags with the label written on the outside of the bag with permanent black ink and on a slip of acid-free paper with permanent ink placed on the inside of the bag.

Metal artifacts, mortar, plaster, daub, oyster shell, floral remains, coal, and charcoal are not labeled directly on the artifact. An acid-free paper tag must be placed in the plastic bag along with these artifacts.

Ceramic, glass, brick, and bone are labeled directly on the artifact.

Do not label directly on the broken edges of ceramic sherds, or across decoration or trademarks

Use a quill pen or a rapidograph pen and black or white permanent (water-proof) ink.
Write legibly.

press-and-blow machine.

10. Circular seam in heel-side wall tangent area means a cup bottom mold.

11. Seams to top of finish, which is then ground to level, usually indicate hand blown in blow-back mold, or snapped off by blow-over method.

12. Circular or oblong seams in side wall, not connected with other seams are made by plated molds.

13. Horizontal seams below finish area mean separate neck rings but do not prove machine manufacture.

14. One or more seams circling top of finish show machine manufacture.

15. "Ghost seams" seams come from the use of a separate blank mold - hence indicate machine manufacture.

fermented, aromatic malt beverage. It is darker, heavier, and more bitter than beer. Stout, a very dark ale, has a strong malt flavor and a sweet taste. A multitude of ale and stout bottles were recovered at Fort Union and Fort Laramie, many with remnants of paper labels or cork stoppers. Some of these bottles clearly predate beer bottles found at the same posts, and all indicate that Americans in the West brought with them a taste for these malt beverages" (Wilson 1981:7).

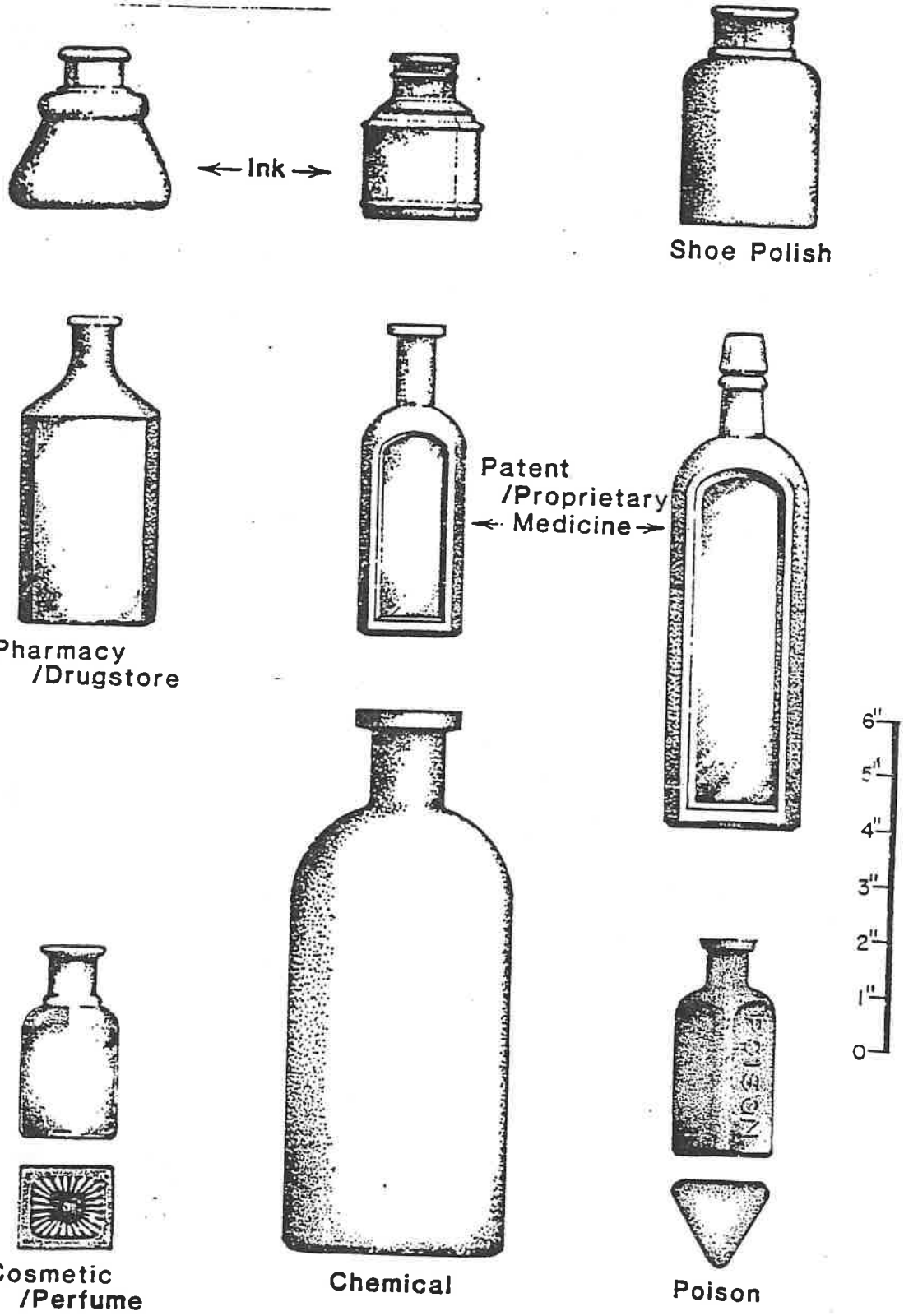
(G) Soda/Mineral Water: The varities of these bottles consist of the three basic types stressed thus far, ie., blob-top, Hutchinson-type, and crown-cork bottles. However, there are several variations, involving pointed, or torpedo-shaped as it is frequently called, and the round bottom bottles were mostly imports from Europe, notably England. These vessels contained ginger ale primarily (Munsey 1970:105).

"The separation (between soda bottles and mineral water bottles) is hard to maintain because at one period mineral water and soda water were one and the same in many cases. The common sizes of mineral water bottles are pints and quarts but they are also discovered occasionally in other sizes. Since the period of greatest production for mineral water bottles was during the era of cork closures most of the ones located are crude and have hand developed necks and lips. Some, however, were made after the invention of the Lightning stopper and the Hutchinson stopper and are thus located with these closures. Some of these bottles even have crown cork closures. Shapes in mineral water containers are varied and range from the Saratoga types to the very unusual Moses figural bottle." One difficulty in mineral water bottle identification relates to soda water bottles: Both beverages used the blob-top soda water-type bottle. Although many mineral water vessels were produced in the common aqua and light green colors some were manufactured in amber and green. The Saratoga types are unusual because they have beautiful deep shades of green and amber. Blue mineral water bottles are known but are unusual (Munsey 1970:101-103).

Blob-top soda bottles: "The earliest of these bottles had tops that were applied separately during their manufacture. To hold the cork under pressure, a wire was placed over the top of the bottle and secured around the neck. These early blob-top soda bottles can be found with pontil scars and iron pontil marks, but are mostly found with plain bottoms because they became most popular after the development of the snap" (Munsey 1970:104).

Hutchinson-type: "The stopper consisted of a rubber gasket (which came in five sizes to accommodate neck diameters) held between two metal plates and attached to a spring wire stem (which came in three sizes to accommodate neck lengths). A portion of the looped

472.6 ILLUSTRATION OF TYPES OF MEDICAL/CHEMICAL BOTTLES
(from Fike n.d.)



472.9 Specialty Bottle Description:

(Y) Figural: "There is a popular parlor game based on the idea that all things in the world can be divided into three general categories: animal, vegetable, and mineral. A similar statement can be made in defining figural bottles, i.e., they are made in the shape of things: animal (including humans), vegetable, and mineral. Figural bottles of both ceramic and glass range from fractions of an ounce to a full gallon. Some of the smallest are the fragrance bottles and some of the largest are spirit containers. In glass specimens, all colors are represented... and each bottle is generally limited to one color. The majority of figural bottles of the earlier types utilized the common cork closure and the more recent specimens come quite often with screw cap closures" (Munsey 1970:95-96).

473 - Historic Ceramics

473.1 IMACS Classification: see IMACS User's Guide for complete Historic ceramics classifications.

473.2 Historic Ceramics Introduction

The components which make up a ceramic artifact are the paste, glaze, decoration, the name (if any) of the decorative pattern, and the maker's mark.

