

**ARCHAEOLOGISTS AT WORK:
A TEACHER'S GUIDE TO
CLASSROOM ARCHAEOLOGY
Second Edition**

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Joanna T. Moyer**

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—FOREWORD—

The question is often asked: “Why dig if you are only going to keep the artifacts in boxes and not tell their stories?” The goal of the City of Alexandria’s archaeological program and the Alexandria Archaeological Commission is to preserve Alexandria’s heritage while sharing research with the public.

The second edition of *Archaeologists at Work: A Teacher’s Guide to Classroom Archaeology* demonstrates our commitment to establishing and maintaining partnerships between museums and schools. This edition, authored by Robin Landes, is based upon Joanna Moyer’s original 1993 publication. While the structure is similar to the first edition, Robin has enhanced the *Guide* with significant changes and updated information.

Over the last year Robin and Ruth Reeder have revised and expanded the Archaeology Adventure Lessons, with the help of hundreds of school children. Educators in other towns may want to use local sites and artifacts in developing their own lessons. Hopefully the Archaeology Adventure Lessons will provide food for thought.

The interpretive theme for our Adventure Lessons and the Alexandria Archaeology Museum is “Archaeologists at Work.” Our museum is a working laboratory in which most of the steps of the archaeological process can be observed as they are carried out by City staff and volunteers. Consequently, the Archaeology Adventure Lessons guide students through the step-by-step process archaeologists use in their research. The Adventure Lessons are used by science and world civilization teachers to demonstrate method, and by other educators to teach history concepts.

The second edition of *Archaeologists at Work: A Teacher’s Guide to Classroom Archaeology* looks quite different than the first. New computer software and scanning equipment allowed its production in a new format with more graphics. These computer resources were purchased with the help of the Friends of Alexandria Archaeology.

Information and ideas in the *Guide* will enable teachers to incorporate archaeology into their lessons in new and creative ways. We hope the revised *Guide* will generate requests, questions and new lessons for future editions.

Pamela J. Cressey, Ph.D.
City Archaeologist
June 1996

—SECTION SUMMARIES—

The information in this teacher's guide is applicable to any study of archaeology. It is an excellent resource whether you are investigating Alexandria, Virginia or Alexandria, Egypt. The information and activities may be adapted to any curriculum, learning style or age level. These summaries will help you find the information in this guide.

Section 1: The Alexandria Archaeology Museum

- *Planning for a Museum Visit:* page 1

Please be sure to review this section before coming to the Alexandria Archaeology Museum. It lists who to call to schedule an Archaeology Adventure Lesson, as well as where to park the bus and a few suggestions that will make the field trip a positive experience for everyone.

- *Additional Museums and Historic Sites:* page 3

Combine the trip to Alexandria Archaeology with a visit to other museums and historic sites. We can help you schedule a joint visit to more than one site. Call 703-838-4399 to arrange a joint visit or to receive a flyer which describes the various programs.

Section 2: Archaeologists At Work

- *The Steps of Archaeology:* pages 5 - 20

A complete description of the step-by-step process of archaeological investigation, with figures and photographs, is included.

- *An Archaeological Case Study: Excavations At The Stabler-Leadbeater Apothecary Shop:* pages 21 - 26

A brief history of the Stabler-Leadbeater Apothecary Shop and descriptions of the artifacts discovered during the excavation are included. Many of the artifacts recovered during the excavations are exhibited in the Stabler-Leadbeater Apothecary Shop Museum.

Section 3: The Archaeology Adventure Lessons

Museum Programs: pages 27 - 90

Examples of the Archaeology Adventure Lessons are included with objectives, vocabulary and background information. These lessons are offered in the Alexandria Archaeology Museum and rely on the artifacts and resources recovered in Alexandria. They may serve as examples for similar lessons that can be created using historic sites and resources in other areas.

Section 4: Classroom Activities

Activities for Use in Your Classroom: pages 91 - 130

These classroom activities reinforce the concepts described in Section 2: Archaeologists at Work. The activities can be completed in one or two class periods. Each

activity states learning objectives, provides background information, lists materials or supplies needed and lists the step-by-step procedure. Master copies of student worksheets and teacher's answer sheets are included for each activity.

Section 5: The Alexandria City Public Schools and Archaeology

- *Social Studies Educational Objectives Related to Archaeology*: pages 131 - 145

The learning objectives which reinforce the major goals for social studies education in the Alexandria City Public Schools are cited here.

- *Supplemental Information for Alexandria Is...*: pages 131 - 144

This information augments selected lessons in the Alexandria City Public School's third grade textbook *Alexandria Is...* The relevant lessons in the textbook are *Alexandria Is... Historic Places*; *Lost in History Since 1949: Time Capsule Lost, Then Found* and *Learning About Alexandria's History from Objects*.

Section 6: Ask The Archaeologists

- *The 50 Most Commonly Asked Questions About Archaeology*: pages 145 - 156

This list contains the 50 most frequently asked questions about archaeology. Read the archaeologists' answers to learn more about the step-by-step process of archaeological research and Alexandria Archaeology.

Appendices: More Information On Archaeology: pages 157 - 218

Supplemental information is contained in this section and includes a glossary of archaeological terms, a list of Washington area public archaeology resources including facilities and museums, recommended publications and curriculum materials, audiovisual materials, a reading list of books on archaeology, selected articles on archaeology, a list of electronic resources and a description of laws governing archaeological research.



Archaeology excites students of all ages.

—INTRODUCTION—

ARCHAEOLOGY

The word archaeology tends to conjure up images of antiquity and exotic, faraway lands. Archaeology is often associated with mystery. Many people do not realize that archaeologists are at work throughout the Washington Metropolitan area and even the United States. One need not travel very far to find archaeologists working to decipher the mysteries of our past.

The *Webster Unabridged Dictionary* defines mystery as “any thing or event that remains so secret or obscure as to excite curiosity.” Archaeology does excite curiosity in adults and children alike because it is about solving a puzzle or discovering a secret. It is no wonder that teachers see the potential for using the problem solving aspects of archaeology in the study of history and across the curriculum. See Section 4, Classroom Activities, Archaeology Isn’t Just a Topic for Social Studies Classrooms, page 128.

ALEXANDRIA ARCHAEOLOGY

Alexandria Archaeology is the nation's first community archaeology program. The Alexandria Archaeology Museum and Laboratory in the Torpedo Factory Art Center was among the first to invite the public to see and experience archaeological research in action. Interest in community archaeology is growing throughout the country as more and more archaeological sites and laboratories are open for visitation. Many new exhibitions explain the process and address the larger interpretive goals of research in addition to displaying the spectacular finds. Novice and avocational archaeology volunteers are recruited to assist professional archaeologists in the protection of archaeological sites by doing excavation, artifact processing and historical research.

One way to protect archaeological sites for future generations is to help children understand that these resources yield valuable information about the past. It is vital that we communicate to them that preserving, studying and interpreting our past contributes to the quality of education and life in our present community.

Throughout the world the number of archaeological sites is sadly diminishing due to development and looting. Archaeological sites are comparable to other dwindling natural resources, habitats and endangered species. These treasures are irreplaceable. The development of open land and the redevelopment of older neighborhoods are inevitable. Therefore we must instill a sense of appreciation in young people for the heritage that has shaped our multi-cultural community. This includes promoting a sense of stewardship for the urban landscape as well as the physical environment. You, the teacher, are an influential ally. The children in your classroom will one day be the citizens and political leaders who will be responsible for decisions that affect our diverse cultural and archaeological resources.

ARCHAEOLOGY IN THE CLASSROOM

Many elementary and secondary teachers in this area and throughout the country use archaeology as a keystone in interdisciplinary studies. In the article “Piaget and Archaeology” (see Appendix VII: Selected Articles), high school teacher Richard Onderdonk cites the participatory nature of archaeology for contributing significantly towards four areas of cognitive development in youngsters: personal involvement, reflective thinking, realistic exposure to scientific methods and social interaction. Educators and archaeologists have only scratched the surface, so to speak, in realizing the potential for incorporating archaeology into multi-disciplinary studies. *Archaeologists At Work: A Teacher’s Guide To Classroom Archaeology* was produced to meet the ever increasing requests from teachers to include the study of archaeology in all subject areas of school curricula. See Section 4, Classroom Activities, Archaeology Isn’t Just a Topic for Social Studies Classrooms, page 129.

An important educational goal of Alexandria Archaeology is to separate myth from reality in regard to the public’s perception of archaeology and archaeologists. Most people have vague ideas about what archaeologists do; but there are many misconceptions about why and how archaeologists excavate sites, acquire, interpret and “value” the artifacts. The persona of Indiana Jones, the dashing and adventurous treasure hunter, is an image that archaeologists must reckon with. Archaeologists realize that in order to combat the *Raiders Of The Lost Ark* stereotype, it is important to let people see what archaeology is, and what it is not, firsthand.



TEACHERS, PLEASE DON'T TOUCH THAT TROWEL!



Digging your own site can be hazardous for history!

Archaeology is a destructive science. Soil and artifacts that are removed from the site can never be replaced in the exact position where they were originally deposited. Archaeologists not only record where artifacts are found below the surface, but also where they are located next to each other within each stratigraphic layer. Archaeologists photograph or map the objects (ceramics, glass, structural material, shell or bone) in place (*in situ*) before they are removed and excavation proceeds. Meticulous record keeping is necessary to reproduce the site on paper as it is being dismantled in the ground. It is extremely important that a controlled, systematic excavation be conducted by a knowledgeable, reputable professional.

No two archaeological sites are alike. It takes years of specialized training to recognize a site, learn how to “read the dirt,” and then determine how an excavation should be conducted. There is a possibility that you and your class could inadvertently disturb an historic or prehistoric site if you elect to do your own dig. Therefore, we do not recommend that you attempt to do an excavation with your class. The amount of time and preparation it takes to excavate, analyze and interpret a site exceeds the amount of class time you can devote to this type of project. One afternoon of digging to retrieve a few objects does not adequately represent the profession of archaeology or fulfill educational goals established by Alexandria Archaeology and other professional organizations.

If you or your students think you have discovered an historic or prehistoric site please notify the archaeologist in your area.

See Appendix III: Washington Area Public Archaeology and Appendix VII: Selected Articles, “The Right Way To Dig At Home: How To Find And Save Your Underground Heritage.”

—SECTION 1—

THE ALEXANDRIA ARCHAEOLOGY MUSEUM

PLANNING FOR A MUSEUM VISIT

Alexandria Archaeology offers a variety of educational programs to participants of all ages. The Archaeology Adventure Lessons (See Section 3 of this guide) are designed to target students of diverse age levels and learning styles. Be sure to review the purpose and learning objectives of each lesson in order to select the program that best suits your students and topic of study. Please follow these procedures when you plan a visit to the Alexandria Archaeology Museum.

- *Contact one of the Museum Educators at 703-838-4399 to schedule the field trip.* Office hours are Tuesday through Saturday. Please review Section 3, The Archaeology Adventure Lessons, and select the lesson most appropriate for your students which best complements your topic of study.
- *Please schedule field trips at least four weeks in advance.*
- *The Museum can accommodate 20 students at one time.* Please have at least three adults for each group of 20 students.
- *You may want to schedule a visit to another historic site in Alexandria.* We can coordinate this for you, providing reservations at the various sites and a schedule for you to follow. Many sites are within walking distance of the Museum, thus, large groups can easily rotate through a series of sites. See page 3, Additional Alexandria Museums and Historic Sites, for a list of other places to visit.
- *Museum programs are free for City of Alexandria Public Schools.* Other groups pay a \$2 per student fee, with a \$20 minimum.
- *Please call the Museum if you need to cancel a visit.* Cancellations must be made within 24 hours of the scheduled program, or full payment will be billed based upon the number of students for whom the space was reserved.
- *Once you have scheduled an Archaeology Adventure Lesson,* you will receive a packet in the mail which includes directions and a parking map, pre-lesson materials and other information about Alexandria Archaeology.
- *Founders Park is right next to the Torpedo Factory Art Center.* You may want to plan for your students to eat their lunch in the park before or after your scheduled visit. We can also schedule a lunch break for your group if they are visiting more than one museum or historic site.

BEFORE THE MUSEUM VISIT

Prepare your students for the visit by discussing the following information with them. This will ensure a good experience for students, chaperones and museum staff.

- *Discuss the vocabulary and background information with your class.* You will receive this information when you make a reservation. Be sure your students are familiar with basic archaeology terms as well as the vocabulary words included with the Adventure Lesson materials.
- *Bus parking is available on North Union Street near the Robinson Terminal or on North Fairfax Street near City Hall.* Please refer to the map you will receive when your reservation is made.
- *Please have your students wear name tags.* Make sure they are legible and worn where Museum Educators and staff can identify the child quickly and easily.
- *Field trips are exciting.* We know that you and your students are enthusiastic about visiting the Alexandria Archaeology Museum. We request that you review the following rules with your students before they arrive:
 1. The Torpedo Factory Art Center is the studio and gallery space for nearly 200 artists. Many of the artists enjoy working in the morning because it is quiet. Please walk quietly when entering and leaving the building.
 2. All rules that apply to students when they are at school, in class and on the bus also apply when they are in the Museum.
 3. Alexandria Archaeology is a museum and an archaeological laboratory. Many volunteers and staff have projects in progress on the laboratory tables. Please be sure students have permission before they touch anything. Artifacts and objects will be available for them to examine during the lesson. Remind students that the objects they will be studying are real artifacts and must be handled with care.
 4. Please remind chaperones that their role is to help monitor the behavior of the group. The Museum Educator will focus on the Adventure Lesson, not on disciplining disruptive students.
- Teachers and chaperones are free to talk and ask questions where appropriate. They should help the children stay focused during the Adventure Lesson.

ADDITIONAL ALEXANDRIA MUSEUMS AND HISTORIC SITES

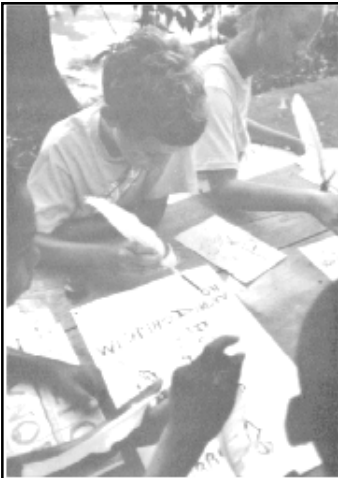
There are many other museums and historic sites in Alexandria. Visits to more than one site are possible. We can coordinate this for you, providing reservations at the various sites, as well as a schedule for you to follow so that students may rotate through a series of sites. For more information, to receive a flyer which describes the various programs or to schedule a joint visit to more than one site, call 703-838-4399.