Paste refers to the clay fabric which forms the vessel. It is composed of clay and added or natural fluxes which are formed in a wet malleable state then fired. The paste is what is commonly referred to as earthenware, stoneware, porcelain, etc.

Glaze is the glassy vitreous coating on the outside of a ceramic vessel. It is composed of fused silicate mixtures which are bonded to the ceramic surface.

Decorative techniques are the methods by which pattern is applied to the ceramic surface. They can be applied under the glaze or over the glaze. Some call for the application of color by a brush or decal, others, such as molded-relief techniques alter the paste itself before the firing to produce a desired texture or form.

The third component, historic pattern name, is really an extension or elaboration of the decorative technique. It refers to the manufacturer's name used to list (as in a catalogue) a particular pattern (in which case the pattern name might be printed on the base of the vessel). It can also refer to the informal labels archaeologists give to commonly encountered patterns or designs which are awaiting the illumination of research to provide official manufacturer's nomenclature.

Maker's marks or trademarks are the printed or impressed marks usually applied to the base of a ceramic vessel and which provide information on the manufacturer, date, and national origin of the ceramic artifact.

473.3 History:

Most ceramic tableware artifacts encountered in the western U.S. represent Euro-American attempts to imitate the expensive Chinese porcelains which strongly influenced the Euro-American market between 16-19th Centuries. During that period, European Delft, salt glaze while stoneware, as well as creamware, pearlware, and other "improved" white earthenwares were developed. By the beginning of the 19th Century, British ceramic tableware dominated the American

5) Overseas Chinese Ceramics

In the 1850's Chinese ceramics returned in force to the American scene for use by Chinese sojourners to the mining and railroad camps of the far west. These ceramics were naturally quite different in decoration and vessel form from those made earlier for the Euro-American export market. Three broad functional categories can be identified: tablevare, utility and storage containers, and opium pipe bowls (see 473.8 for illustrations).

Tablevares: These most commonly include rice bowls and tea cups. Serving dishes, soup spoons, and small wine cups are less common. Tablevares are made from a fine, white porcelain or stonevare, with four decorative styles, including:

Bamboo (also called Three Circles and Dragonfly, or Swatow).
Four Seasons (or Four Flowers, a hand-painted overglaze polychrome).
Double Happiness (or Swirl).
Celadon (or Winter Green, see below).

For a more in detailed discussion of these types see Chace 1976.

Utility Wares: Utility stonevares or storage vessels are distinctively different, but no less common than tablevares. Generally composed of a coarse, sometimes gritty buff or grey-brown paste with a thick brown or metallic grey-black jian you glaze, utility vessels were generally shipped from China containing soy sauce, liquor, ginger, dried vegetables, and other foods. See Chace (1976) for a description of these vessel forms.

Opium Pipe Bowls: Although highly variable, opium pipe bowls are generally the size and shape of doorknobs. Round styles are most common, followed by 8-sided and round/10-sided. All bowls have a slightly convex smoking surface with a small (1-3mm) smoking hole in the center, sometimes with an insert, and a larger hole on the bottom with a flange and neck. The clay neck was often removed and replaced with a metal ferrule. Bowls are made of stonevare or earthenware in a variety of colors, commonly orange or grey. Surfaces may be plain, burnished, slipped, or glazed. Small Chinese characters or decorations are stamped on the bottom or side. The smoking surface immediately around the small hole may be burned and worn from preparing and igniting the opium pellet. This part of the bowl is thin and easily broken. For more detailed information, see Etter 1980, or Wylie and Fike 1986.

glaze), engine turned (annular), decal, and others.

Common Vessel Forms: Tableware, decorative vessels, chamber pots, and other tioletry vessels.

*Vitreous China or Earthenware (Semi-porcelain, Hotel Ware, Opaque Porcelain, some Ironstone).

Paste Attributes: White/grey-white, fine, non-porous, hard.

Common Surface Treatments: Usually clear glaze with molded-relief, decal, simple handpainted or engine-turned band, transfer print.

Common Vessel Forms: Tableware (often sturdy restaurant varieties), decorative vessels, tioletry vessels.

*Yellow Ware

Paste Attributes: Yellow/buff, usually fine (but can be quite coarse), usually porous, soft. Some varieties appear to be harder and non-porous, particularly those with Rockingham or other flint enamel glazes.

Common Surface Treatments: Usually clear glaze allowing the natural paste color to show through as a mustard color, frequently the interiors of the bowls are slipped or glazed opaque white. Other surface treatments include molded-relief designs, a single painted band, mocha or moss designs, spatter or sponge designs, mottled brown flint enamel glaze (Rockingham or Bennington).

Common Vessel Forms: Mixing bowls, mugs, crockery, kitchen utensils, e.g., collanders, meat tenderizers, rundlets (barrel shaped containers). "Rebeccah-at-the-well" tea pot.

Note: Yellow Ware is a result of an industrial ceramic age after 1830, and was manufactured primarily in East Liverpool, Ohio in great quantities between 1830 and 1900. (Boger 1971).

Glaze and Slip Types:

Bennington: Often used synonymously with "Rockingham" glaze. Bennington, Vermont potteries produced all ware types from earthenware to porcelain, but are most famous for an improvement patented in 1849 on the Rockingham, mottled brown glaze. (Barclay 1976, Norman-Wilcox 1965).

Bristol Glaze: A glassy, creamy glaze sometimes colored with iron to make it brown, most commonly found on cylindrical vessels formed by an extruder, glazed half brown, half cream color: for example: stoneware ale bottles (Barclay 1976). Bristol glaze has been used on commercially made stoneware since the late 19th century (C. Malcom Watkins 1978).

Celadon: A glaze used on chinese porcelain which is derived from iron and ranges in color from putty to sea green to blue.

Winter Green: may be a universal marker for late 19th/early 20th century Overseas Chinese sites. In addition to being very common, they were the most expensive type of Overseas Chinese tableware (Sando and Felton 1984). They exhibit the following distinctive characteristics (Wylie and Geer 1983):

1. Green or blue-green transluscent glaze, full of minute bubbles, that exhibits variation in color density depending on thickness.

2. An extremely heavy exterior glaze, especially at the corner of the foot.

3. A very thin, almost transparent interior glaze.

4. A fine, white vitreous paste.

5. A scraped rim, sometimes a faint yellow, covered with a thin glaze.

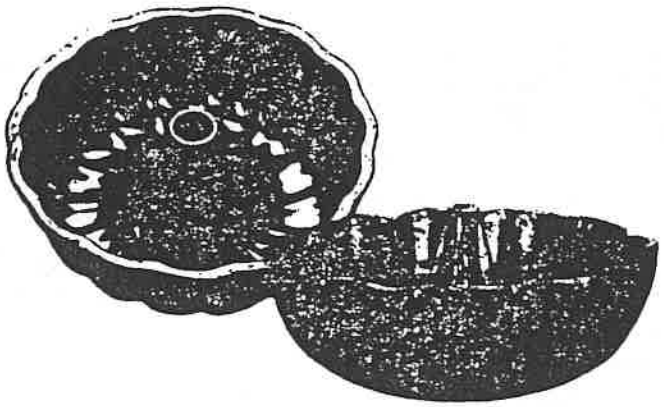
6. A slightly flared rim with an expanded lip.

7. A light colored exterior collar (contrasting thicknesses of glaze).

8. Cobalt blue base marks under the glaze. Rice bowls have a square "reign" mark; some cups have simple brush strokes (sun, moon).

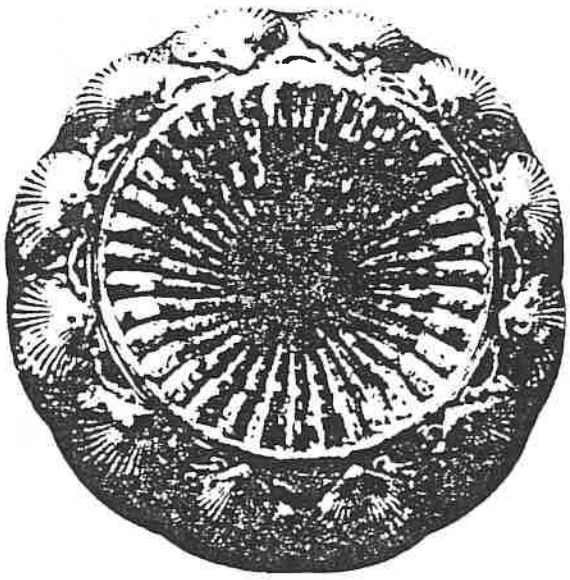
Rockingham: A common lead based glaze used on earthenware from the late 18th century. The glaze is mottled dark brown and yellow. (Boger 1971, Barclay 1976).