Museums and historic sites within walking distance of Alexandria Archaeology:

The Carlyle House	703-549-2997
Gadsby's Tavern Museum.....	703-838-4242
The Stabler-Leadbeater Apothecary Shop	703-836-3713
The Torpedo Factory Art Center	703-683-0693

Other museums and historic sites in Alexandria include:

The Black History Resource Center	703-838-4356
The Boyhood Home of Robert E. Lee	703-548-8454
Fort Ward Museum and Historic Site	703-838-4848
The Lee-Fendall House	703-548-1789
The Lyceum	703-838-4994



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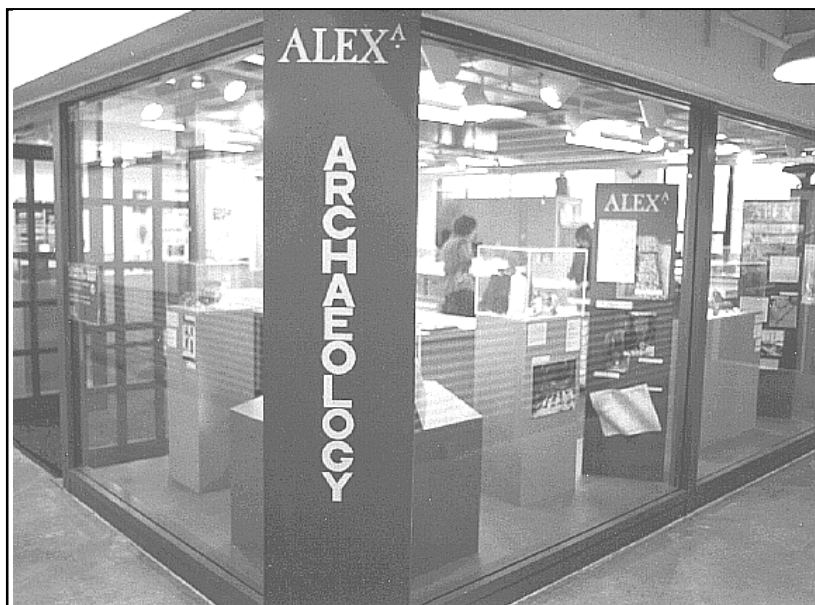
—SECTION 2—

ARCHAEOLOGISTS AT WORK

ALEXANDRIA ARCHAEOLOGY

Archaeology has been an important aspect of the study of Alexandria's past for more than thirty years. At the request of concerned Alexandria residents, rescue excavations were sponsored by the Smithsonian Institution in the 1960s to save *artifacts* and information from King Street sites slated for redevelopment. These early excavations led to the establishment of the Alexandria Archaeological Commission and to the development of Alexandria Archaeology, the first community archaeology program in America. See Appendix VI, *Archaeology and the Law*, page 193 for information on the establishment of the Commission.

Archaeological excavations in Alexandria have brought to light a wide range of *sites* spanning several centuries. These include prehistoric hunting camps, colonial wharves, nineteenth century pottery kilns and the Tide Lock of the Alexandria Canal. Archaeologists have also examined commercial and residential sites in neighborhoods established by free African Americans and by European settlers.



Alexandria Archaeology is located at 105 North Union Street in the Torpedo Factory Art Center.

Alexandria Archaeology studies and preserves archaeological sites in the City and interprets them for the public through museum exhibitions, publications, seminars, workshops and tours. City archaeologists and volunteers work together to discover fragments of the past buried beneath Alexandria's yards, streets and buildings. Artifacts found in excavations throughout the City are brought to the laboratory for classification and study. To better understand past life in Alexandria, these artifacts are analyzed and interpreted in the context of their place of discovery and their relationship to one another. The City now maintains an extensive collection that includes over two million artifacts dating back 8,000 years.

THE STEPS OF ARCHAEOLOGY

Archaeology is the scientific study of the human past, through *excavation* and related research. Archaeological projects are conducted in a step-by-step process, much like scientific experiments. First, a *site* and research topic are selected for study. Background study of archival records and a field survey follow. Next, archaeologists excavate the site and then process the *artifacts* in the laboratory. Lastly, the site is analyzed using the information from archival research, field records and artifact analysis. The results are interpreted in the form of site reports, publications and exhibitions. The artifacts and records are then safely stored for future research. These steps are described on the following pages.

ARCHAEOLOGY—A STEP-BY-STEP PROCESS



1. SITE SELECTION & BACKGROUND RESEARCH



2. SITE SURVEY



3. EXCAVATION & MAPPING



4. LABORATORY PROCESSING & ANALYSIS



5. REPORTS & PUBLICATION



6. CURATION & COLLECTIONS MANAGEMENT

STEP 1—HOW ARCHAEOLOGICAL SITES ARE DISCOVERED AND SELECTED

Site Selection

“How do you find an archaeological site?” “How do you know where to dig?” These are questions that archaeologists hear numerous times. In Alexandria, archaeological sites are discovered or selected in a variety of ways. City Archaeologists consult maps, deeds, census, tax and other records. Historic and Native American sites can also be located through *field surveys* (walking across the ground looking for artifacts). Sometimes sites are discovered by chance by home-owners who find artifacts, building foundations, or abandoned *wells* or *privies* in basements and backyards. When these discoveries are reported, the City Archaeologists visit the site and record finds by taking notes and photographs. This information is then added to Alexandria Archaeology’s register of City sites.



The ventilation shaft of a 19th-century beer cellar was unearthed by a bulldozer at a site south of Duke Street.

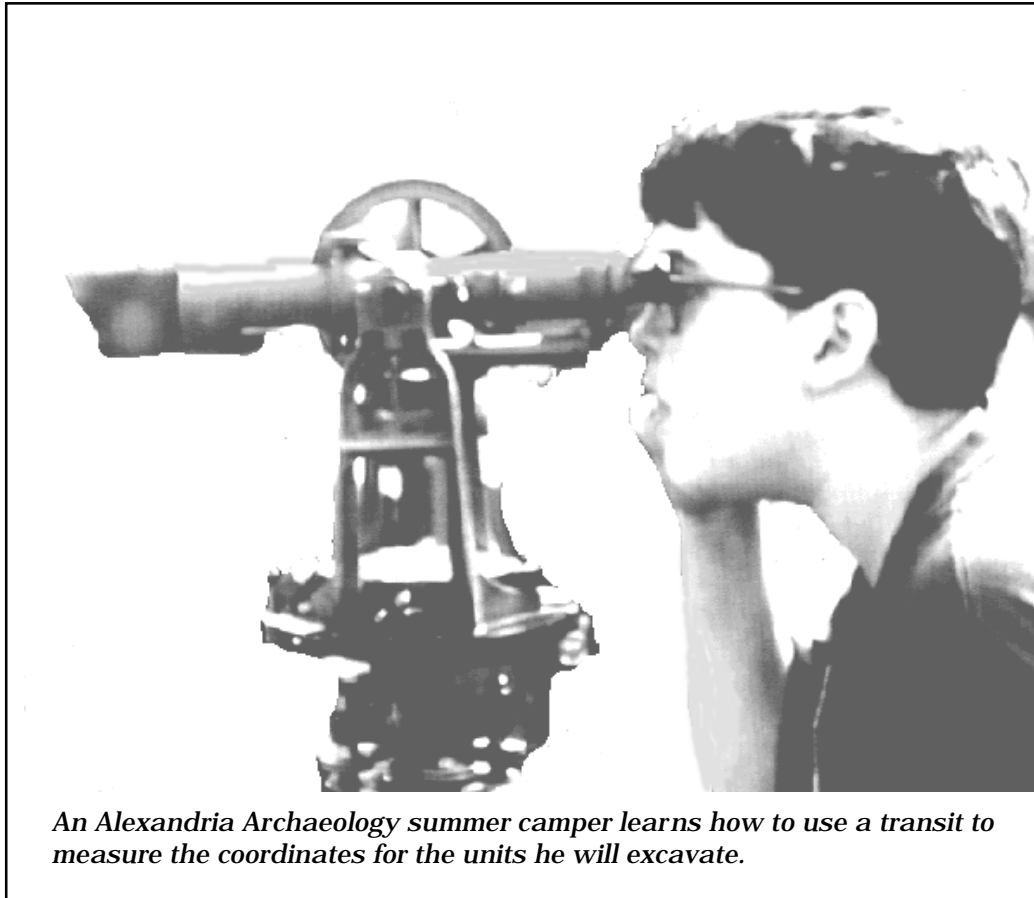
The City of Alexandria has laws that protect archaeological sites so that information may be recovered before they are destroyed by development. The City Archaeologists review planning dockets and construction applications to determine whether proposed commercial projects could disturb archaeological sites. Before construction begins, a developer may be required to have an archaeological investigation conducted. If a site is discovered, the information from the site is recovered prior to construction. See Appendix VI: Archaeology and the Law, page 193 for more on this topic.

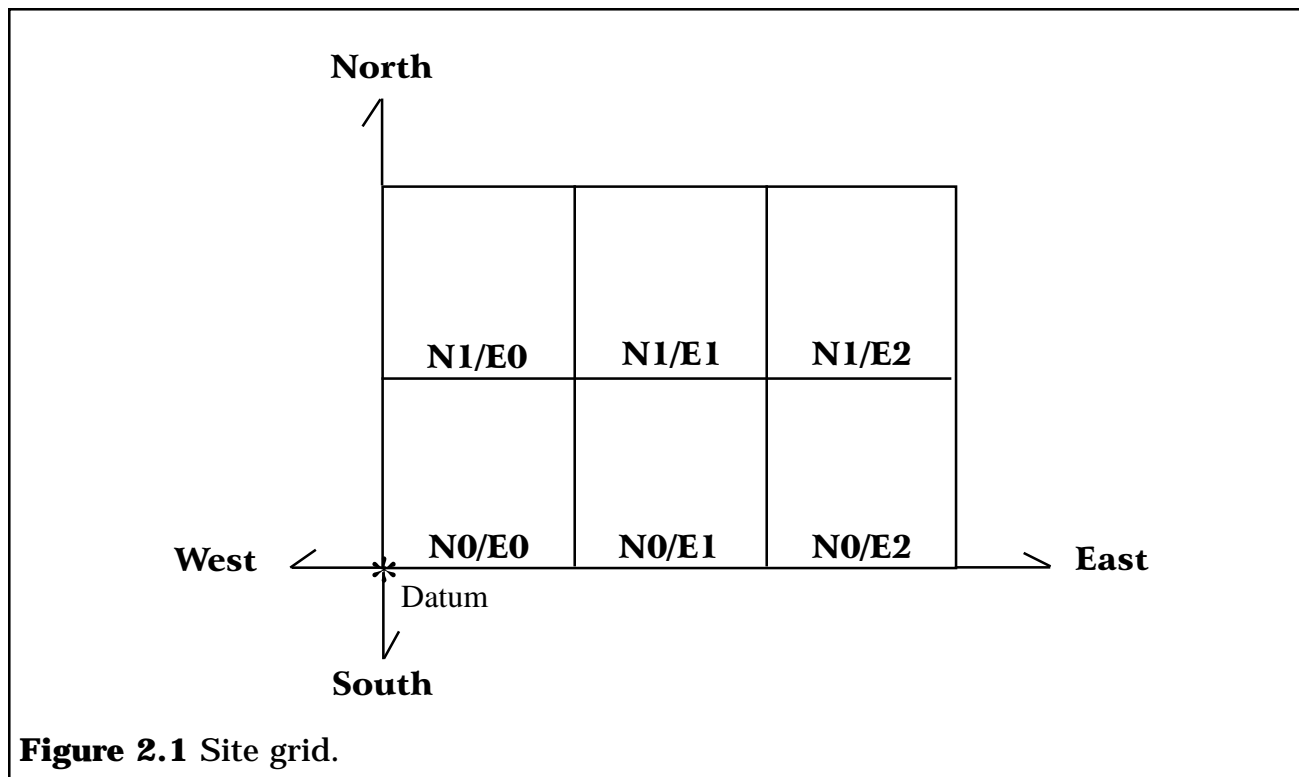
Occasionally, the City Archaeologists choose to work on an important site that is not threatened, or that will be disturbed by small construction projects not covered by the City laws. The archaeologists then contact the property owner and request permission to conduct excavations that will add to our knowledge and interpretation of daily life in the past. All notes, maps and other site records are kept on file and the data are entered into a computer for future use in research and preservation planning. Legal owners of the land on which a site is located own the artifacts recovered from that site. These property owners usually donate the artifacts recovered from their sites to the City of Alexandria. These artifacts, combined with the artifacts excavated from City properties, comprise the extensive Alexandria Archaeology Collection. There are many historic areas such as Rosemont, Northridge, Del Ray and the West End that have the potential to yield information about Alexandria’s historic and prehistoric past. Archaeologists in Alexandria view the entire City as an archaeological site.

STEP 2—SITE SURVEY

Archaeologists make accurate maps of each site prior to excavation. The archaeologists first draw a *base map* which indicates where the site is located. During the excavation, the archaeologists add to the map to show which portions of the site were excavated and where *features* and artifacts were discovered.

A *grid* is established over the site with string held by large nails or stakes. The grid is based on the cardinal points of the compass (north, south, east and west). Accurate measurements are taken using surveying equipment such as a *transit*, level or alidade and plane table. A *datum point*, or point of reference such as a United States Geologic Survey (USGS) benchmark, is established, and horizontal and vertical measurements (i.e. distance and depth) are taken from that point. Locations of USGS benchmarks are marked on the ground with a metal plate. The height above sea level of USGS markers is known, and enables archaeologists to make accurate maps of the site.





Once the grid system for the site is established, each *excavation unit*, or square, on the grid is identified by a set of coordinates, usually relating to the location of one of its corners. The corner locations are designated by counting the number of units (meters or feet) in two directions (e.g., north and east) of the datum point as shown in **Figure 2.1**

Grid coordinates are used to maintain artifact *provenience*, the specific location where an artifact or feature is found. The coordinates also appear on the bag used to store the artifacts in the field, as well as on the artifact catalog form and the box in which the artifacts will permanently be stored. Tape measures, folding rules, *line levels*, *plumb bobs* and mapping frames are used throughout the excavation to take measurements and map features using the coordinates.

In addition to the locational data derived from the grid coordinates on a site, all sites have a unique *site number*. This numerical code is part of a national system of site identification and is assigned to the site and the artifacts found there. Each state is represented by a one- or two- digit number. The city or county is designated by two letters followed by the number of the site. For example, "44AX44" represents the designation for: 44 = Virginia, AX = Alexandria and 44 = Apothecary Shop.

STEP 3—EXCAVATION and MAPPING

After the site is surveyed each excavation unit on the established grid is identified by its own unique set of *coordinates*. These coordinates are designated by counting the number of units (meters or feet) in two directions (e.g., north and east) of the datum



Excavated squares at a site make the ground look like a checkerboard as not all squares are dug.

point. Sometimes only a few test squares within the grid are dug, while on other sites the entire area is excavated.

Stratigraphy

Stratigraphy is the study of the *strata* or soil layers of an archaeological site. The effects of human and natural actions over a long period of time cause visible changes in the color and texture of the soil. The strata may have formed gradually by erosion, plant decomposition, gardening activities and littering; or over a shorter period of time through activities such as construction, demolition, trash dumping, or landfilling.

Each stratum (an individual layer of soil and artifacts) is dug separately. Archaeologists start on the top layer and work their way down following the contour of each stratigraphic layer. The layers containing soil, structures and artifacts from different time periods are identified using careful excavation techniques. The archaeologists look for artifacts and any changes in the color and texture of the soil. See **Figure 2.2**. These changes may indicate the beginning of a new layer. Small amounts of soil are collected and saved for analysis. This *soil sample* may contain clues to the past in the form of fragments of shell, bone, pollen and animal or human waste.

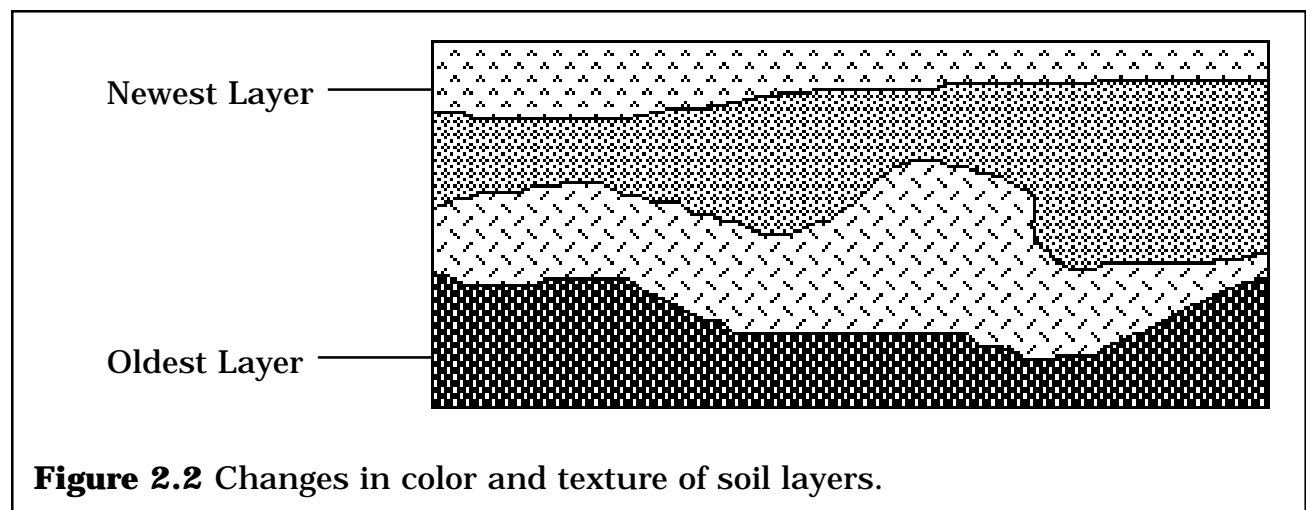


Figure 2.2 Changes in color and texture of soil layers.

As each layer is dug, it is measured and recorded on a special form. Artifacts are collected separately from each stratigraphic layer within each square so that their spatial relationship can be recorded. The artifacts are placed in a bag marked with the grid coordinates and the layer number. The exact location where the artifacts were found is called the *provenience*.

Each layer represents a segment in time, much like a timeline. Archaeologists also encounter features while they are digging. Features are areas which appear different from the surrounding soil because the ground was disturbed in the past. Features are usually the result of human activity. Some examples of features are building foundations, abandoned wells and privies, trash pits and burials. Usually the lowest layers are the earliest, although features such as wells, foundations and post-holes may have been dug through earlier layers.

Careful mapping of each layer and feature ensures that the provenience of all artifacts is maintained. This information is critical when the site is later analyzed and interpreted. Additionally, *wall profiles* are drawn. These drawings of the side wall of each excavation unit further record the stratigraphic layers and features. One final important record of the site involves extensive photography.



Excavated squares at a site. The dark “post holes” are features, areas which appear different than the surrounding soil because the ground was disturbed in the past.

Archaeological excavation techniques are tailored to the individual site. In some circumstances, such as in the excavation of wells, stratigraphic layers cannot be identified by soil color and consistency. When strata are either indistinguishable or very deep, *arbitrary levels* are designated by the archaeologist. These arbitrary levels are all equal in depth (e.g., 10 cm.) and provide a way to record the relative placement of artifacts.

Archaeologists must be observant and aware of post-depositional factors, conditions that have occurred after the artifacts were deposited on the site. Seasonal weather changes, roots, worm and rodent activities can alter the placement or preservation of the artifacts. The very actions that can create a site, such as those noted above, may also affect the artifacts and features at a later time.

Tools of the Trade

Archaeologists use a wide variety of tools on archaeological sites, ranging from small hand tools to heavy machinery. The basic tool for digging is the five inch pointing trowel, the same type of trowel bricklayers or masons use. The trowel is used to carefully and evenly scrape the soil off the excavation area. This not only allows archaeologists to uncover artifacts, but enables them to see changes in soil color and texture which may indicate a feature or the beginning of a new level. Smaller tools such as dental picks and paint brushes are used for fine work. The *Munsell Soil Color Charts* book provides standard names for soil colors.



Alexandria Archaeology summer campers learn to record soil colors using a "Munsell Soil Color Chart". Notice the trowels they have used for digging.

Once soil is scraped or shoveled into buckets, it is sifted through a screen to ensure that no artifacts remain in it. Sometimes, water is sprayed on the screen to wash away the soil, uncovering small objects more easily. This is called *water screening*. Another technique that may be used to recover the lightweight floral and faunal remains is known as *flotation*. Soil and water are mixed in a container. The heavier debris sinks, while the lighter materials float. These are then skimmed off the water surface with a fine wire mesh.

Once recovered from the soil, artifacts are placed in bags that are carefully labelled as to site, unit, level or feature and date. A *line level* and *plumb bob* are used for mapping and drawing *wall profiles*. Standardized record forms are completed so that the same type of data is collected from every part of the site.

STEP 4—LABORATORY PROCESSING and ANALYSIS

Excavation is only a small part of an archaeologist's work. After excavation, the job of cleaning, analyzing and interpreting begins. In urban archaeology, it is estimated that for every hour of excavation it takes at least 20 hours of laboratory and supplemental work to complete an analysis and report. Often the study and analysis of a site continues for years after the excavation has been completed.

Cleaning Artifacts

Artifacts arrive in the Alexandria Archaeology Laboratory from the sites in bags and boxes labeled according to the *provenience* (the specific location where an artifact or feature is found in the ground). The artifacts from each bag are cleaned, keeping all



Volunteers washing artifacts in the Alexandria Archaeology laboratory.

the material from each unit and level together. It is important not to mix the artifacts from different proveniences together unless they have been marked with the provenience. *Ceramics*, glass and bones in good condition are washed with a toothbrush in a basin of plain water. Detergents can cause chemical reactions that damage the artifacts. The artifacts are then placed in a drying rack for at least 24 hours. This process ensures that the artifacts are completely dry before being stored in plastic bags. Metals are cleaned with a soft, dry

brush to remove surface dirt. Wet wood, leather and cloth artifacts are sprayed with fungicide and placed in sealed plastic bags on site until they can be further treated. Later they are cleaned very gently under a water spray. These *organic materials* are photographed, and either allowed to dry very slowly or treated by a conservator.

Sorting and Marking Artifacts

When dry, the artifacts are inventoried by *provenience*. First, the artifacts are *sorted* into categories: ceramics, glass vessels, structural material (window glass, nails), miscellaneous (buttons, pipes, toys), organic artifacts (cloth and leather), bone, shell and seeds. Artifacts in each category are then counted, described, recorded on a sorting sheet and then bagged separately by material within each provenience.



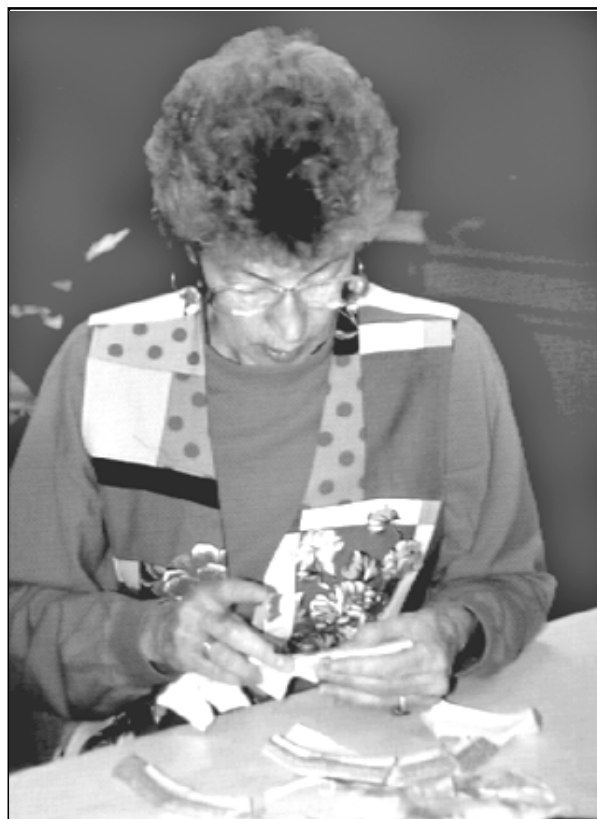
An Alexandria Archaeology volunteer explains to museum visitors how artifacts are sorted and marked.

A *numbering* system is used to mark each artifact identifying its site number and provenience. All ceramics and glass fragments are marked with India ink and crow-quill pen with the site and provenience numbers. Artifact *assemblages* (all the artifacts from the same provenience) are studied together, therefore it is important that each artifact is marked or accompanied by a label. Once marked, ceramic and glass fragments can be removed from their context to be *crossmended* with fragments from other parts of the site so that individual vessels can be identified and catalogued.

Crossmending

Crossmending is the process of piecing *sherds* together to form a vessel, regardless of where the artifact fragments were found on the site. The crossmended vessels are held together temporarily with masking tape to reveal the shape. This process requires persistence and an eye for detail. Many people relate crossmending to doing a jigsaw puzzle. Fragments of each crossmended vessel are bagged according to their provenience, unless they are to be used to reconstruct the vessel.

Artifacts are only restored with glue if they are to be exhibited, since restored vessels require more storage space and are subject to breakage. Archaeologists always use a clear glue that can be removed easily and which forms a weaker bond than the artifact structure, so as not to damage the artifact. At Alexandria Archaeology we use tubes of UHU, a Poly-Vinyl Acetate Resin (PVA) or HMG, a cellulose-nitrate glue similar to Duco cement.



Crossmending is similar to putting together the pieces of a puzzle.

Cataloguing Artifacts

Cataloguing is the most difficult part of laboratory work. After crossmending, a detailed description of each vessel is recorded on a catalogue card along with a sketch or photograph.

Alexandria Archaeology has an extensive library of books which are used in artifact identification. A ceramic *type or study collection*, which contains examples of the many ceramic types found in Alexandria, is used to compare the actual color and texture of the *sherds* being catalogued. A glass study collection illustrates different *manufacturing* techniques. A faunal study collection, made up of bones from digs

and butcher shops, is used by our bone specialists to identify animal bones.



A volunteer identifies artifacts and then records them on a sorting sheet.

Ceramics and glass are very useful in archaeology because their date, and even place, of manufacture can often be identified. Ceramics are identified by *ware*, which refers to the color and texture of the body and glaze, and by *type*, which refers to the method of decoration. The description further includes the variety, or decorative motif, and the *function*, shape and size of the vessel. The artifact can then be identified and dated according to advances in technology and changes in stylistic preferences.

Nineteenth century glass is useful in dating sites because glassmaking technology changed rapidly in that

century. The innovations, which have specific dates, can be identified by visual examination of the glass. Glass is identified by color, production method and shape. The type of lip, position of seams, and marks on the bottle base are all important in determining the date the bottles were manufactured and used.

Code books have been developed which give standard terminology to be used in the description and cataloguing of glass, ceramics, and bones. Artifact catalogues are computerized to facilitate the study of large amounts of data. One example is the code book which is used to describe the species, element and distinguishing characteristics of bones. These codes are entered into the computer to enable statistical studies to be carried out and catalogues to be printed.

Faunal Analysis

Faunal analysis, the study of animal bones, is a very specialized area of study. Alexandria Archaeology has developed an extensive *study collection* of bones, since



Alexandria Archaeology maintains a study collection of animal bones for use in identification of finds from various sites.

comparison with three-dimensional specimens is easier and more accurate than using only drawings or photographs. The remains of a cut of meat purchased at the butchers can be determined and linked with historical recipes and methods of food preparation. Immature species of chicken and rabbit can document that animals were raised by the household. The presence of deer and local species of fish indicates that hunting wild game and fishing contributed to the family's meals.

Analysis and Interpretation

The next step is to interpret, or find out, what the data mean. One aspect of interpretation is to determine the period or periods of time that the site was occupied. After the ceramics, glass and miscellaneous artifacts are identified and catalogued, artifact groups from each provenience are studied as a unit. These artifacts provide the archaeologist with a point to begin their study of the site. Manufactured products are very useful because their date and place of manufacture can often be identified according to advances in technology and changes in stylistic preferences.

Archaeologists must then estimate when the artifacts were discarded. This is known as the *date of deposition*. This can be a specific point in time or a span of many years, decades or even centuries. The concept of *terminus post quem* (Latin for "the date after which") is used to determine the date of deposition, such as when a layer of trash was dumped into a pit or abandoned well. All of the artifacts which are found together in one level had to have been put there after the date that the newest artifact was manufactured. The date when this most recent artifact was first manufactured is known as the *terminus post quem*. For example, archaeologists uncover a small trash pit in a yard. Among the items in the pit are three pennies marked 1889, 1895 and 1900. We would say that the date of deposition for that provenience was during or after 1900.

Stratigraphy, the study of the layers of the earth that contain artifacts, is a *relative dating* technique which tell us the order in which things occurred, but not the exact

date something happened. Seriation, a graphical comparison of a series of artifact assemblages that have been put in chronological order based on their similarities, is often used when stratigraphy is lacking, such as in surface collections.

Now, as in the past, the availability of certain consumer goods depends on factors such as the rate of technological advances, patterns of trade or popularity. The fundamental premise of seriation is based on the date an item is introduced to consumers, when it grows in popularity and the subsequent decline of use until it is replaced by another product. Plotting the frequency pattern will result in what is known as a 'battleship' curve. For example, candles were the chief source of artificial light prior to the nineteenth century. Eventually the use of oil and gas lamps surpassed candles. Finally, the earlier methods were virtually replaced in the twentieth century when electricity became an affordable, safe and popular source of light. It is important to note that all of these items - candles, oil, kerosene and gas lamps, as well as light bulbs - were, at certain times, used simultaneously. Each light source can be plotted separately and compared as to when it was introduced, reached the point of highest usage and then became obsolete.

It should also be noted that dates of manufacture can also be a form of *absolute dating*. A date on a coin is one example. Patent marks indicate the date a product was first registered with the Patent Office. They do not, however, indicate when it was actually manufactured or how long the item was produced.



1891 coin recovered at a site in Alexandria.

Absolute dating techniques using scientific methods, such as Radio-carbon (Carbon-14) or Potassium-Argon, are not used in Alexandria and most historic sites. These techniques are expensive; are only used on organic material (ceramics and glass are non-organic), and have a margin of error that can be as much as plus or minus 250 - 500 years. Because manufacturing information and dated samples of artifacts are available for the historic period, these absolute dating techniques are not used.