Euro-American Vessels



Redware molds

Eastern US c. 1800-60. Left H: 3-4";
D: 8-9". Right, H: 3½-4½"; D: 8-10".



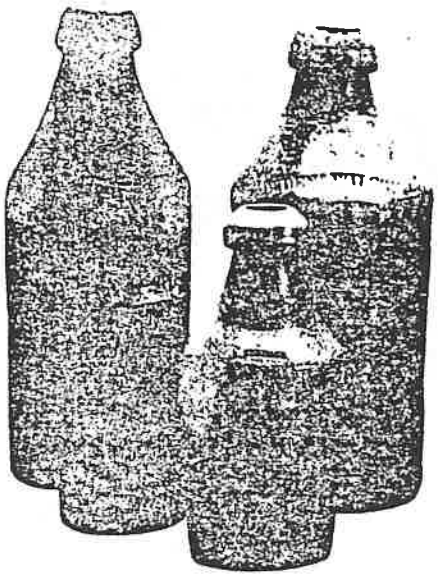
Rockingham spittoon

Yellowware (earthenware) with mottled brown Rockingham glaze on a molded-relief shell pattern.
Bennington, Vermont c. 1850-70.
H: 3½-4"; D: 9-10".

Common Euro-American Vessel forms from: "Pottery and Porcelain, Knopf Collector's Guides to American Antiques" by William C. Ketchum Jr. (1983), courtesy of Alfred A. Knopf, Inc.

Stoneware crock

Note orange peel finish of glaze. Decorated with cobalt blue handpainting. Interior is coated with brown albany slip. Made in Pennsylvania, New Jersey, and Virginia c. 1850-80. H: 16-22"; D: 11-15".



Stoneware ginger beer bottles

Note orange peel finish typical of salt glaze. Interior is glazed with albany slip. Eastern US c. 1850-1900. H: 6-10"; D: 2½-4½".

Rockingham teapot

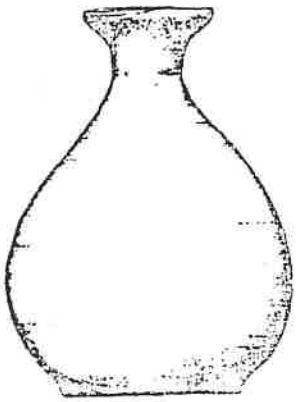
Molded "Rebecca at the Well" design. Ten sided yellow ware vessel with mottled brown Rockingham glaze. Eastern U.S. potteries, 1800-1900. H: 8-10". D: 9".

Porcelain beaker

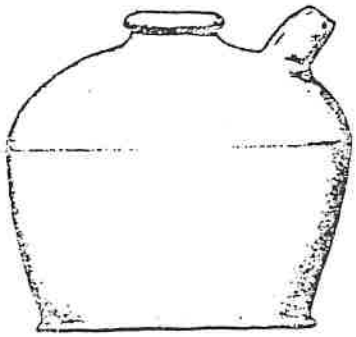
Hand painted, molded, and gilded. Lenox Inc., Trenton, New Jersey c. 1920. Popular style c. 1870-1930. H: 3-4"; D: 2¾-3".

Common Euro-American Vessel forms from: "Pottery and Porcelain, Knopf Collector's Guides to American Antiques" by William C. Ketchum Jr. (1983), courtesy of Alfred A. Knopf, Inc.

Common Chinese Vessel Forms:
(from Felton, Lortie, and Schultz 1984; Chace 1976)

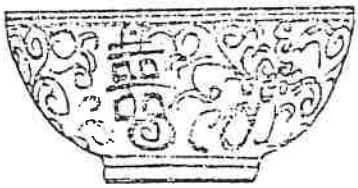


Wine/Tiger Whiskey

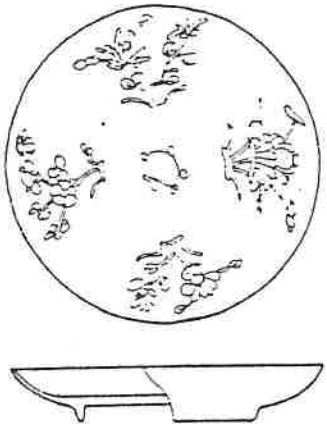


Soy Sauce

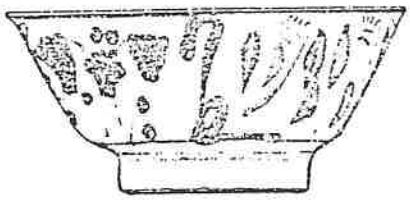
Shouldered Food Jar



Double Happiness/Swirl

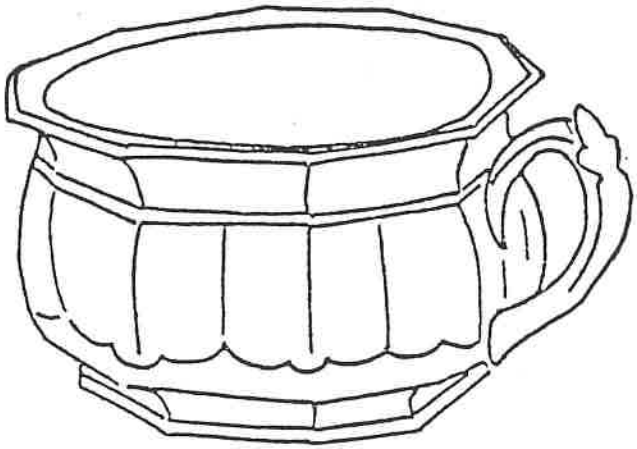


Four Seasons



Bamboo/Swatow/
Three Circles and Dragonfly

Euro-American Vessels



Davenport's Decagon Pattern on
9 in. diameter, 6 in. high chamber
pot, Davenport, 1853

Gothic Pattern on 9 in. wide,
7 in. tall octagonal dish,
Davenport, ca. 1840's

Common Ironstone Patterns from: "A Handbook on White Ironstone" by Jean Wetherbee (1974), courtesy of Wallace Homestead, Inc.

473.9 Trademarks:

Maker's marks, patents and other devices that are printed or impressed on ceramic vessels, are usually the most accurate dating indicators. Hallmark motiffs, key works and pattern names are often associated with specific time periods e.g., "made in England" implies a post 1900 date. Registry marks, the diamond shaped inscriptions commonly used in England between 1842-83 provide a key to the year, month and day of manufacture. If any numbers, pictures, initials or marks are oserved on ceramic artifacts in the field, these should be recorded and an encyclopedia of maker marks should be consulted.

The following list of general rules for interpreting Euro-American maker's marks has been adapted from Godden's Illustrated Encyclopedia of British Potter and Porcelain Marks (1963) and Wetherbee's White Ironstone (1974). For a discussion of Asian maker's marks, see Berge 1980:215-216.

> "Any printed mark incorporating the name of the pattern may be regarded as having been made after 1810."
>
> "The use of the work "Royal" suggests a date after the mid-19th century."
>
> "The garter shaped mark was used from 1840 onward."
>
> "The Staffordshire knot occurs from about 1845."
>
> "The Royal Arms was used from the early part of the 19th century, but the quartered shield without a central escutcheon was used after 1837."

By law, the word England has to be affixed to English goods imported to the U.S. after 1891. Some British potters, however, labeled their wares with "England" as early as 1869.

Note: This American law requiring labeling of national origin applied to other ceramic exporting countries.

> "Made in England" is a 20th century mark.
>
> Ltd., "Limited," reveals a date after 1860's but was not generally used in ceramics marks before 1880."
>
> "Trade Mark" had to be subsequent to the Trade mark Act of 1862. Normally, it denotes a date after 1875.