STEP 5—REPORTS and PUBLICATIONS

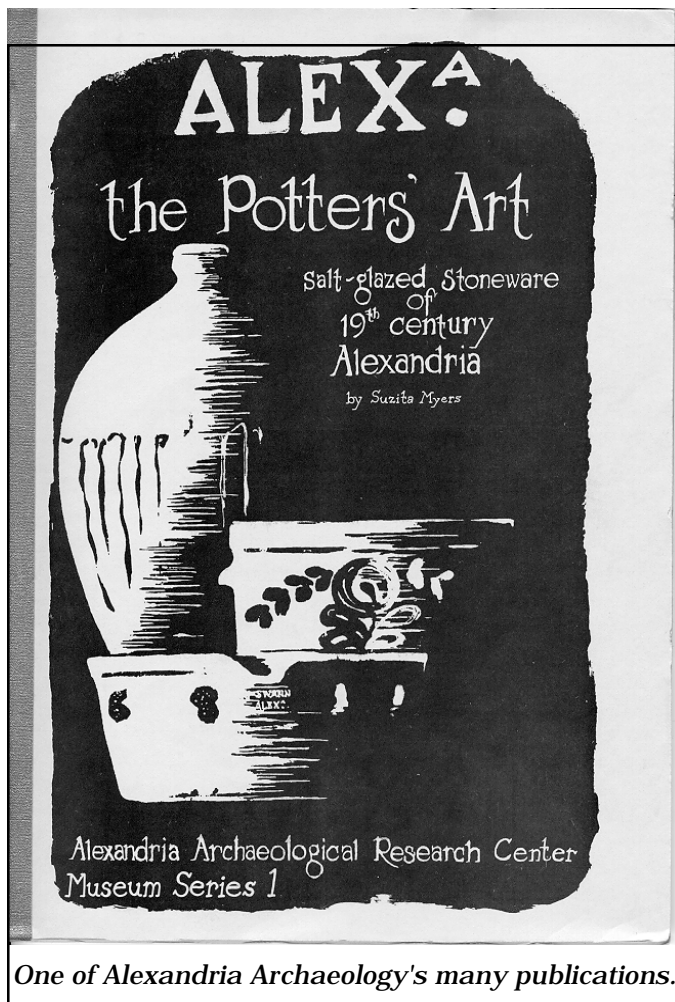
Although the discovery of artifacts is exciting, it is important to remember that the archaeologist is not just looking for individual objects. As strange as it may seem, one or two spectacular artifacts are not regarded as any more “valuable” than the other hundreds or thousands of objects uncovered during the excavation. Interesting artifacts are frequently displayed in exhibitions to provide information and insight into the culture the archaeologist is studying. The artifacts, however, are not regarded as antiques and given a monetary value. The value is what the entire collection or assemblage can tell the archaeologist about the site and the events that happened there through time.

The interpretation of the data gathered from the excavation is an ongoing and lengthy process, and cannot be overlooked. There is no point to digging and analyzing the artifacts unless you are prepared to find out what all of the information means. Ultimately, interpretation takes the form of site reports, books, lectures or exhibitions.

For archaeologists in Alexandria, the interpretation of each site adds to our knowledge of the growth and development of the City. Many historians have studied the lives and events that are associated with famous Alexandrians like the Washington

and Lee families. Alternatively, archaeologists study the items used and discarded by the children, women, merchants, tradesmen, African American freedmen and slaves who comprised the community, but whose achievements and lives are not celebrated on the pages of history books. Archaeology provides a clearer understanding of how we arrived at our current state and the possibilities for our future.

The Washington Metropolitan area is rich in archaeological resources. Numerous organizations, Federal, county and city governments, interpret the results of their work through exhibitions, publications, video and public programs. See Appendix III: Washington Area Public Archaeology, page 171.



STEP 6—CURATION and COLLECTIONS MANAGEMENT

A final step in archaeological research is imperative to the archaeological process as a whole. The *curation* of artifacts and the management of collections of objects is necessary to preserve archaeological resources for future generations to study, research and exhibit.

Artifacts and objects in a collection such as Alexandria Archaeology's must have policies regarding curation and collections management. Over two million artifacts are maintained in the City of Alexandria's collection. The maintenance of these objects in an appropriate environment is as important as keeping the other site records and documentation.

Curation facilities must be able to provide a climate controlled environment in which temperature and humidity are kept at stable and acceptable levels. There must be enough space for objects to be labelled and stored in proper archival materials such as acid-free paper and boxes, polyethylene bags and silica gel. In addition to the curation of the objects themselves, other factors are important.

Records maintenance for each object in the facility is crucial. Good collections management is concerned with not just the objects themselves, but also records pertain-

ing to the objects. Records concerning provenience, how and where the object was obtained, use of the object, interpretation, field notes, oral history, other research, care of the object, condition reports and exhibition records must all be kept.

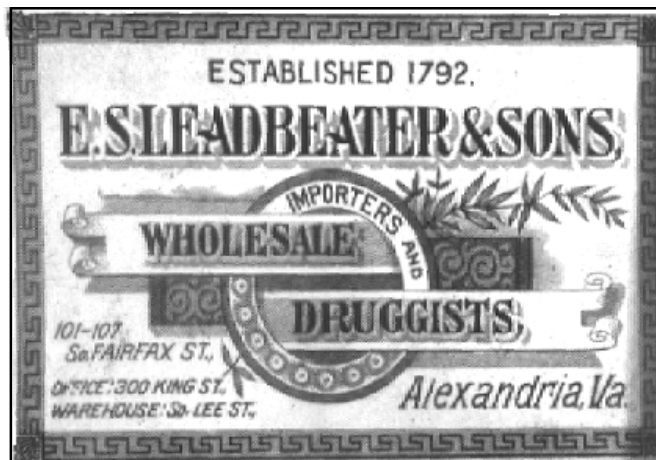
The responsibility for the actual care of the objects is also an issue. Aside from general care, it must be established who will implement preventive conservation treatment, security, disaster planning and inventory checks for loss, theft or damage once the object is in the curation facility. Objects must be insured. Access to the objects and their associated records must be monitored. Administration of loans for further research or exhibition must be considered. See Appendix VII: Selected Articles, "Buried In Storage: The Alexandria Archaeology Collections Management Project," page 221.



Alexandria Archaeology's remote storage facility houses over two million artifacts.

AN ARCHAEOLOGICAL CASE STUDY— EXCAVATIONS AT THE STABLER-LEADBEATER APOTHECARY SHOP

Between 1982 and 1989 Alexandria Archaeology conducted a series of excavations in the cellar of the Stabler-Leadbeater Apothecary Shop at 105-107 South Fairfax Street. City archaeologists and volunteers excavated two brick-lined shafts, portions of the old earthen floor, and half of a trash pit that predated the brick buildings housing the Apothecary Shop. The thousands of artifacts found at this site were analyzed in the Alexandria Archaeology laboratory. See Appendix VII: Selected Articles, "Apothecary Site Was Home to More Than Nostrums," page 221.

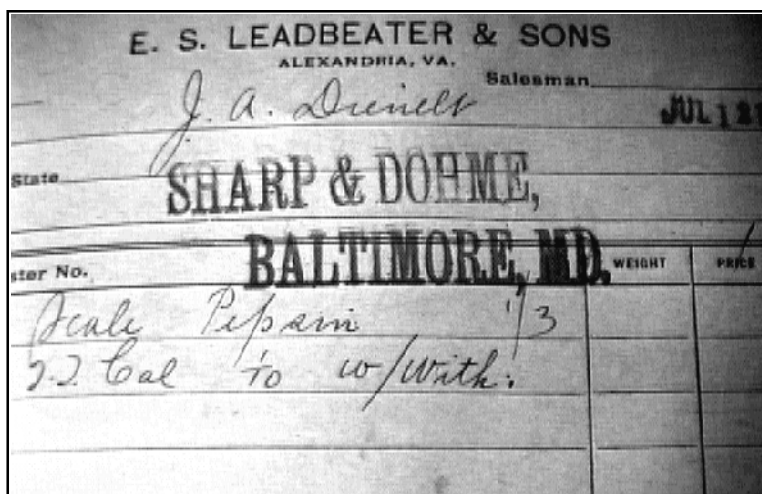


Many bottle labels like this one were found in the attic of the Apothecary Shop.

STEP 1—SITE SELECTION and BACKGROUND RESEARCH

Selecting the Site

The Stabler-Leadbeater Apothecary Shop was selected for archaeological investigation because of the property's long and interesting history. This site provided a unique opportunity to study artifacts from archaeological contexts related to those still on the shop's shelves. Primary sources were a key to research of the Apothecary shop. These records, found in the shop when it closed in 1933, included account books, letters, bills of sale and receipt books. Documents of the Alexandria Water Company also proved useful. The piped water this company supplied resulted in the abandonment of the shop's well which was then filled with trash.



A bill of sale from the Apothecary Shop.

Background Research

Edward Stabler was born in Petersburg, Virginia in 1769, the youngest child of devout Quakers, Edward and Mary Robinson Stabler. As a young man, he was apprenticed with a tanner, but then went to work at his brother William's apothecary in Leesburg, where he learned his profession. Edward moved to Alexandria in 1792 where he established his own apothecary shop. This shop's

address was not known, but may have been located only a few doors south of the present location.

The Stabler-Leadbeater Apothecary Shop, at 105-107 South Fairfax Street, looks much the same today as it did when it was opened by Edward Stabler in 1796. The building which houses the shop at 107 South Fairfax Street, was built in 1774, and Stabler purchased it in 1805. The adjoining building (105 S. Fairfax) was purchased in 1829. The Apothecary Shop eventually grew into an important business and social institution for patrons such as the Washington, Mason, Custis and Lee families.

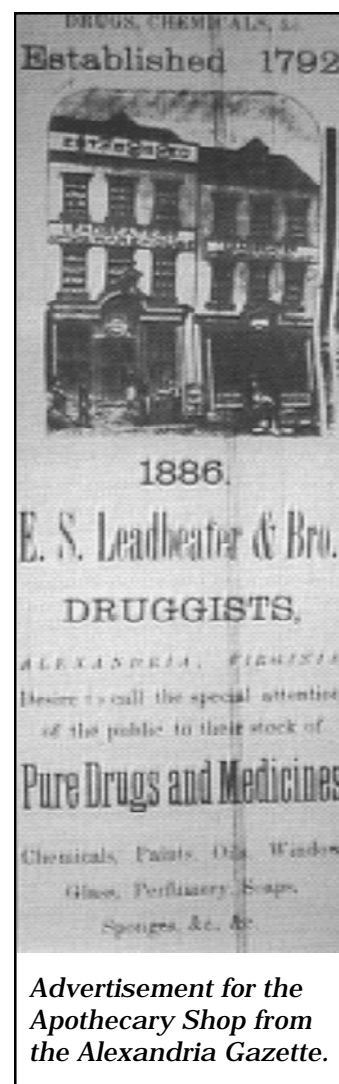
In 1794, Edward married his first wife, Mary Pleasants and they had five children before her death in 1806. Their eldest son, William, became a druggist, and eventually worked with his father. In 1808, Edward remarried Mary Hartshorne, with whom he had 11 children. In 1835, their eldest child, Mary Pleasants Stabler, married a druggist from England named John Leadbeater. John Leadbeater became the partner of his bother-in-law, William Stabler in 1844. When William died in 1852, John Leadbeater bought the business. His son, Edward Stabler Leadbeater, and his descendants became the proprietors of shop.

Lawrence Fawcett, who worked in the packing room of the Wholesale Department in 1912, described the Leadbeater establishment as it appeared at that time: a retail shop on the first floor for the sale of drugs, herbs and extracts; the second story was used for wholesale and bottling; the third floor was for storage. Another building was used to make extracts, flavors and liniments.

Many of the retail sales were to customers who visited the shop on foot, but later delivery boys on bicycles or horse-drawn wagons delivered orders to local destinations. By 1912, the Leadbeaters kept the largest stock of drugs in the Washington area and are believed to have served six or seven states. The Stabler-Leadbeater Apothecary was one of the oldest drug stores in the United States in continuous operation by one family in 1933. See APPENDIX VII: Selected Articles, "Alexandria Exhibit to Feature Excavations at Apothecary," page 221.

STEP 2—SITE SURVEY

The study of the Apothecary Shop was enhanced by the opportunity to research building construction, particularly basements, from this time period. A site datum was established on the earthen floored building of the pair that made up the shop. A grid was established, and excavation of squares and the various features described below was begun in a systematic manner.



Advertisement for the Apothecary Shop from the Alexandria Gazette.

STEP 3—EXCAVATION and MAPPING

The Cellar Floors

The cellar of the Apothecary Shop consisted of packed earth, with areas of wooden planking. A one-meter and five half-meter square test pits were excavated in the dirt floor. More than 2,000 artifacts were recovered. At 105 South Fairfax Street there were over 1,000 fragments of window glass and numerous nails, screws, wires, nuts and bolts, and the general structural debris which one would expect in a cellar. Other artifacts included an eyedropper, two marbles, buttons, a brush handle, part of a hacksaw, corks, two pills and some crystalline chemical substances. In addition, over 200 animal bone fragments were found along with numerous fragments of bottle glass and ceramic sherds.



Volunteers excavating in the basement of the Apothecary Shop.

Feature 1—Well

Feature 1, a well excavated by Alexandria Archaeology in 1982, is located in the center of the basement of the older portion of the shop at 107 South Fairfax Street. It remained open almost to its original depth of about 10 feet, with only one foot of fill at the bottom.



A shaft excavated at the Apothecary Shop.

Feature 2—Well

Feature 2 was located near the front wall of the 105 South Fairfax Street basement. This brick-lined shaft was completely filled with soil and artifacts. Excavation was halted after the surface was cleared because the soil contained quantities of unidentified chemicals which were potentially hazardous.

Feature 3—Well

The brick-lined shaft known as Feature 3 is situated underneath the rear basement foundation at 105 South Fairfax Street. A brick arch spanned

the opening. About one-third of the shaft extends beyond the building wall and has a brick, chimney-like downspout. The feature was not lined with plaster as are cisterns. Thus, it probably is a well which had its water supply supplemented by the collection of rainwater. Feature 3 was excavated to a depth of two meters (six feet), and a probe showed that the fill continued for at least another meter. Excavation was halted when odorous chemical substances were encountered in the feature. The lowest levels excavated contained artifacts discarded in the 1880s.

Many products were bottled at the Leadbeater drug warehouse and marked with paper labels, hundreds of which remain in drawers on the upper floors of the shop. Others from the 1880s were embossed with the name of the product or manufacturer. Some of the more interesting bottle labels read: “Gargling Oil” (apparently a liniment for horses), “Witch Cream” (witch hazel?) and “Lubin Parfumeur Paris.”

Feature 4—Trash Pit

Feature 4 was a trash pit probably associated with a building that stood on the site before the brick structures were built in 1774. It was located under the foundation. Feature 4 was fairly shallow and not lined with brick as were the other features.



A trash pit excavated at the Apothecary Shop.

STEP 4—LABORATORY PROCESSING and ANALYSIS

Although the discovery of artifacts is exciting, it is important to remember that the archaeologist is not just looking for individual objects. One or two spectacular artifacts are not regarded as any more “valuable” than the other hundreds or thousands of objects uncovered during the excavation. Interesting artifacts are frequently displayed in exhibitions to provide information and insight into the culture the archaeologist is studying. The artifacts, however, are not regarded as antiques and given a monetary value. The value is derived from what the entire collection or assemblage can tell the archaeologist about the site and the events that happened there through time. The thousands of artifacts recovered from the Apothecary were washed, sorted and marked by volunteers. Each artifact was then catalogued and analyzed with others found in the same context. The following results and interpretation were presented.

Feature 1—Well

The 480 glass fragments and 45 ceramic sherds found in this well dated from the late 19th and early 20th centuries. These represented 80 glass and four ceramic vessels. A newspaper fragment dated 1914 was found on the surface of the trash

deposit. The small number of artifacts in this feature indicate that they might have been disposed of during a clean up of the shop in 1914 (the date of newspaper found on the surface), or shortly thereafter, rather than resulting from gradual disposal over the 30-40 year period during which most of the artifacts were manufactured. Almost all of the artifacts were storage vessels.

Feature 3—Well

Thousands of artifacts were recovered from Feature 3. The upper levels contained turn-of-the-twentieth century artifacts similar to those from Feature 1. These upper levels went to a depth of 120 centimeters (nearly four feet). This portion of the well contained late nineteenth and early twentieth century stoneware jugs, glass bottles and corks, as well as a few late eighteenth century artifacts which may have been found in the basement during cleaning or minor building renovations. After a soil level containing few artifacts, the nature of the artifact assemblage changed. Most of the artifacts recovered from the lower levels were pharmaceutical and cosmetic bottles from the 1880s. There were also a few eighteenth century bottle fragments and ceramic ointment pots, metal syringes, glass measuring beakers and other shop-related objects.