1) Bore or diameter of the barrel.
2) Barrel-groove diameter.
3) Bullet diameter.
4) Inside diameter of cartridge case mouth.
5) Arbitrary figure, determined by manufacturer.

The caliber may be designated by many means, as listed, and may include the case length or case type. The measuring of a cartridge case with calibers in order to determine specific measurements of given places on the metallic case may prove to be of more value than cartridge-type collections. Many books such as Barnes (1965) give detailed listings of cartridge case measurements which identify a cartridge case very accurately" (Berge 1978).

Celluloid: This synthetic, ivory-like material was developed in 1869. Celluloid is distinguished from ivory by a carbolic or menthol odor produced by heating or rubbing the surface of the button. After 1900, a two-piece button was made by placing a thin piece of celluloid over another type of material.

China: See Prosser.

Daguerreotype: During the Civil War (1860 - 1865), daguerreotype photographs were used on two piece buttons with glass fronts and backs.

Ferrotypes or Tintypes: Developed during the Civil War, ferrotype photographs were also made into buttons. They do not have the "Coppery" finish found on daguerreotype photos.

Glass: Many different types of blown, molded, and fused glass have long been used for buttons. Glass has been used for all types of button construction, and a great range of colors are known. Luscomb (1967:80-89) discusses over twenty-five different kinds of glass buttons. Prosser buttons are often confused with glass. Be careful not to confuse glass with ceramic or so-called little chinas made by the Prosser process (Roderick Sprague, personal communication 1985).

Horn: Disks, metal shank and self-shank buttons cut from horns and antlers of animals were made in the United States and Europe. In the 19th century, horn was sometimes processed (or imitation horn was made) and stamped with intricate designs.

Ivory: Elephant tusks, the teeth of whales, and tusks of the walrus and hippopotamus were used for "ivory" buttons. Ivory can be distinguished from celluloid by fine-grained striations which are characteristic of the structure of teeth and tusks.

Japanning: This is a lacquering process developed in Europe about 1800. Tin, wood, brass or other materials were coated with successive layers of high grade varnish. Black was the most common color for japanned buttons. The term "lacquered" refers only to those varnished buttons produced in the Orient.

Mother-of-Pearl: See "Shell".

Pewter: Pewter buttons with wedge and wire shanks were cast in the late 18th and early 19th century for use on men's clothing. After 1800, a pewter button with an iron shank was made. Luscomb (1947:148) lists the names of 21 pewterers whose names appeared on pewter buttons in the early 1800's. After 1810, many pewterers switched to brass. Pewter buttons, painted and decorated with other materials, were manufactured in the late 19th century.

476 - Shoes

476.1 IMACS Classification:
(AS) Animal shoes
(SO) Shoes

476.2 Shoe History and Dating: "The old way of doing things in the shoemaking business meant using wooden pegs, hand driven, to join soles and uppers. Shoes in the western world were universally made this way until the early 1800s. About 1810, and after Brunel's work with clamping presses, an American developed a similar invention as did two Frenchmen, Gengembre and Joliciere, working in Paris. Their efforts were followed in 1822 by a German shoemaker from Stuttgart, a man named Brecht, who conceived the use of screws for joining soles and uppers. Brecht's idea culminated before 1880 in a process in which a thread was cut upon a brass 'cable screw' wire. The screw thus made was then forced through sole and upper placed on an arm beneath, riveted, and then cut off. This was repeated as the shoe was advanced by the workman until the operation was finished, the whole being effected automatically by a single machine. The ends of the wires were then cut off and filed down, and the heels were nailed to the shoes by machinery (Knight 1882:III: 2158, 2162; Turner 1948:138)" (Fontana et al. 1962:105-106).

"As a rule of thumb, one can safely say that it was about 1812 before shoe nails replaced wooden pegs. Shoe-nailing machines, such as that finally perfected by Nathaniel Leonard of Merrimac, Massachusetts in 1829, did not drive finished nails into shoes. Rather they drove wire which the machines then cut and subsequently, in some instances, headed. In other words, the presence of actual square cut iron nails or square cut brass nails in a shoe dates it post-1812. Metal fasteners of any kind, especially wire, in a shoe date it certainly post-1800 and most likely post-1829" (Fontana et al. 1962:105-106).

"Sometime between the 1800s and the present day brass shoe pegs and nails ceased to be made. We have not been able to establish any dates. Modern shoe nails, both wire and square cut, are iron, coated or otherwise treated to make them resistant to corrosion. There are many kinds, but among the more common varieties are the square cut clinch and soling nails; the wire top-lift and hold-fast nails; and the twisted wire fed into a machine from a spool to be cut at any desired length after it has been driven into the shoe. This machine is a descendant of that invented by Brunel at the onset of the 19th century and perfected by Leonard in 1829" (Fontana et al. 1962:105-106).

The following summary is from Anderson (1968:62-64).

During the industrialization of the nineteenth century a number of important technological innovations took place within the shoe industry. Each development was marked by some distinctive feature which provides the archaeologist with valuable technological data. The twentieth century has been a period of stylistic experimentation and innovation, but today's shoes are manufactured by the same

476.5 Animal Shoes: The following information is adapted from Berge (1980).

Horseshoes

"The normal horseshoe has the form of a constricted arc with the same three general sections as the foot, ie., toe, quarter, and the heel. The area from the toe to the heel on each side of the shoe is termed the branch or wing (Great Britain 1908:227). These branches can be either inner or outer, depending on the position of the shoe in relation to the body median. The area of the shoe which comes in contact with the ground is the ground surface, and the opposite side is the hoof-surface. That portion of the shoe which comes into direct contact with the hoof is the bearing-surface. The fuller is a groove which usually extends the length of the quarter but may include the entire arc of the shoe, from heel to heel. Nail holes are punched into the fuller, and this groove prevents the wearing away of the nail head, thereby preventing the untimely loss of the shoe. The fuller also prevents slipping and aids the farrier in punching the nail holes more easily and accurately (Fitzwygram 1903:479). Seating is used to take the pressure off the sole in order for the wall to take the entire pressure of the horse's weight. The "web" of the shoe (width of the branch) is "the whole of the substance of the shoe ... and the width of the web, cover, e.g., a wide-webbed shoe, is frequently spoken of as having 'plenty of cover' (Great Britain 1908:227).

Normal front shoes are easily distinguishable from normal hind shoes. The front shoes are more nearly circular at the toe and quarter, and are usually wider at the heels. The hind shoes are more pointed at the toe and quarters, and usually narrower at the heels (Hayes 1960:448).

Muleshoes

"The structure and characteristics of the hooves of these animals are quite similar to those of the horse, differing chiefly in the narrow and the round at the toe, the sole is well-arched, and the side walls are rather steep. In the ass the narrowness of the hoof is still more pronounced, the wall is relatively wide in the region of the quarters. The horn of both the mule and the ass is tough.

Theshoes differ from those of the horse in no other respect than that they should be lighter and narrower. Four nail-holes are sufficient for an ass's shoe, and five to six for a mule."

Oxenshoes

"The shoeing of oxen is essentially different from that of horses, because the foot of the ox is cloven (split), the long pastern, short pastern, and hoof bone are double so that instead of one hoof or claw, there are two upon each foot, distinguished as outer and inner. Each claw consists of wall, sole, and bulbs; the frog is absent. The wall is considerably thinner than that of the horse's hoof, the sole is thin, and the bulbs are low. For these reasons the shoe designed for a claw must be thin, but wide."

Nails

There are hand-made and machine-made horseshoe nails, both of which have their specific advantages and disadvantages (Lungwitz 1908:109). There are two primary types of nails: (1) rose-headed

477 - BARBED WIRE/BALE TIES

477.1 IMACS Classification: Barbed wire should be entered under the encoding entry (WF) Barbed Wire. Bale ties and all other wire should also be entered under the encoding entry (WI) Wire.

477.2 Barbed Wire/Bale Ties and Dating:

Barbed wire and staples are used to contain or repel livestock but may have been primarily used as property boundaries.

"The innovation of the Bessemer steel making process in approximately 1876 had a tremendous effect upon the wire making industry (as well as iron and steel). Due to the lowering of production costs, it allowed for the production of a variety of wire products in large volumes (Clark 1949, Vol. III:124-125).