Bottles and jars recovered at the Apothecary Shop.

Feature 4—Trash Pit

A large quantity of plain creamware teabowls* and saucers had been discarded into the pit along with fragments of several plain creamware plates, the spout of a teapot, portions of two delft punchbowls, an earthenware bowl, a fragment of German porcelain, a glass wine bottle and a flask. The feature was dated to before 177 because there was no pearlware, an English ware first manufactured around 1775.

* In the 18th and early nineteenth centuries, tea was served in small bowls without handles.

Faunal Finds

Six hundred and fifty animal bones were recovered from the two wells and the basement floor. Many of the bones were probably the scraps of the shop workers' meals, and included beef, chicken, sheep and pork bones. Several rabbit, turkey and fish bones and one bone each of raccoon and muskrat were recovered. The majority of bones recovered from the cellar floor and top levels of the wells were those of rats. Rats were not a source of food, of course, but were common inhabitants of early

Alexandria. One human molar was found in a cellar floor test pit. Leadbeater was known to have extracted teeth in his Shop, and the molar provides archaeological confirmation.

STEP 5—REPORTS and PUBLICATIONS

Several reports were generated following the archaeological research at the Stabler-Leadbeater Apothecary Shop. Extensive site files containing the archaeological data are on file at Alexandria Archaeology. *A Brief History of the Stabler Family and the Stabler-Leadbeater Apothecary Shop* and a biography of Edward Stabler are available from Alexandria Archaeology's *List of Publications*, available by contacting the Museum.

STEP 6—CURATION and COLLECTIONS MANAGEMENT

The artifacts that were recovered from excavations in the Stabler-Leadbeater Apothecary Shop were displayed at the Alexandria Archaeology Museum in 1985. In this way, the public was able to gain access to the historical research and learn about this aspect of Alexandria's heritage. Following the exhibit, the collection was stored in archival materials in the event that future research needs to be conducted.

—SECTION 3—

THE ARCHAEOLOGY ADVENTURE LESSONS

MUSEUM PROGRAMS

Artifacts are a source of information about life in the past. Your students will have the opportunity to participate in a guided study of selected artifacts that were excavated from sites in Alexandria, Virginia. Teachers may choose the Archaeology Adventure Lesson that best enhances topics being covered in their classroom.

There are three parts to an Archaeology Adventure Lesson:

1. Once an Adventure Lesson has been scheduled, information will be sent to you in the mail. This packet will include the purpose, objectives, background information and vocabulary for the lesson selected.
2. When students arrive at the Museum, an Alexandria Archaeology educator explains the step-by-step process of archaeological research using exhibits, equipment in the museum and the hands on activity using real artifacts.
3. After the lesson, students receive copies of the background information, vocabulary and a letter to take home, so their parents will be familiar with the field trip their child took.

The following pages contain copies of the letter an educator receives upon scheduling an Archaeology Adventure Lesson, a copy of the letter that students take home with them following a Lesson and a field trip permission form which may make planning the museum visit easier.

April 1, 1996

Dear Educator,

Thank you for your interest in Alexandria Archaeology's Adventure Lesson programs. The lesson you have selected, *Hayti: Uncovering An African American Neighborhood* will be presented on *May 3 at 3:45 PM*. Enclosed you will find background information for use in a pre-lesson discussion with your class, and a list of vocabulary terms your students should be familiar with prior to the visit.

Before your students arrive at the Museum, please discuss the background information with them. When your students arrive at the Museum, they will be given a brief introduction to the step-by-step process of archaeological research. They will then take part in a selected aspect of archaeological study, in this case, artifact analysis. The lesson includes handling of the actual artifacts and worksheets to guide students through the analytical process.

Our lessons are exciting, allowing students to learn about archaeology, and take part in the research process. Most students will be fully engaged in this chance to study our past, however, if your students are not, please remember that the Museum educators are here to present the lesson. It is up to you and the chaperones to maintain proper discipline.

Should your students wish to, they may purchase a Friends of Alexandria Archaeology pencil for 25¢.

If you require more information or have questions about the lesson you have scheduled, please call one of our educators at the Museum, 703-838-4399. We look forward to seeing you soon.

Sincerely,

Museum Educator

Dear Parents,

Today your child participated in an Alexandria Archaeology Adventure Lesson. This hands-on activity gives children the opportunity to examine and handle actual artifacts that were used in Alexandria 100 to 200 years ago. Each artifact was excavated in Alexandria over the last 30 years. The City of Alexandria's archaeological collection consists of more than two million artifacts which span 10,000 years of human history.

Investigating archaeology with your child is a wonderful way to learn more about the history of the Washington Metro area. Archaeology sparks the interest of children of all ages. We invite you to share in your child's new knowledge by visiting the Alexandria Archaeology Museum located in the Torpedo Factory Art Center at 105 North Union Street. Here you will see the City archaeologists and volunteers working with recently excavated artifacts, as well as exhibits on Alexandria's past.

Our Archaeology Adventures are perfect for scout and club groups, as well as birthdays. Your child may enjoy doing a different Adventure on another occasion. In addition to the lessons, Alexandria Archaeology sponsors Family Dig Days during the spring and summer months. This is an opportunity for families to tour an archaeological site and even help the archaeologists screen dirt for artifacts. Other special events throughout the year include Alexandria's April Earth Day Celebration, the June Waterfront Festival, a summer camp for teenagers and an artifact ornament decorating workshop in December. Classes are taught through the Department of Recreation and Cultural Affairs. You may want to join the Friends of Alexandria Archaeology (FOAA). This group sponsors special events for members, publishes a monthly newsletter and offers discounts on publications, tee-shirts and hats.

For more information on our excavation schedule, Family Dig Days, camps and other events, please call the museum at (703) 838-4399, Tuesday through Saturday, 10:00 AM - 5:00 PM.

We hope to see you soon.

Sincerely,

Pamela Cressey, Ph. D.
City Archaeologist



ALEXANDRIA ARCHAEOLOGY

105 NORTH UNION STREET
ALEXANDRIA, VIRGINIA 22314
703/838-4399
FAX 838-6491

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Thank you for your interest in Alexandria Archaeology's Adventure Lesson programs. The lesson you have selected, *Hayti: Uncovering An African American Neighborhood* will be presented on *May 3 at 3:45 PM*. Enclosed you will find background information for use in a pre-lesson discussion with your class, and a list of vocabulary terms your students should be familiar with prior to the visit.

Before your students arrive at the Museum, please discuss the background information with them. When your students arrive at the Museum, they will be given a brief introduction to the step-by-step process of archaeological research. They will then take part in a selected aspect of archaeological study, in this case, artifact analysis. The lesson includes handling of the actual artifacts and worksheets to guide students through the analytical process.

Our lessons are exciting, allowing students to learn about archaeology, and take part in the research process. Most students will be fully engaged in this chance to study our past, however, if your students are not, please remember that the Museum educators are here to present the lesson. It is up to you and the chaperones to maintain proper discipline.

Should your students wish to, they may purchase a Friends of Alexandria Archaeology pencil for 25¢.

If you require more information or have questions about the lesson you have scheduled, please call one of our educators at the Museum, 703-838-4399. We look forward to seeing you soon.

Sincerely,

Museum Educator



Alexandria Archaeology

105 North Union Street
Alexandria, Virginia 22314
(703) 838-4399

Dear Parents,

Today your child participated in an Alexandria Archaeology Adventure Lesson. This hands-on activity gives children the opportunity to examine and handle actual artifacts that were used in Alexandria 100 to 200 years ago. Each artifact was excavated in Alexandria over the last 30 years. The City of Alexandria's archaeological collection consists of more than two million artifacts which span 10,000 years of human history.

Investigating archaeology with your child is a wonderful way to learn more about the history of the Washington Metro area. Archaeology sparks the interest of children of all ages. We invite you to share in your child's new knowledge by visiting the Alexandria Archaeology Museum located in the Torpedo Factory Art Center at 105 North Union Street. Here you will see the City archaeologists and volunteers working with recently excavated artifacts, as well as exhibits on Alexandria's past.

Our Archaeology Adventures are perfect for scout and club groups, as well as birthdays. Your child may enjoy doing a different Adventure on another occasion. In addition to the lessons, Alexandria Archaeology sponsors Family Dig Days during the spring and summer months. This is an opportunity for families to tour an archaeological site and even help the archaeologists screen dirt for artifacts. Other special events throughout the year include Alexandria's April Earth Day Celebration, the June Waterfront Festival, a summer camp for teenagers and an artifact ornament decorating workshop in December. Classes are taught through the Department of Recreation and Cultural Affairs. You may want to join the Friends of Alexandria Archaeology (FOAA). This group sponsors special events for members, publishes a monthly newsletter and offers discounts on publications, tee-shirts and hats.

For more information on our excavation schedule, Family Dig Days, camps and other events, please call the museum at (703) 838-4399, Tuesday through Saturday, 10:00 AM - 5:00 PM.

We hope to see you soon.

Sincerely,

Pamela Cressey, Ph. D.
City Archaeologist

Permission Slip for Field Trip to Alexandria Archaeology

My child _____
 _____ student's name
 has permission to travel to the Alexandria Archaeology Museum for an
 Archaeology Adventure Lesson on _____
 _____ date of field trip

The students will leave the school at _____ and
will return to the school at _____.

parent signature

date

phone #

Permission Slip for Field Trip to Alexandria Archaeology

My child _____
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will return to the school at _____.

parent signature

date

phone #

Archaeology Sets the Tavern Table

How do archaeologists relate artifacts to historic documents?

PURPOSE

This lesson uses real artifacts in a hands-on format to describe the 18th century Gadsby's Tavern in Alexandria. It emphasizes the sorting and analysis components of the laboratory step of the step-by-step process of archaeological research, as well as the importance of referencing primary sources.

LEARNING OBJECTIVES

The Student will

- discriminate between two types of ceramics: pearlware and creamware.
- discriminate between different artifacts made of glass, including tumblers, window and bottle glass artifacts.
- refer to a primary source to confirm the artifacts' presence at Gadsby's Tavern.

SYNOPSIS

Artifacts excavated from Gadsby's Tavern courtyard are inventoried by the students. These artifacts include pearlware, creamware and porcelain ceramics, several types of glass and clay pipestems. Once counted, the sherds are compared to a primary resource, tavernkeeper Mary Hawkins' 1777 tavern inventory.

Archaeology Sets the Tavern Table

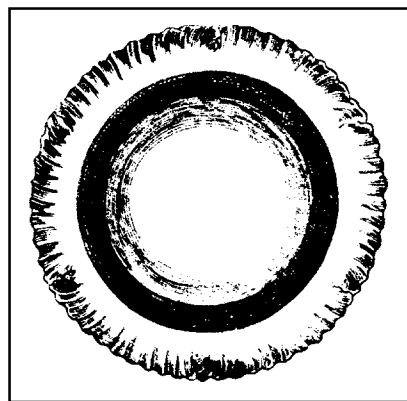
How do archaeologists relate artifacts to historic documents?

BACKGROUND INFORMATION:

Gadsby's Tavern was first built in 1770. Following the death of her husband, Mary Hawkins leased the tavern building in the 1770s. It was considered all right for a woman to be a tavernkeeper. Mary had five children and five slaves who helped with the operation of the tavern.

The tavern is now named for John Gadsby who ran the tavern from 1796 until 1808. A second building, the City Hotel, was added in 1792. By 1929, after many years of use, the buildings had deteriorated, but were purchased and saved by the American Legion Post 24. The Tavern's courtyard was excavated in 1974, in time for America's 200th anniversary.

The artifacts excavated at Gadsby's Tavern are important because they allow us to date the site and help shed light on the activities that took place there. The sherds excavated include transfer-printed pearlware, a more expensive type, confirming other evidence that the Tavern was considered one of the best in the area. Ceramic and glass sherds of punch bowls, wine glasses, plates and wine bottles provide clues as to what food was served at the Tavern.



Many people in Alexandria came to Gadsby's for food, drink and social events. Guests were served meals of duck, oysters, bread, cheese and a variety of other fare, along with wine and ale. In addition to serving food and drink, the tavern had room for travelers to spend the night. The Tavern held many events and performances.

George Washington was a guest of the Tavern on several occasions, he attended balls and reviewed militia volunteers from its steps in 1798. Thomas Jefferson and John Adams were also guests. The artifacts that are used in this lesson may even have been used by these important men.

Today, we know about the history of Gadsby's Tavern because we have deeds, tax records, newspaper ads and inventories, including that of Mary Hawkins, compiled at her death in 1777. We also know more about the Tavern because of the ceramics uncovered in the excavation unit that extended under the coach house, GT21. These artifacts are some of the oldest historic artifacts in the City of Alexandria's Archaeology collection.

Archaeology Sets the Tavern Table

How do archaeologists relate artifacts to historic documents?

VOCABULARY (See Appendix I: Glossary, for more words and definitions)

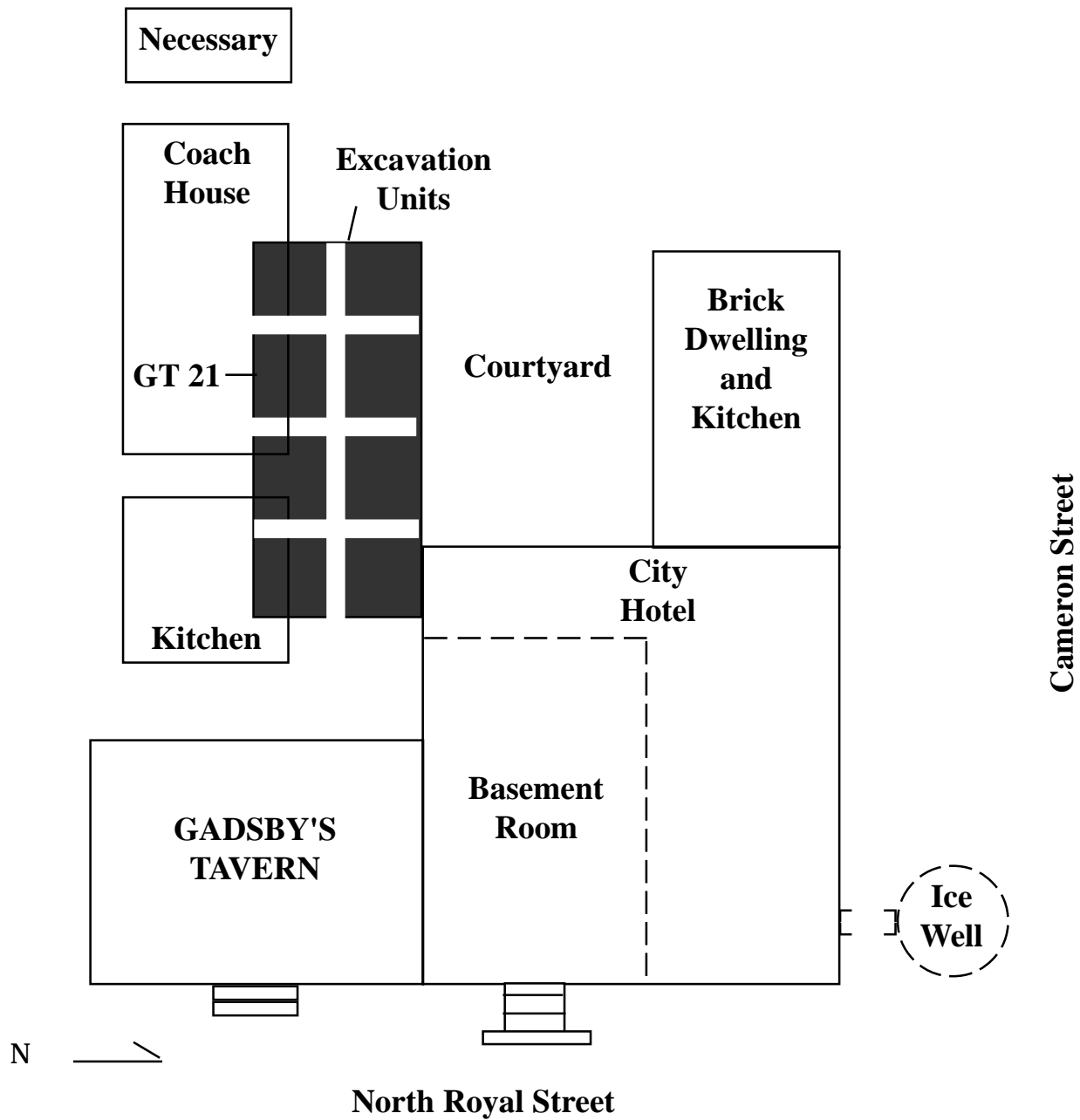
- *Archaeology*—The scientific study of the human past through excavation and related research.
- *Archaeologist*—A person who specializes in the study of material remains of past human life and activities.
- *Artifact*—An object made or modified by people.
- *Ceramics*—Pottery or objects made of clay.
- *Glass*—A hard, transparent substance made of sand, soda and lime; or a container made of glass.
- *Manufacture*—The act of making a raw material into a finished product.
- *Primary Resources*—The original written documents from the time period being studied; for example, newspapers, deeds, tax and census records, diaries, photographs and maps.
- *Sherd or Shard*—A fragment of pottery or glass.