Bale ties and barbed wire were among the products which had a florescence around this time, according to Washburn (1917:154-157). Washburn was an officer of Washburn and Moen Manufacturing Company which acquired most of the patents to the new wire technologies and he was a firsthand witness. Washburn, as an example, cites the first commercially made barbed wire in the United States as consisting of five tons in 1874. In 1876 his company acquired the patents and began production in quantity. A similar florescence in bale ties occurred and Washburn and Moen also held many of these patents. The descendent firm to Washburn and Moen is the United States Steel Corporation and much of its success was related to its wire products.

Wire rope, woven wire fencing, and other wire products were made by Washburn and Moen as the primary supplier. Wire rope became a major product in the 1880s with a major application to cable railways, which were first constructed in 1889 (Washburn 1917:159). Woven wire fencing was popular '...a few years later after barbed wire fluoresced', which would be approximately 1880 (Washburn 1917:163)" (Buckles et al. 1978:444-445).

Chronology: (from Buckles et al. 1978:448)

Post 1875:	Barbed Wire
	Bail Ties
Post 1880s:	Woven Fence Wire
	Wire Rope

"A number of books have been written on the subject of barbed wire (Glover 1969, Clifton 1973, and others). The patents on many variants of barbed wire are definitive but cultural lag is a problem in dating since early wires continued to be used long past their original patent dates" (Buckles et al. 1978:435).

Pertinent Notes on Recording Barbed Wire/Bale Ties:

If barbed wire is present on a site it indicates a date of post-1875. For specific patent dates refer to the references cited above. It should be kept in mind that the patent dates refer only to initial manufacture of that particular type of barbed wire, hence, they may

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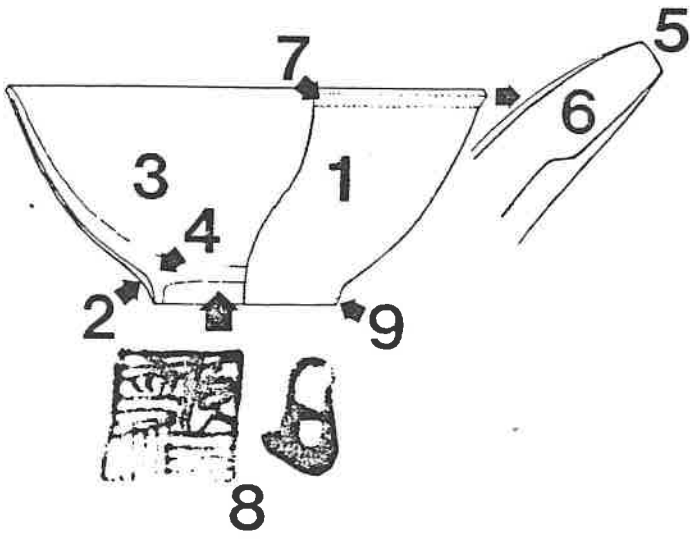
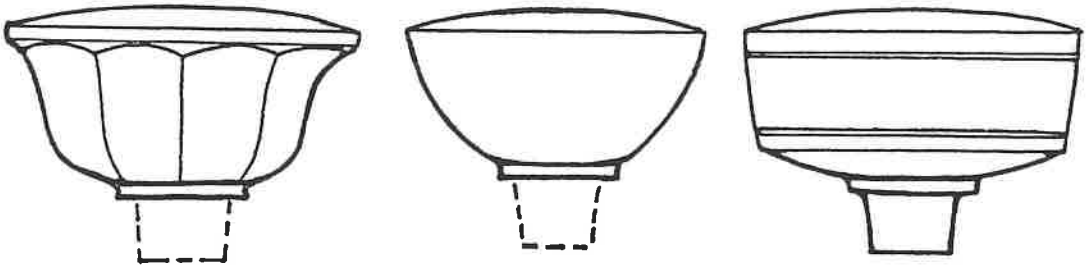
478 - Common Chinese Artifacts

Characteristics of Celadon Wares (From Wylie and Geer 1983)
rice bowls, tea/wine cups, spoons



See text for explanation

Three Typical Opium Pipe Bowl Types
(From Wylie and Fike 1985)



orange
66-79mm. diam.

grey-green or
dark reddish brown
65-68mm. diam.

grey-green
60-70mm. diam.

December 1, 1983

Terminus Post Quem dates for cataloguing artifacts excavated
by the Office of Excavation and Conservation,
Colonial Williamsburg Foundation

Whenever possible, each excavated assemblage being catalogued into our computer system will be given a terminus post quem date. That date is established by identifing the artifact type in each lot which is the newest or most recent one in term of period of production. The T.P.Q. date can be a fairly reliable indicator for the earliest point in time an assemblage or soil layer could have been deposited. Such information about features and layers can play an essential role in further interpretation of the site.

The attached list of T.P.Q. dates are for some of the most commonly occurring artifacts which is meant to be used as an aid in expediting the cataloguing process. There are many more artifact types for which T.P.Q. dates are known, however, they do not occur frequently enough to warrant including them on this list. Cataloguers are not restricted to this list and they are encouraged to use other artifact types whenever they provide a more recent TPQ date. When listing the T.P.Q. date on the computer form, write down the artifact used to establish the date.

A word of caution about the dates given on the following three sheets, many of them are the best estimates available for when a given artifact was introduced or began being produced. Often with more research, the dates can be refined. These T.P.Q. dates are provided to give a rough date of the earliest period an assemblage could have been completed. They are not meant to provide authoritative dates for an assemblage which should be done through more detailed research.

The dates given on these sheets came from a variety of sources, however, most of them are from Ivor Noel Hume's Artifacts of Colonial America and The Parks Canada Glass Glossary (Olive Jones et al.).

1850 common

Nails

ca. 1850 Wire nails
ca. ~~1805~~ Cut nails, machine headed → 1820 common
ca. ~~1790~~ Cut nails, hand headed → 1800 common

Tin cans, pots & pans

1962 Pull-tabs from pop & beer cans
1935 Canned beer, crown stopper cans
1928 Key opened vacuum packed coffee can
1898 Modern crimped top tin can
ca. 1867 Commercial production, enamelled tin ware
ca. 1837 Commercial production, canned foods in U.S.
1799 Enamelled cast iron cooking pot

Miscellaneous

1886 Barbed wire
1876 Portland cement-not significant amounts until 1899
ca. 1860 Kerosene lamp burners & chimneys
1846 Gimlet point wood screws

1901 Machine made glass marbles
1895 Machine made electric light bulbs
1865 Glass electrical insulators with internal threads
1846 Handmade glass marbles

Ammunition

1871 Bottle necked cartridges
1866 Rim fired cartridges
1852 Minie ball
1850 Shotgun cartridges
1846 Brass or copper cartriages
1814 Percussion caps

1650 Rhenish stoneware, sprig moulded, combed lines, blue & purple
1650 North Devon sgraffito slipware
1650 North Devon gravel tempered ware
1630 Metropolitan slipware
1620 Poorly made Bellarmine face bottles
1610 Red marblized slipware

Glass

1935 Applied color lable on commercial containers
1933 "Federal law prohibits sale or reuse of this bottle" blown in glass
1927 Plastic caps
1915 Hob-skirted coke bottle
1906 Lug finish on machine made containers
1903 Owen's "scar" on machine made bottles
1893 Semi-automatic machine made wide mouth containers
1892 Crown stopper finish
1889 Semi-automatic machine production for narrow mouth containers
1886 Milk bottles
1882 Bail & yoke lightning stoppers
ca. 1880 Solarized glass, manganese used as whitner
1879 Machine crimped lamp chimney tops
1879 Hutchinson stopper, "blob top"
ca. 1874 Vented moulds
ca. 1870 Hand crimped lamp chimney tops
ca. 1870 Turn paste moulds
1869 Milk glass canning jar lid liners
1867 Plate moulds
1863 Lug finish on mouth blown jars
1858 Screw top canning jars
ca. 1850 Snap case held bottles (no pontil mark)
ca. 1845 Bare iron pontil
ca. 1825 Pressed glass
ca. 1825 Lipping tool finish
ca. 1825 Post bottom moulds
1821 Rickets style 3-piece mould
ca. 1750 Letters embossed
ca. 1750 2-piece hinged bottle mould
ca. 1750 Lead glass commercial containers
ca. 1750 Cut glass stems on English stemware
ca. 1750 Enamel twists in English stemware
1743 Milk glass
ca. 1730 Dip mould blown English black glass bottles
ca. 1725 Air twists in English stemware
ca. 1690 Heavy baluster wine stems
ca. 1670 English lead cristal glass
ca. 1650 Mould blown English tableware

Plastics & Rubber

1940 Melmac plastic
1915 Pyralin plastic (tooth brushes, combs, etc)
1907 Bakelite plastic-black/brown
1868 Celluloid plastic-white, pink, tortoiseshell
1851 Hard rubber-buttons & combs

Table II.5. Potomac Basin Woodland Pottery Types.