DISCUSSION TOPICS

Docents will discuss these topics with your students

- Who might you see if you visited Gadsby's Tavern in the late 1700s?
- What kind of foods do you think were served at the tavern?
- Do you ever go out to eat? What kind of plates, cups or containers do the restaurants use today?
- Since Gadsby's Tavern was also a hotel, what other types of artifacts might you find there?

Archaeology Sets the Tavern Table



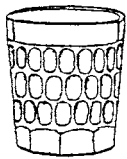
MAP OF GADSBY'S TAVERN AS OF 1796 AND EXCAVATION AREA. (1" = 20')

Gadsby's Tavern served food and drink to customers in the 18th century. Mary Hawkins ran the tavern until 1777. One of her customers was George Washington who wrote in his diary on January 17, 1774:

*Supp'd at Mrs. Hawkins'
and came home afterward.*

Many artifacts were found in the courtyard when it was excavated by archaeologists. Look at the artifacts to see how the tavern table was set.

I. Glass: Write the number of each artifact you have in the blank.



Tumbler



Glass

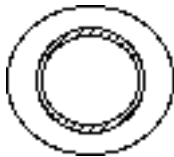


Bottle



Window Glass

II. Ceramics: Write the number of each artifact you have in the blank.



Creamware (yellowish, plain)
1762-1810



Pearlware (bluish, plain or decorated)
1779-1820

Did you have ceramic sherds that were not creamware or pearlware?

III. What could this be?

IV. What did people do at this 18th-century tavern?

Mary Hawkins
1777
INVENTORY
from
GADSBY'S
TAVERN

**Circle any of
the artifacts
you have on
the inventory.**

The Potter's Art: Alexandria Stoneware Pottery Design

Who made this pot?

PURPOSE

Students are challenged to identify attributes of the pottery of historic Alexandria to make assertions about manufacture technology, design and individual potter's work.

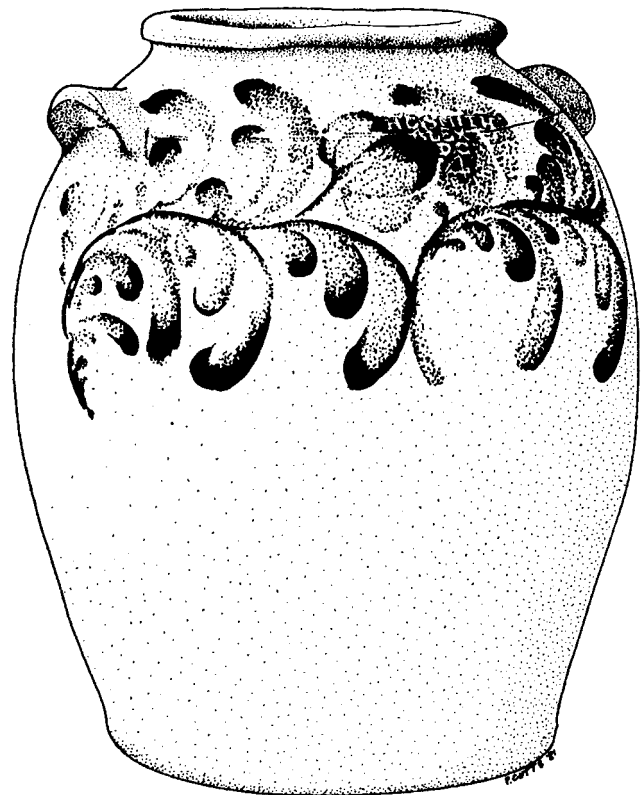
LEARNING OBJECTIVES

The Student will

- identify the physical characteristics of Alexandria salt-glazed stoneware pottery—vessel shape, design motifs and potter's mark.
- identify artifacts based on pottery making technology and function.
- compare the use of salt-glazed stoneware pottery with modern food-storage containers.
- apply knowledge of pottery decoration to design a pottery motif.

SYNOPSIS

Students examine pots and sherds made by two Alexandria potters who produced salt-glazed stoneware in the 1800s. The shape and use of these pots are discussed and compared to modern containers. The decoration and potters' marks are analyzed to demonstrate how manufacturing techniques and decorative styles can be used to date a site. Students will then create their own stoneware pottery motif.



The Potter's Art: Alexandria Stoneware Pottery Design

BACKGROUND INFORMATION

Salt-glazed stoneware pottery was produced in Alexandria during the nineteenth century. These sturdy ceramic vessels were used for food preparation and storage. Today, in addition to paper and cardboard packages, we use metal tins, glass and plastic containers to store foods such as flour, sugar, pasta and other dry goods. We also bake and microwave foods in a variety of glass and ceramic vessels.

The Wilkes Street Pottery was the longest operating pottery in Alexandria. The Pottery was located on the site of what is today the Tannery House condominium, behind Shuman's Bakery. It passed through the hands of three different proprietors between 1813 and 1876. John B. Swann, Alexandria's first stoneware potter, operated the business until 1825. Hugh Smith, a merchant, bought the business and sold the stoneware in his King Street shop. He employed potters, including a freeman named David Jarbour, to produce the stoneware. Several other free blacks were employed by Smith, but their specific occupations are not known. Benedict C. Milburn leased the establishment from Smith in 1833 and bought it outright in 1841. After Milburn's death in 1867, his sons maintained the business until 1876.

The archaeological excavation of the Wilkes Street Pottery took place in 1977. Salt-glazed stoneware pottery sherds are also found in sites throughout Alexandria. However, the analysis of thousands of sherds from this site enables the City archaeologists to attribute specific vessel forms and decorations to the three periods of stoneware production. Thus, the site provides a record of Alexandria stoneware technology and stylistic development.

Many stoneware vessels were stamped with the name of the potter or merchant who distributed the wares. This marking device is analogous to the prominent markings of shopping bags as well as the proliferation of logos and designer signatures on a wide variety of products today.



The Potter's Art: Alexandria Stoneware Pottery Design

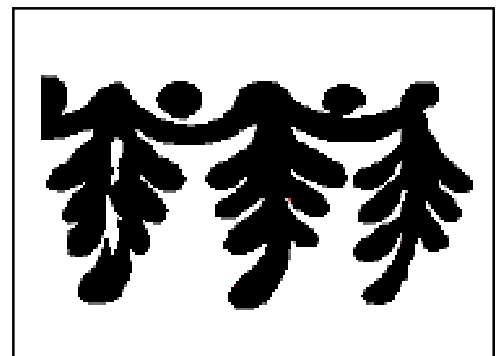
VOCABULARY (See Appendix I: Glossary for more words and definitions)

- **Archaeology**—The scientific study of the human past through excavation and related research.
- **Archaeologist**—A person who specializes in the study of material remains of past human life and activities.
- **Artifact**—An object made or modified by people.
- **Ceramics**—Pottery or objects of clay.
- **Firing**—The heating or baking of clay pots in a kiln in order to harden them.
- **Glaze**—A glassy, shiny coating applied on pottery.
- **Kiln**—An oven or furnace in which pottery is fired or baked.
- **Potter**—A person who makes pottery.
- **Potter's mark**—The name of the potter marked on the vessel.
- **Pottery**—Objects made from clay.
- **Potter's stamp**—A tool with lettering that was pressed into the clay to make the potter's mark.
- **Slip**—A solution of clay and water that can have added color and be used for decoration.

DISCUSSION TOPICS

Docents will discuss the following topics with your students

- Have you ever seen pottery made? What are some ways that pottery can be formed?
- What types of containers do we prepare and store foods in today?
- Are the containers we use today decorated? Describe some of the decorations.

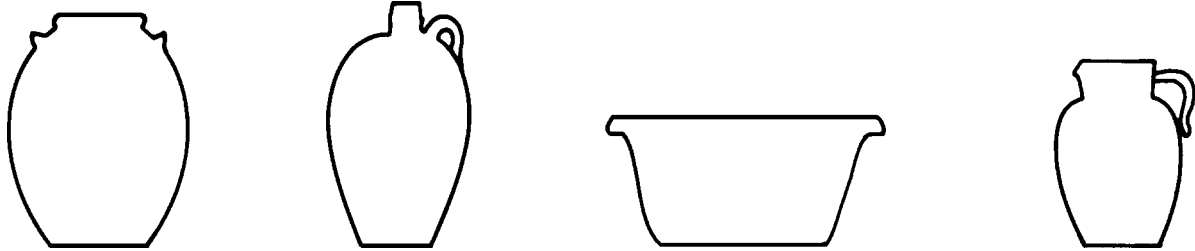


THE POTTERS' ART

I. SHAPE & USE:

1. What do you cook in and store food in today?

2. In the 1800s, stoneware pottery was used to cook and store food and drink. Look at your pottery sherd. What do you think it looked like before it broke? Circle one.



3. What do you think could have been stored in your container?

POTTERS' MARK & DECORATIONS:

H. Smith decorated his pottery using the broad lines of a paint brush. He produced pottery from 1825 - 1841.

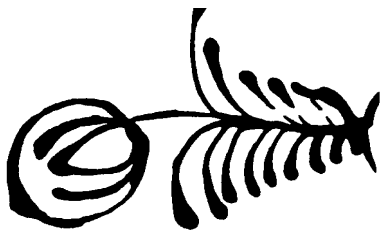
H.SMITH&C:



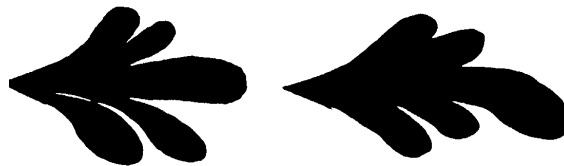
B.C. Milburn's designs were drawn using thin lines. He used a slip cup. He produced pottery from 1841 - 1876.

**B.C.MILBURN
ALEX^**





Circle the tool used to create this design.



Circle the tool used to create this design.



II. WHO MADE YOUR POTTERY?

1. Draw the design on your pottery sherd.

2. Were the lines on your pottery made with a brush or a slip cup?
How do you know?

3. Who made your pottery, H. Smith or B.C. Milburn?

3). When was your pottery created?

The Potters' Art

Name: _____

B. C. MILBURN,
 MANUFACTURER OF
STONEWARE, EARTHENWARE,
FLOWER POTS, STOVE PIPE COLLARS, &C.
 At the old established Potteries,
No. 127 Wilkes Street,
ALEXANDRIA, VA.

LIST OF PRICES STONEWARE, PER DOZEN:

Pint, 60 cts.; Quart, \$1.; Half gallon, \$1 33 $\frac{1}{4}$; Gallon, \$2; 1 $\frac{1}{2}$ gallons, \$3; Two gallons, \$4; Three gallons, \$6; Four gallons, \$8; Five gallons, \$10; Six gallons, \$12.

COVERED WARE---CHURNS, BUTTER JARS, PANS, &C.:

Half gallon, \$2; Gallon, \$2 40; 1 $\frac{1}{2}$ gallons, \$4; Two gallons, \$5 40; Three gallons, \$7 20; Four gallons, \$9 60; Five gallons, \$12; Six gallons, \$14 40.

FRUIT JARS, WITH CORK AND CEMENT:

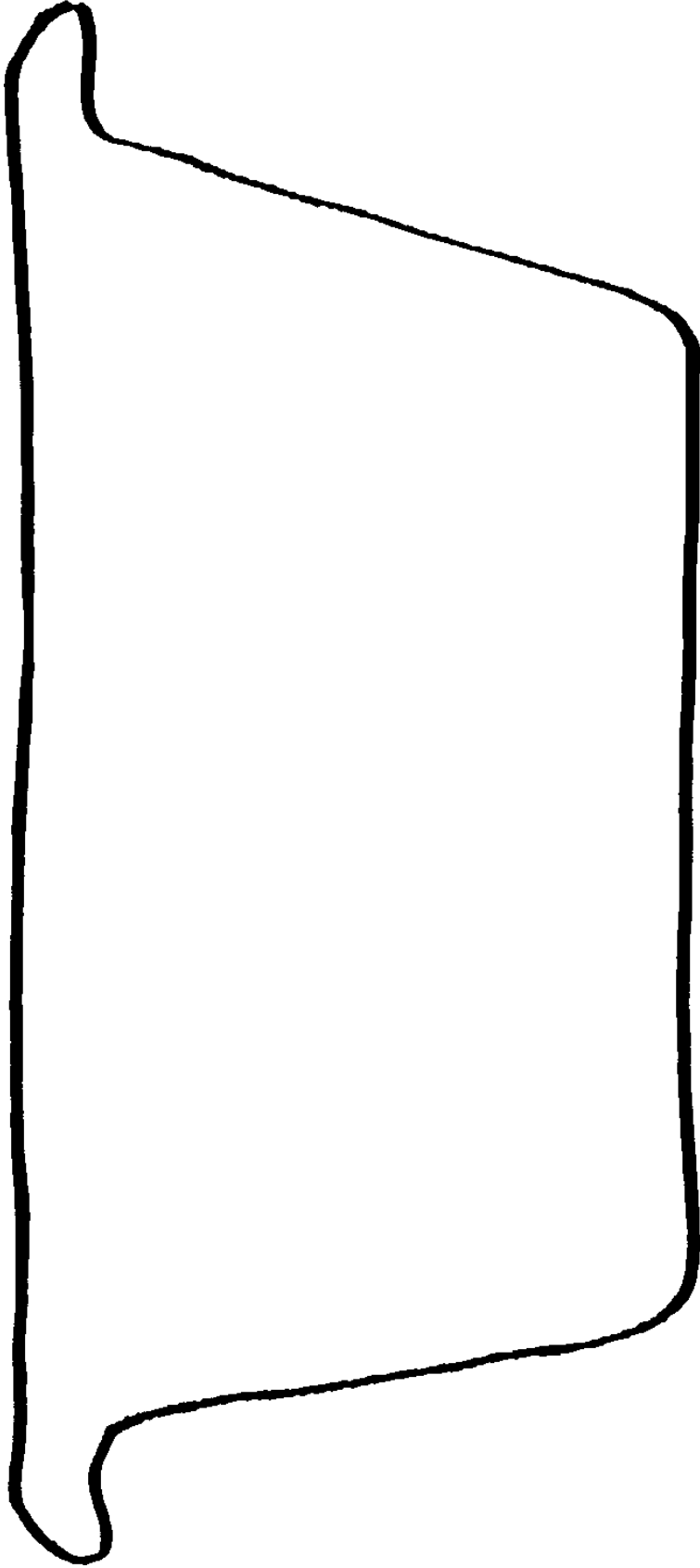
Pint, \$1; Quart, \$1 33 $\frac{1}{4}$; Half gallon, \$1 75; Gallon, \$2 50.