Ceramic Type	Temper	Description	Distribution	Time Period (uncorrected C14 date)
Townsend ware[2,4]	shell	small to large, wide-mouth jars, direct rims, conoidal bodies, rounded or semiconical bases; fabric-impressed; incised and cord-impressed decoration	Delaware south through Delmarva and coastal Maryland and Virginia	Late Woodland
Rappahannock Incised (Townsend pottery)[4]		complex geometric motifs	same as Townsend	Late Woodland I 900-1300 CE
Rappahannock. Fabric-Impressed (Townsend pottery)[4]			same as Townsend	Late Woodland 900-1600 CE
Currioman Fabric-impressed[4]	quartz particles, finely crushed oyster shell	large open-mouth jars and shallow bowls, fabric-impressed	Virginia northern neck	Late Woodland I
Townsend Corded[4]	shell	geometric motifs impressed in fabric-marked exterior	same as Townsend	Late Woodland II
Sullivan ware[4]	shell	thin-walled, fine cord-marking; constricted necks and conoidal bases	Maryland western shore; Virginia northern neck	Late Woodland II
Potomac Creek, Cord-marked and Plain[2,4]	medium to fine sand and/or crushed quartz	large to medium globular form, everted to straight rims, rounded bases, cord-impressed designs below rim	western Virginia Coastal Plain south to James River, Maryland Coastal Plain, central Delaware	ca. 1300-1600s, CE
Moyaone ware, cord-impressed, Incised, Plain[2,4]	fine sand, occasionally with crushed quartz or coarse sand	small to medium globular jars or simple bowls	as Potomac Creek	ca. 1300-1500, CE
Yeocomico ware[2,4]	fine, crushed shell	thin, coil-constructed, variety of shapes and rims, plain or scraped exterior, punctates or core impressed decoration below rim	southern Maryland and Virginia Northern Neck	Protohistoric 1500-1690 CE
Shepard Cord-marked[4]	crushed granite and quartz	cord-marked, collared rim, cord and cord-wrapped stick decoration	Piedmont	Late Woodland, ca. 900-1600
Page[5]	limestone		Piedmont	Late Woodland, ca. 1400-1500

Table II.6. A General Dating Guide to Selected Artifacts of the Historic Period: *TPQs* and Date Ranges (selected indicators are shown in Table II.7).

CERAMICS	
1550-1625	Bellarmine bottles
1567-1800	delftware apothecary and ointment jars
1610-1660	red marbleized slipware
1620-1700	Bellarmine bottles with stylized or grotesque faces, debased
1630-1660	Metropolitan slipware
1640-1800	plain white delftware vessels
1650-1730s	delft chamber pots
1650-1775	Rhenish stoneware, sprig molded, combed lines, blue and purple
1650	North Devon, sgraffito slipware (1650-1710) and gravel tempered ware (1650-1775)
1650-1725	Westerwald sprig molded
1660-1840	Chinese export porcelain in English North America
1670-1795	combed slipware
1670-1795	trailed clear glaze slipware
1685	Famille Rose palette on Chinese export porcelain
1690-1710	embellished Hohr grey Rhenish stoneware
1690	refined red stoneware, unglazed and sprigged
1690	English brown stoneware, saltglazed
1700-1810	Nottingham stoneware
1700-1775	Westerwald, stamped blue floral and geometric
1710-1740	Mimosa pattern on delftware
1715	white slipped saltglazed stoneware
1720-1805	White saltglazed stoneware (general)
1720-1730	scratch brown or trailed white saltglazed stoneware
1720-1775	Buckley ware
1725-1750	Astbury ware, white sprigged and trailed
1740-1770	Wieldon-Wedgwood wares
1740-1780	Jackfield ware
1745-1775	scratch blue white saltglazed stoneware
1745-1795	English porcelain
1745-1780	Iberian storage jars
1745-1797	overglaze Chinese export porcelain
1750-1820	Black Basalt
1750-1800+	large delft forms such as punch bowls, plates remain popular
1752	black transfer print (TPblk)

Table II.6. A General Dating Guide to Selected Artifacts of the Historic Period: *TPQs* and Date Ranges (selected indicators are shown in Table II.7).

GLASS	
1650	mold blown English table ware
1730	dip mold blown English dark green glass bottles
1750	embossed lettering
1810-1880	2-piece full-height mold (bottom hinge)
1815-1885	black/opaque glass
1820s-1920s	full-height 3-part dip bottle mold
1850	continuous thread bottle finish
1855-1913	snap case (bottles)
1858	Mason jars
1865	glass electrical insulator with internal threads
1879	hand blown light bulbs
1880-present	clear glass
1880-1925	sun-colored amethyst glass
1886	milk bottles
1890-present	crown bottle finish, cork liners to 1955, then plastic liners
1893-1926	semi-automatic machine made bottles
1895	Coca-cola bottles
1895	machine made electric light bulbs
1906	Pepsi cola bottles
1919-1935	straw-colored and turned-pink glass
1920s	machine made bottles
1920s-1930s	Depression glass
1932-1965	"Federal law prohibits sale or reuse of this bottle" on bottles
1930s	applied color labels on bottles
1948	non-returnable soft drink bottles
METALS	
1600-1800s	handwrought nails
1790s-1820s	cut nails with hand wrought head
1805/15-1830s	machine headed cut nails
1810-present	machine cut sprigs and brads
1814	percussion caps
1820	hole-in-cap tin cans
1830-present	modern machine cut nails
1846	wood screws with gimlet points
1846	brass or copper cartridge caps
1850	shotgun cartridges
1850	wire drawn nails invented
1852	Minie ball
1866	key wind opened cans
1867	barbed wire

Look up

" The Hero Fruit Car Co. unit NO/E350 L-1 Phila "

Tin Cans

Compiled from: Gillio et al. (1980), Gilpin (1983), and Rock (1981)b

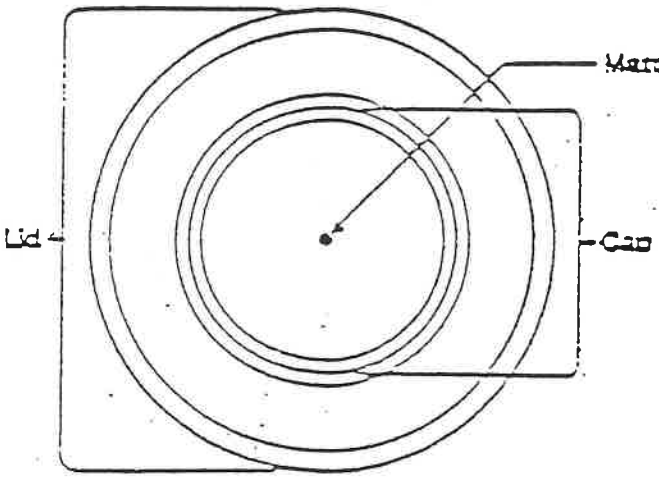
Tin cans may be dated using two criteria: technology and size. First we will look at technological changes in cans through time, then explore the changes in can size. Finally, some common can types will be examined.