FLOWER POTS AT VERY LOW PRICES.

A good supply of the above articles constantly on hand. Orders promptly attended to.
 [Gentle print]

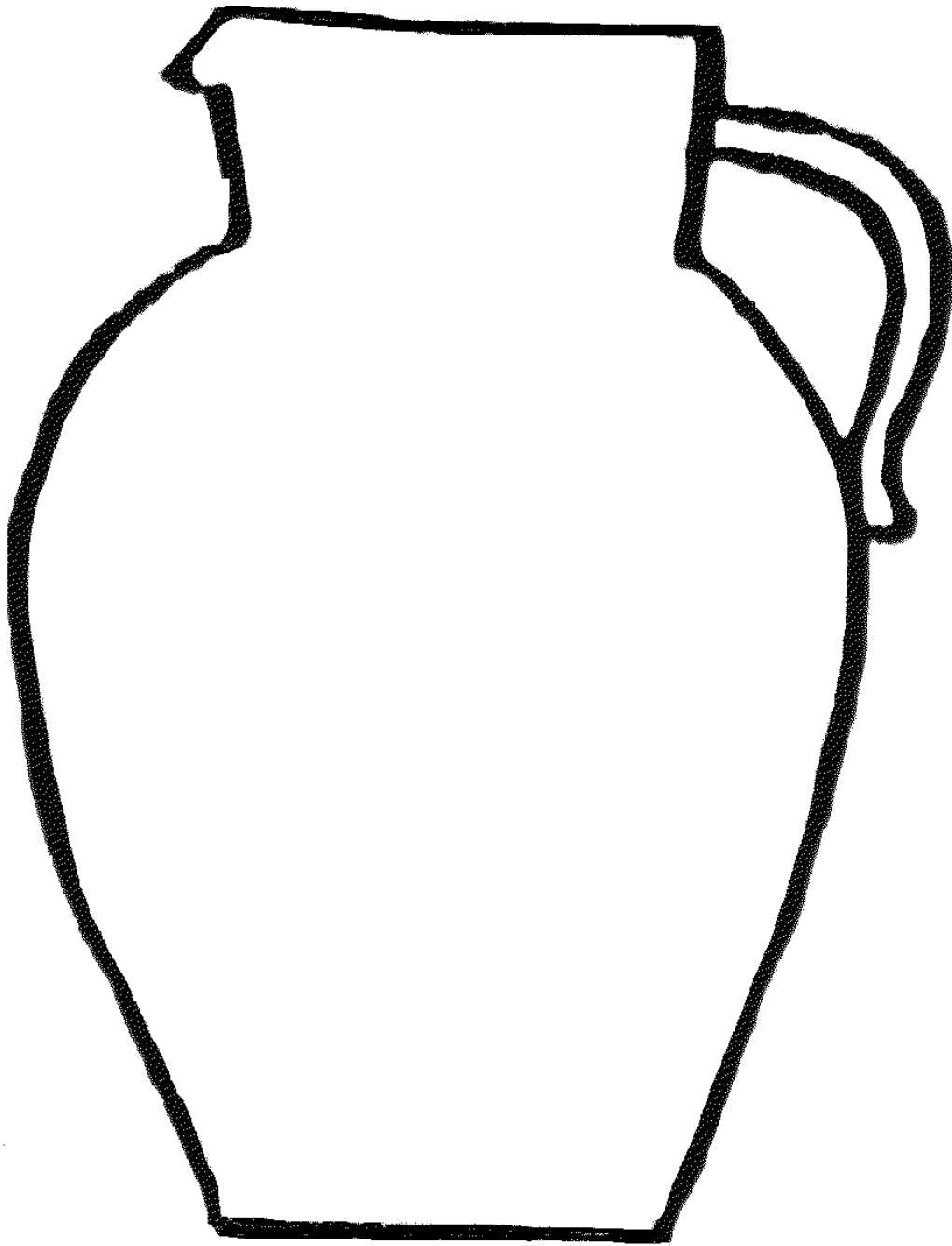
If you saw this advertisement for stoneware pottery, when do you think it could have been made?

How would it have been decorated?



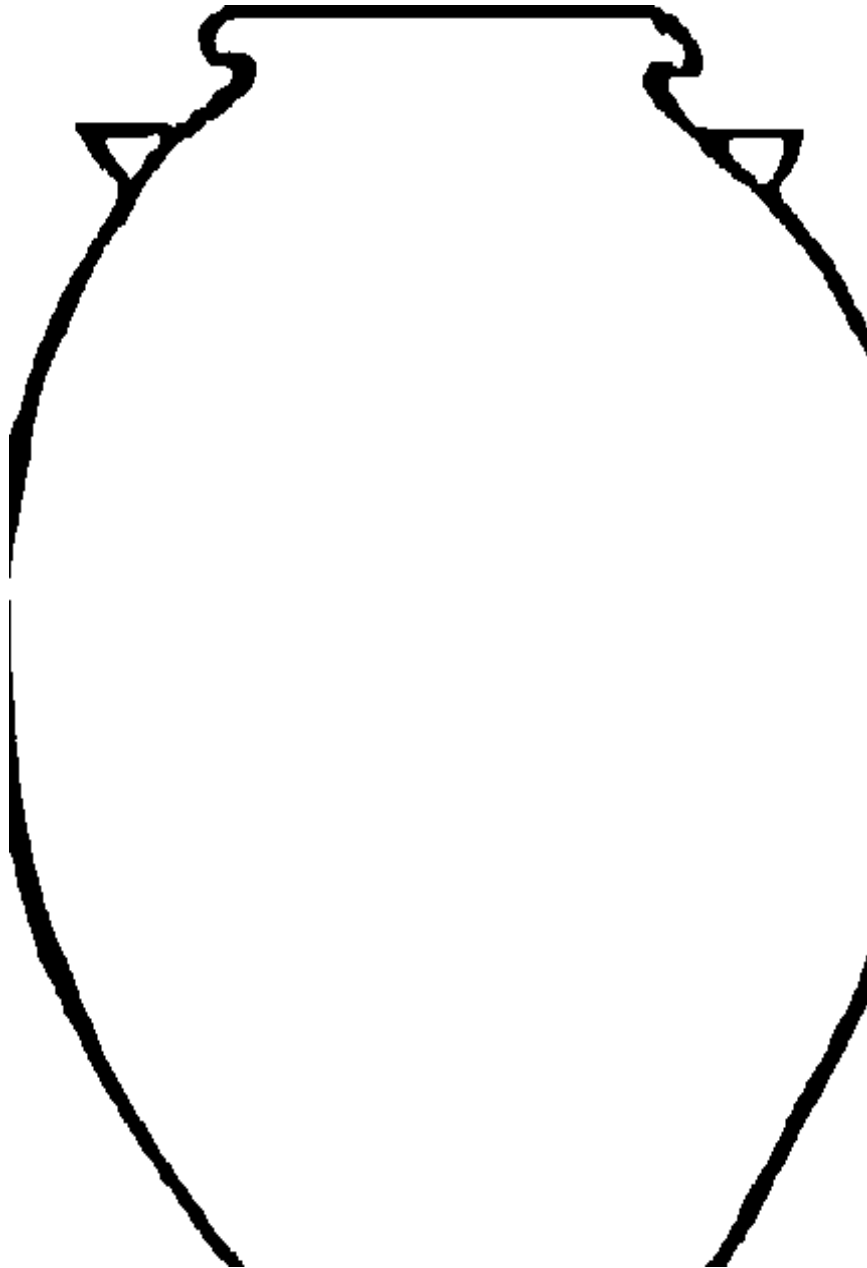
Stoneware Milk Pan

Salt-glazed stoneware pottery was produced in Alexandria from 1813 to 1876. These sturdy ceramic vessels were used for food preparation and storage. The Wilkes Street Pottery site was excavated 1977. The thousands of sherds found at this site provide a record of the technological and stylistic developments of Alexandria stoneware.



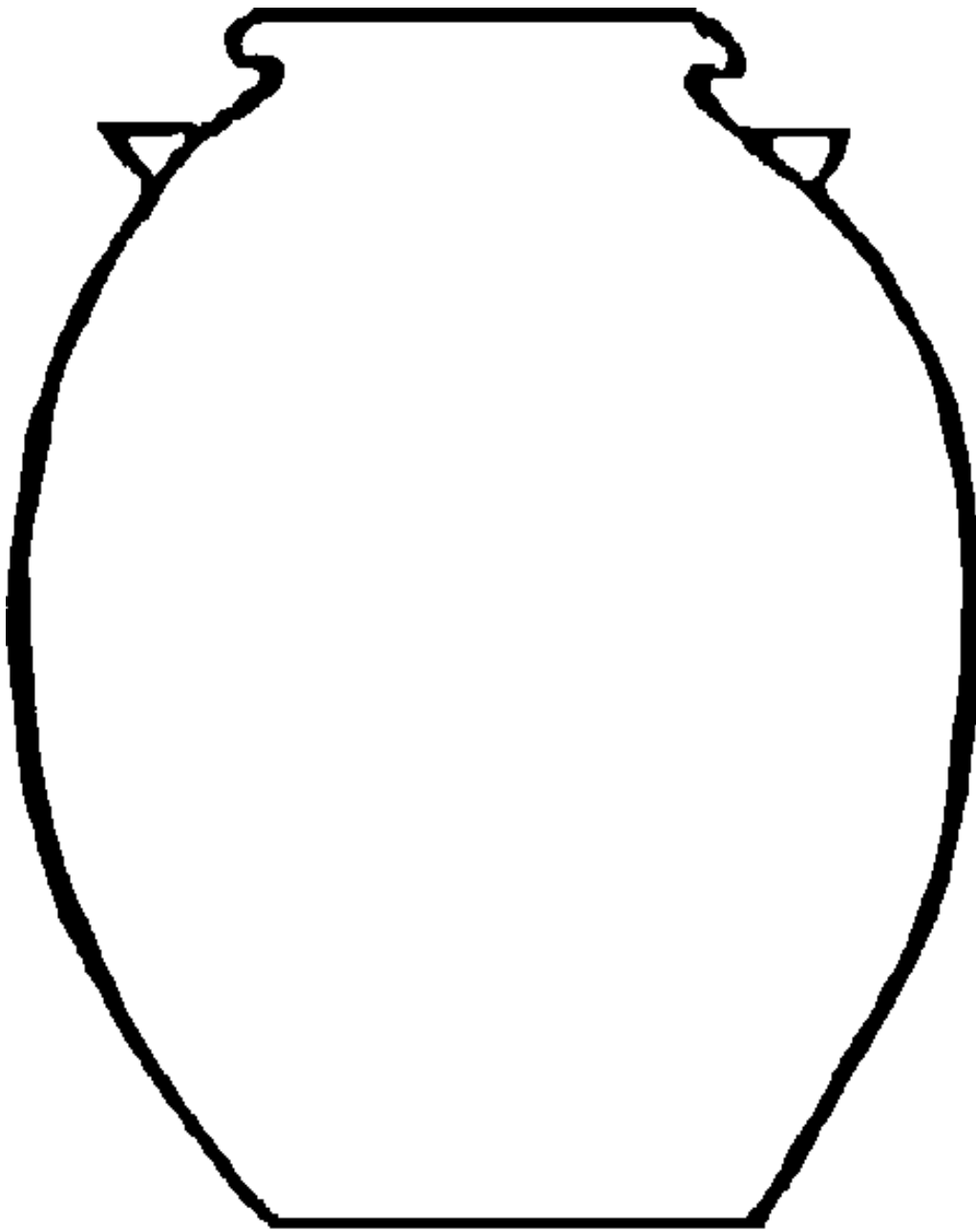
Stoneware Pitcher

Salt-glazed stoneware pottery was produced in Alexandria from 1813 to 1876. These sturdy ceramic vessels were used for food preparation and storage. The Wilkes Street Pottery site was excavated in 1977. The thousands of sherds found at this site provide a record of the technological and stylistic developments of Alexandria stoneware.



Stoneware Jug

Salt-glazed stoneware pottery was produced in Alexandria from 1813 to 1876. These sturdy ceramic vessels were used for food preparation and storage. The Wilkes Street Pottery site was excavated in 1977. The thousands of sherds found at this site provide a record of the technological and stylistic developments of Alexandria stoneware.



Stoneware Jar

Salt-glazed stoneware pottery was produced in Alexandria from 1813 to 1876. These sturdy ceramic vessels were used for food preparation and storage. The Wilkes Street Pottery site was excavated in 1977. The thousands of sherds found at this site provide a record of the technological and stylistic developments of Alexandria stoneware.

How Sweet It Was: The Sugar Trade in Alexandria

What is a sugar house?

PURPOSE

A hands-on experience with actual artifacts, this lesson reinforces the importance of background research and primary sources in archaeology and teaches students classification skills.

LEARNING OBJECTIVES

The Student will

- discriminate between two types of ceramics: syrup jars and sugar molds.
- describe three to four characteristic traits of each artifact.
- distinguish between three different parts of sugar making ceramics, rims, bodies and tips/bases.
- sequence flash cards describing the sugar refining process.
- create an "advertisement" applying information learned on sugar manufacture.

SYNOPSIS

When the City archaeologists in Alexandria uncovered hundreds of earthenware pottery sherds at the Sugar House Site, they had to similarly uncover the artifacts' function. Researching documents and old prints shed light on the antiquated sugar refining process used here in Alexandria in the 1800s. Your students will be led through the step-by-step process that the City archaeologists followed to research, excavate and analyze the Sugar House Site. Then they will have the opportunity to take part in a step of the laboratory process.

Each student will be given a set of ceramic artifacts from the sugar refining process to classify during the lesson. Sorting the artifacts into different functional categories furthers students' understanding of artifact form and function, and ultimately, the process of refining the sugar. Students will then have an opportunity to relate this to their own use of sugar today through discussion and the creation of an "advertisement" for the sale of sugar.

How Sweet It Was: The Sugar Trade in Alexandria

What is a sugar house?

BACKGROUND INFORMATION

Alexandria Archaeology excavated a sugar refinery during the 1987, 1988, 1989 and 1992 field seasons. It was one of two refineries that operated in Alexandria during the early nineteenth century. The refinery excavated by Alexandria Archaeology was located on the 100 block of North Alfred Street near the corner of Cameron Street. It operated from 1804 to 1828.

The City archaeologists study artifacts to learn about how people lived and worked long ago. Occasionally, artifacts that do not have a modern counterpart in style or function are found on archaeological sites. This was the case when hundreds of earthenware pottery sherds were uncovered on the Sugar House Site. These artifacts were the ceramic sugar molds and syrup jars used in the refining process. Sugar refining has changed since the nineteenth century. The pottery used by the two refineries in Alexandria nearly two hundred years ago belonged to an antiquated technology.