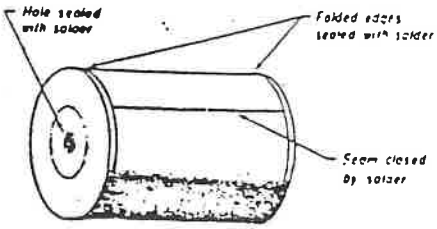
Technology

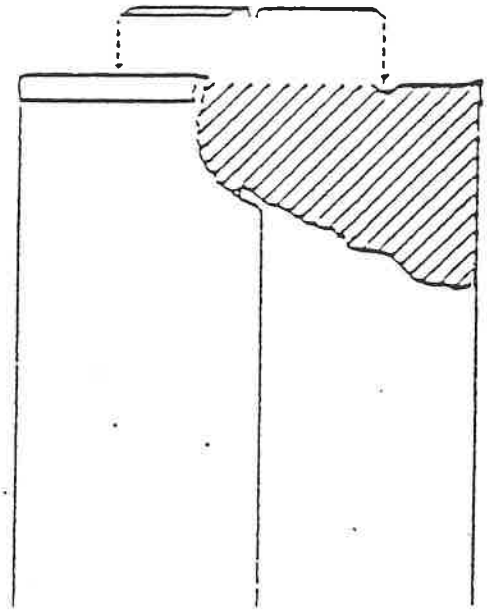
Hole-in-Top Can ca.1810-ca. 1920

Oldest and longest lived type of can. Originally made by hand, pre-1880 cans were hand soldered, thus seams are irregular and might have as much as 1/8" relief. Later post-1880 cans were machine soldered and had a more even, less obtrusive, soldered seam.

Food was forced through a hole in the top of the can. A smaller cap was then soldered in place. This cap had a pinhole in it through which steam escaped during the cooking process. This hole was then sealed with a drop of solder after cooking.







1 inch

Dating Tin Cans By Their Size

Navajo Nation archeologists have attempted to date tin cans on the basis of their size. Common can sizes used in various years by the canning industry since 1916 were compiled into a list. Cans found on sites were measured and compared with those on the list. Preliminary data indicate that this method may be of some use in dating sites, but further archeological testing is necessary. Can sizes are often difficult to measure in archeological context due to crushing and rusting. The following is from Gilpin (1983: 1026-7) and explains this process in more detail (see also McKeown 1983).

It should be pointed out at the outset that the canning industry measures cans in sixteenths of an inch and records each can dimension as a three-digit number in which the first digit is the number of inches, and the second and third digits are the number of sixteenths. Hence, a measurement of 2 4/16 inch would be written 204. The dimensions of round cans are written with the diameter first and the height second. Thus, a 204x208 can would be 2 4/16 inches in diameter and 2 8/16 inches in height. In recording the dimensions of rectangular cans, the first two sets of dimensions are for the lid or base, and the last set of dimensions are for the height. Thus, the distinctive Arbuckle Brothers rectangular slide-on-lid can would have the dimensions 404x215x515, and the lid and base of the can would measure 4 4/16 inch by 2 15/16 inch, while the height would be 5 15/16 inch.

In order to accumulate data on can dimensions, McKeown (Duran and McKeown 1980; McKeown 1983) consulted the Almanac of the Canning Industry, which has been published annually since 1916. This trade journal published lists of "common can sizes" in each volume except for the volumes 1927, 1928, 1979, and 1980. The volumes for 1917, 1919, and 1930 could not be located. Based on these lists, McKeown compiled Table 15.7, listing the dates when each can size was common. In the Blocks VIII, IX, X, and XI survey report, Gilpin (1982a) analyzed the distribution of sanitary seal can sizes on surveyed sites and concluded that the canning industry's data on common can sizes and their dates were archaeologically visible. The can sizes listed as common by the canning industry are practically the only sizes that occur on archaeological sites, and, with a few possible exceptions, if a can size was not listed as common, it was not common enough to appear in the archaeological record. Moreover, can sizes appear to come into production and to be phased out quite rapidly, so that the canning industry's dates closely match the dates of sites on which the various can sizes were recorded. The biggest problem with using the dates is the accurate measurement of the cans. On the Blocks VIII, IX, X, and XI survey, and on the data recovery project on Blocks VIII and IX, can measurements were recorded and listed along with the nearest common can size that was within 4/16 of an inch of each dimension. Usually, it was found that if a date was hypothesized based on the nearest common can size, additional evidence for that date could be found in the form of glass dates, other can sizes, can dates based on brand names, and so forth. It thus appears that the canning industry's information is correct and archaeologically visible, but additional studies need to be done on the relationship between the dates supplied by the canning industry and distribution of can sizes in archaeological sites. In general, it appears that can sizes are useful in dating sites, especially if used in conjunction with dates of other artifacts. Hypothesizing a date on the basis of only one or two cans, especially if can measurements are rounded to the nearest can size, may be risky, but probably no more so than dating sites with only a few projectile points.

Specific Can Types

Coffee

Arbuckle Brothers

Until 1914: Rectangular tin can, embossed external slip cover lid, legend: "ARBUCKLE BROTHERS, NEW YORK, CHICAGO AND PITTSBURGH"
1914-1928: Replaced by round Maxwell House can with slip cover lid.
1928: Round Maxwell House can replaced by round key-opened vacuum packed can.

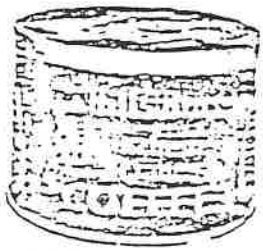
Folgers

1903-WWI: Sold in cans (with slip cover lid?).
Post WWI: Sold in vacuum packed key-opened cans.

Hills Brothers

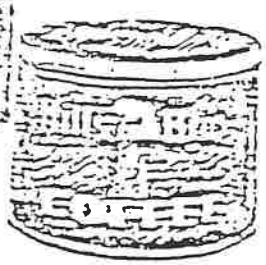
1900-1903: Two varieties: 2 lb. tall soldered can--top had to be cut out; key-opened 1 lb. squat can.
1903-1906: Discontinue 2 lb. tall can, continue 1 lb. squat can.
1906: "Hills Brothers" first used on cans.
1914-1922: Can top embossed "STEEL CUT".
1926: Introduce key-opened can.
1963: Keyless can with plastic cover.

03



1906-1914

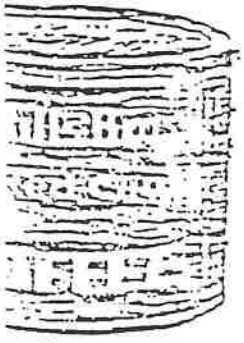
1908-1918



1922-1926

1926-1927

1926-1937



918

1937-1942

1948-1963

BAKING POWDER CANS

K C Baking Powder

Introduced in 1890

Lids

pre-1925: "KC BAKING POWDER"

post-1925: 2 variations--

"KC BAKING POWDER, SAME PRICE TODAY AS 35 YEARS AGO"

or "SAME PRICE FOR OVER 35 YEARS"

Until World War II, this number was changed every few years. With a base date of 1890, the year of manufacture can be determined, as follows:

"35 YEARS AGO": 1925-1927

"38 YEARS AGO": 1928-1929

"40 YEARS AGO": 1930-1932

Etc., until "50 YEARS AGO" : 1940 to ? Since World War II, KC has been manufactured in a lithographed can with the slogan "SUPERIOR QUALITY FOR OVER ___ YEARS". The base date is still 1890.

"TRUE HEIGHT CAN" probably dates between the years 1925 and 1950.

PATENT DATES FOR OTHER BAKING POWDER

Clabber--later Clabber Girl: 1906 to present

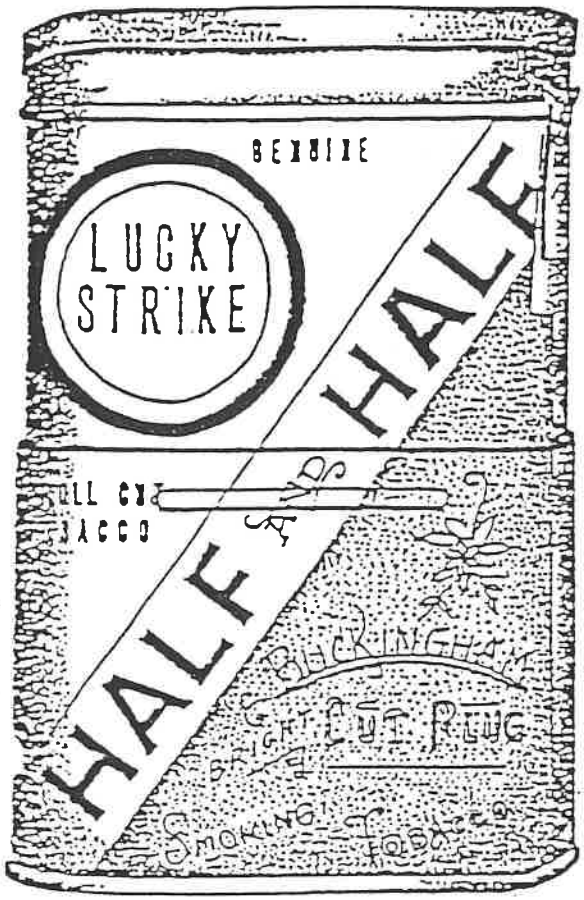
Morey's OK: 1907-1936(?)

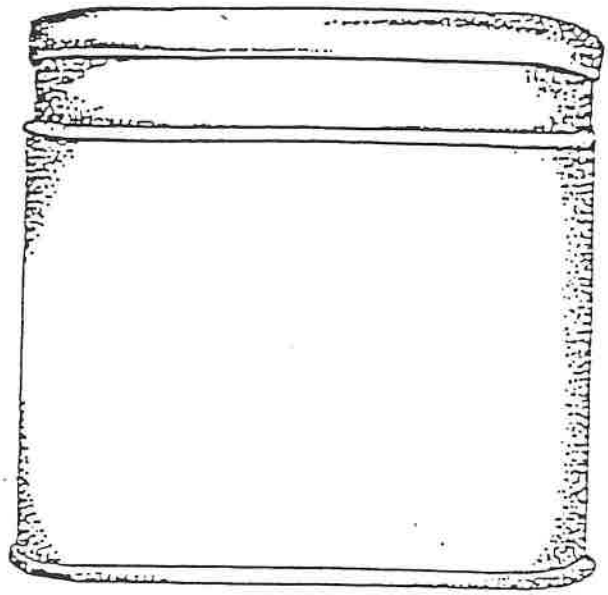
Dr. Price's Baking Powder: 1850-1920(?)

Calumet: 1870-present. Gilpin hypothesizes that Calumet can lids stamped with a "MADE IN U.S.A." legend postdate 1928 and those without this legend antedate 1928.

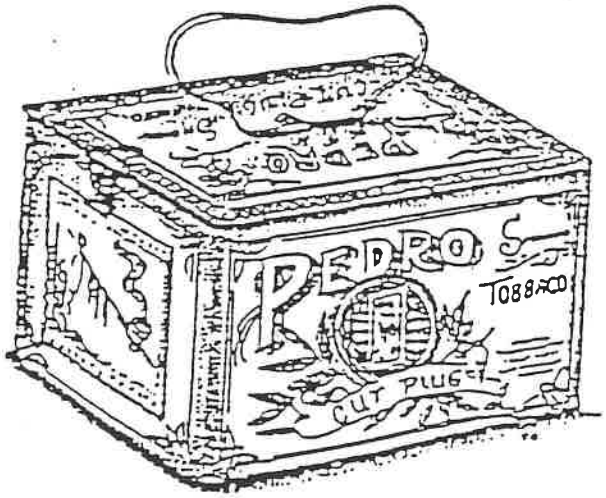
Compiled from: Ward, Abbink, and Stein 1977; and Gilpin 1983 (p. 1030-3).

Copenhagen snuff lid, in use 1937 to 1977.





Telescoping canapsible tin - 1930



Some examples of tobacco containers.

HEMINGRAY INSULATORS
100 Years Of History

A handout from Bill Meier's 1994 National Display

1850's

The exact date of the start of production of insulators is unknown. Some advertising mentions producing "Telegraph Glasses and lighting rod insulators."

1871

(December 19) Robert Hemingray receives a patent for the molding of telegraph insulators.

1870's

The earliest embossed insulators produced by Hemingray are embossed "PATENT DEC.19.1871". Over a dozen styles are produced, the most common being CD 132, 133, and 133.4.

1883

(November 13) Samuel Oakman patents the Double Petticoat insulator. This design feature is incorporated in a number of styles of insulators, including some styles produced by Hemingray.

1884

(February 12) Samuel Oakman patents the CD 145 "Beehive" style insulator. This style becomes the Western Union Standard Double Petticoat insulator. Again, several insulator companies, including Hemingray, begin producing this style in large quantities for telegraph use.

1880's

During the 1880's the embossing "H.G.CO." replaces the "PATENT DEC.19.1871" embossing and several new styles of insulators are introduced. Most of these are the new double petticoat styles CD 145, CD 151, CD 162 and CD 164.

1893

(May 2) Ralph Hemingray receives a patent for drip points or "teats". This feature is quickly added to nearly all styles of insulators that are in production.

1890's

The embossing "HEMINGRAY" appears on several new styles of insulators. The earliest of these probably are the No 8 CD 112.4 and the No 9 CD 106. Also "HEMINGRAY" replaces the "H.G.CO." embossing on most existing styles.

1899

The "Provo" style CD 283 is developed for high voltage power transmission and is used on a 40 KV transmission line of the Telluride Power Transmission Company in Provo, Utah.

1910

CD 152 is developed as a new standard for telegraph work.

1919

"MADE IN U.S.A" first appears on Hemingray insulators per an international agreement to mark any items for export with the country of origin.

1922

CD 154 is developed as a replacement for CD 152 for telegraph work.

COMMON 20th CENTURY GLASS MAKER'S MARKS

AMERICAN BOTTLE CO. 1905-1916; 1916-1929 ABCo N17 S18	LATCHFORD-MARBLE GLASS 1939-1957
AMERICAN CAN CO. 1962-1967	MARYLAND GLASS CO. 1916-Present
ANCHOR HOCKING GLASS CO. 1938-Present	MAYWOOD GLASS CO. 1930-1961
ARMSTRONG CORK CO. 1938-1969	NORTHWESTERN GLASS CO. 1931-Present
BALL BROTHERS GLASS CO. 1919-Present	OBEAR-NESTER GLASS CO. 1915-Present
BROCKWAY GLASS CO. 1925-Present	OWENS GLASS CO. 1911-1929
ADOLPHOUS BUSCH GLASS MF'G CO. 1886-1928 # AB ABGMCo	OWENS-ILLINOIS GLASS CO. 1929-1956 1 through 19
BUCK GLASS CO. 1909-1961	OWENS-ILLINOIS PACIFIC* COAST CO. 1937-1956 20
CHATANOOGA GLASS CO. 1927-Present	OWENS-ILLINOIS PACIFIC* COAST CO. 1932-1938 21
CONSUMERS GLASS CO. 1917-1961	OWENS-ILLINOIS PACIFIC* COAST CO. 1932-1937 22
DIAMOND GLASS CO. 1922-Present	OWENS-ILLINOIS PACIFIC* COAST CO. 1932-1956 23
DOMINION GLASS CO. 1913-Present	OWENS-ILLINOIS GLASS CO. 1954-Present
FAIRMONT GLASS CO. 1930-1945/1945-1960 F	OWENS-ILLINOIS GLASS CO. DURAGLAS:1940-1963
FOSTER-FORBES GLASS CO. ca. 1940-Present	PIERCE GLASS CO. 1905-1917
GAYNOR GLASS CO. ca. 1920 G	ROOT GLASS CO. 1902-1932 ROOT
GLASS CONTAINERS INC. * 1934-1967	SOUTHERN GLASS CO. 1917-1931
HAZEL-ATLAS GLASS CO. 1920-1964	STREATOR BOTTLE & GLASS CO. 1881-1905 SB&GCo
ILLINOIS GLASS CO. 1916-1929	THATCHER MF'G CO. 1900-Present
ILLINOIS PACIFIC GLASS CO. 1902-1930 IPG	THREE RIVERS GLASS CO. 1925-1937 3 RIVERS
KERR GLASS CO. 1912-Present	TYGART VALLEY GLASS CO. 1940-1960
KNOX GLASS COMPANY 1924-1968	WHITALL-TATUM & CO.* 1924-1938
LATCHFORD GLASS CO. * 1925-1938	WILLIAM FRANZEN & SON 1900-1929 WF&S

#-From Berge 1980:114-115 *-In Giarde 1981 All Others Listed in Toulouse 1971