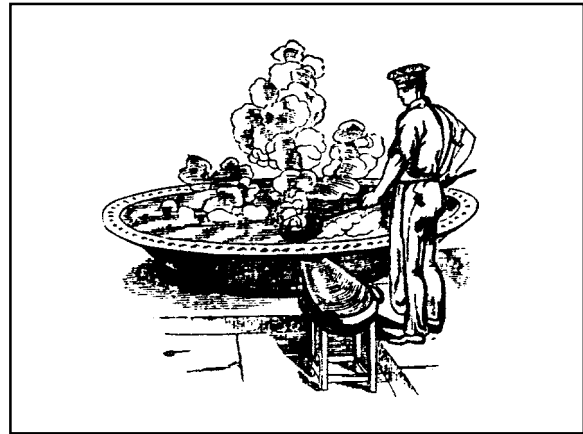


Milton Grigg Collection, Alexandria Library, Lloyd House, Alexandria, Virginia

The City Archaeologists also look for written and graphic resources that provide more information about how the artifacts were used. The archaeologists and volunteers investigated documents that provided insight into how an early refinery operated and discovered prints of how the sugar pottery was produced and used. The

1805 Mutual Assurance (fire insurance) records for the property show a sketch for “A sugar house 5 stories high covered with slate.” According to the 1820 Census of Manufacturers, about 500 boxes of “Havana Sugar,” valued at \$20,000, were used annually in the production of sugar. Labor was provided by seven slaves, five men and two boys, using “one pan, one cooler, and one cistern and about five thousand molds, and the same quantity of pots.” Sugar production was based on slave labor. Slaves were used to grow, harvest and process the sugar cane in the Caribbean. The raw sugar was then shipped to refineries in America and Europe. In Alexandria, and in other southern American cities where sugar was refined, slaves toiled to produce white sugar loaves and molasses in oppressively hot, dangerous working conditions.

The refineries in Alexandria imported muscovado, a crude, raw sugar that is grainy brown and full of impurities. The muscovado (from the Spanish “mas acabado” meaning more processed) was rolled to the sugar refinery in a barrel or hogshead. It was boiled in huge vats with lots of water. Bull's blood and egg whites were added to the boiling mixture to help bring impurities to the surface for skimming. The cooled sugar was poured into cone-shaped unglazed earthenware molds. The filled molds were placed on large earthenware jars that were glazed on the inside. The molasses filtered down through the sugar as it hardened and trickled out of the sugar into the jars. After several days the sugar was removed from the molds and left to dry. This process was repeated several times until the sugar was purified. The loaves of refined white sugar were then wrapped in blue paper and sold.



The Penny Magazine, (London) vol. 10, 1841.

Refined white sugar was very expensive in the eighteenth and early nineteenth centuries. Those who could afford white sugar used it on special occasions. Other sweeteners such as honey, molasses and the lower grades of brown sugar were used more frequently.

sep 18 KERR & McLEAN.

JAVA COFFEE, LOAF & CRUSHED SUGAR.

25 bags pure Java Coffee; 2500 lbs. Refined Sugars; 2000 lbs. Crushed Sugars; 2 casks Sugar House Treacle; 25 boxes Poland Starch, and 15 boxes Chewing Tobacco, just received and for sale by

sep 18 KERR & McLEAN.

Typical ad from the Alexandria Gazette, 1820's

How Sweet It Was: The Sugar Trade in Alexandria

What is a sugar house?

VOCABULARY (See Appendix I: Glossary, for more words and definitions)

- *Archaeology*—The scientific study of the human past through excavation and related research.
- *Archaeologist*—A person who specializes in the study of material remains of past human life and activities.
- *Artifact*—An object made or modified by people.
- *Glaze*—A glassy, shiny coating on pottery.
- *Manufacture*—The act of making a raw material into a finished product
- *Molasses*—Thick, dark syrup produced during the refining of sugar, used as a sweetener.
- *Mold*—A hollow form used to give shape to something; the pottery form used to shape a sugar loaf.
- *Muscovado*—Unrefined or raw sugar obtained from the juice of sugar cane.
- *Pottery*—Objects made from clay.
- *Refinery*—An industrial factory for purifying a raw substance, such as sugar or petroleum.
- *Sherd or Shard*—A fragment of pottery or glass.
- *Sugar House*—A sugar refinery or processing plant.
- *Sugar Loaf*—A large cone-shaped loaf of pure, refined sugar.

DISCUSSION TOPICS

Docents will discuss these topics with your students

- Would you like to work in a sugar refinery? Why or why not?
- What are your favorite foods? Do they contain sugar?
- Is sugar as valuable today as it was in Alexandria in the 1800s? Could you have eaten as much sugar then as you eat today?

NAME: _____

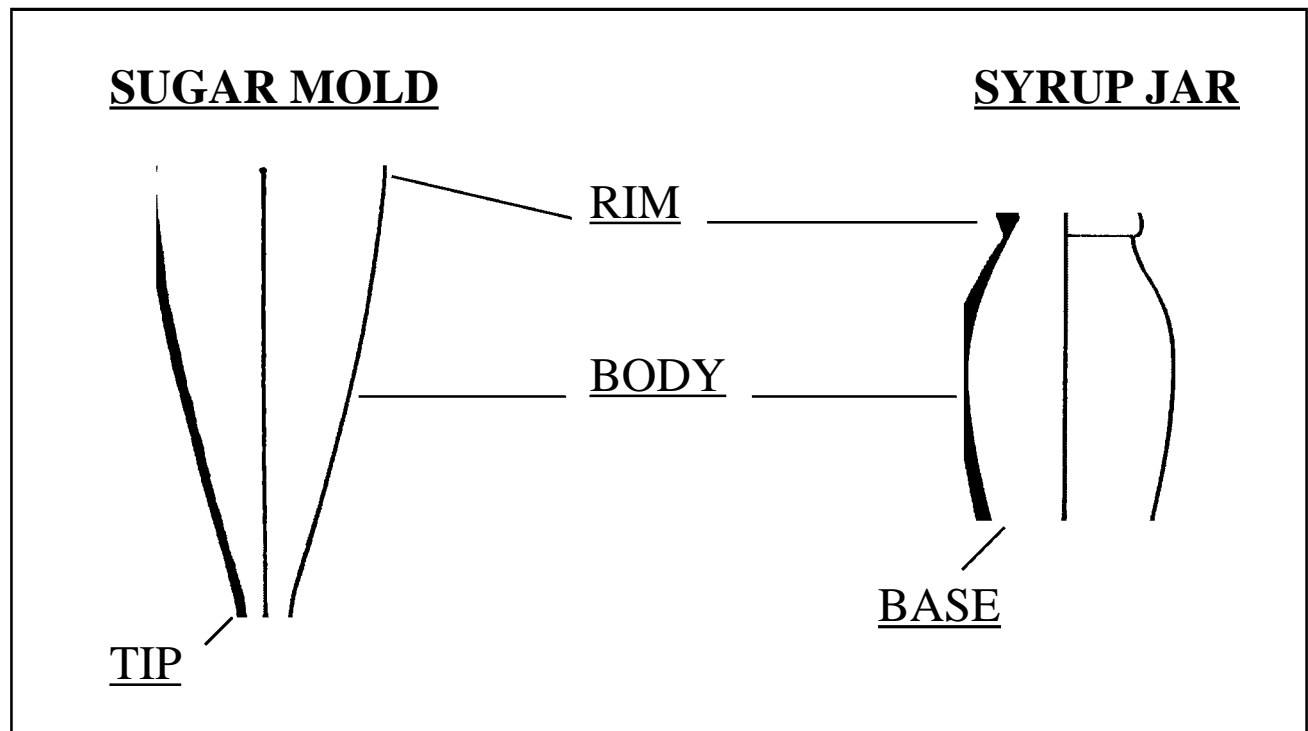
SUGAR HOUSE LESSON

I. SORT the SHERDS

Look at your sherds. Then sort them into two groups: syrup jars and sugar molds.

II. PARTS of the WHOLE

Sketch each one of your sherds on the diagrams below.



Why are syrup jars glazed?

Why are sugar molds unglazed?

III. PUTTING IT ALL TOGETHER

If you had the job of making sugar in the 1800s, how would you do it? Put the cards in order and then number the sentences below in order.

_____ The hot liquid is poured into the **sugar mold**.

_____ Muscovado is boiled with bull's blood.

_____ Syrup drips from the mold into the **syrup jar**.

_____ Tongs are used to serve sugar at a tea party.

_____ Hogsheads of muscovado are rolled to the Sugar House.

_____ Cones of sugar are wrapped in blue paper.

_____ A ship arrives on the Waterfront in Alexandria.

IV. LET THE COMPETITION BEWARE

You are the proud owner of a sugar refinery in Alexandria in the 1800s. Design an awesome ad to sell your products, then draw it on the page.

REAL AD

Public Vendue.

On Saturday next will be sold at the Vendue-Store,
opposite Col. Hooe's dwelling-house,

A Variety of Merchandise as usual.

Also, will be sold at the same place at 10 o'clock
in the forenoon of the same day, for the
benefit of the underwriters,

A quantity of

LOAF SUGAR

In small lots,

P. MARSTELLER, Vendue-Master.

Alexandria June 28, 1787.

PLAN YOUR AD

What does a good ad need to say?

1. _____

2. _____

3. _____

4. _____

5. _____

NAME: _____

SUGAR HOUSE LESSON

NAME: _____

SUGAR HOUSE LESSON

Phoenix Gazette



"Fall ce qu'il faut, arrive ce qu'il pourra."

VOL. IV.

THURSDAY MORNING, JANUARY 10, 1828.

NO. 700.

PRINTED AND PUBLISHED DAILY.
GUY SNOWDEN & THORNTON.
 For Norfolk Petersburg or Richmond.
 The ship **ELIZA**, Captain S. M. ... will ...
 For Sale or Freight.
 The ship **ELIZA**, Captain S. M. ... will ...
 For Freight.
 The ship **HOPE & SUSAN**, Captain S. M. ... will ...
 For Amsterdam.
 The ship **HOPE & SUSAN**, Captain S. M. ... will ...
 For Freight.
 The ship **HOPE & SUSAN**, Captain S. M. ... will ...
 Cohagan and Whittle.
 15 barrels ...
 Cotton Yarn, etc.
 15 barrels ...
 Molasses, Mackerel, and Potatoes.
 20 barrels ...
 Young Hyson Tea.
 32 casks ...
 BURTON'S CHURCH HISTORY.
 HISTORY of the Christian Church, from the succession of Jesus Christ to the ...
 CAINET OF CURIOSITY.
 OR Wonders of the World Displayed, forming a repository of whatever is remarkable in the regions of nature and art, ...
 BARGAINS! BARGAINS! BARGAINS!
 W. M. N. & E. BARKLEY being desirous of lessening their stock of Dry Goods, have determined to dispose of them at ...
 COFFEE, SUGAR, &c.
 BAGS Java and Leguira Coffee ...
 Y. H. TEA, COFFEE, RAISINS, &c.
 BAGS Java and Leguira Coffee ...

Line and Mackerel.
 367 Casks ...
White Lead
 11 casks ...
Whiskey
 17 casks ...
Smoked Herrings
 110 casks ...
Florida Land Agency
 THE undersigned have opened an office in the City of Tallahassee, for the purchase and sale of Lands in the Territory of Florida.
Whiskey
 10 casks ...
Clover Seed
 TWENTY bushels of Pennsylvania Clover Seed ...
Mould Candles, Pepper &c.
 27 boxes ...
Cotton Yarn, etc.
 140 bales ...
A. C. Cazenove & Co.
 HAVE for sale, landing from steamer ...
German Linen, etc.
 11 bales ...

Hayti: Uncovering An African American Neighborhood Who lived in Hayti in the 19th century?

PURPOSE

This lesson uses artifacts excavated at the Coleman Site, a free black site in Alexandria. Students examine maps, census and tax records to determine who used the artifacts from four different features at the site. These activities demonstrate the importance of the step-by-step process followed in archaeological research.

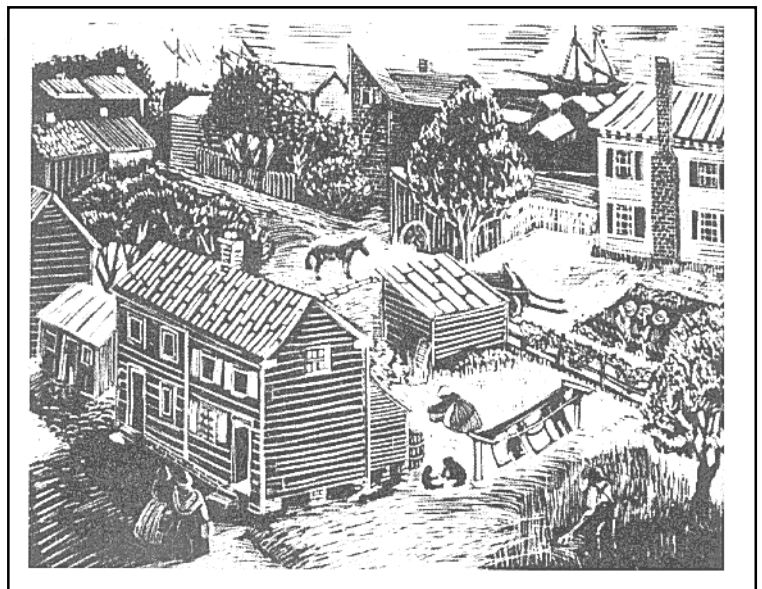
LEARNING OBJECTIVES

The Student will

- define & identify an archaeological feature.
- reference data on artifacts to determine function and date of manufacture.
- reference maps, census and tax records to determine occupancy dates and occupant data for a site.
- determine who used and discarded artifacts based on their function and date of manufacture.
- write a fictional paragraph in the first person interpreting an artifact assemblage.

SYNOPSIS

Students examine artifacts to determine what they were used for and when they were manufactured. Census records from Alexandria are then referenced to identify who may have actually used the artifacts before they were deposited in the earth. Finally, students look at historic photographs and oral history and then write a fictional letter or diary entry describing what life was like for African Americans at this time using oral history data.



Hayti: Uncovering an African American Neighborhood

Who lived in Hayti in the 19th century?

BACKGROUND INFORMATION

Walking along an Old Town Alexandria street, everything looks old. But there used to be many more houses, particularly wooden ones, lining the streets. Most of the small wood buildings where the craftsmen and laborers lived deteriorated or burned. They were replaced by newer structures.

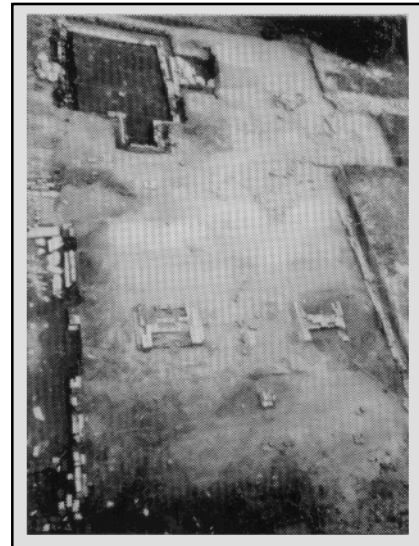
The archaeological clues to these homes still lay within the soil under parking lots and in backyards. Excavation of the Coleman Site began in 1980 and continued for three years. The site was selected for investigation because it presented a good opportunity to study African American families living in Alexandria from 1830 to 1910.

Alexandria had a large African American population, ranging from 20 to 40 percent of the residents. While the majority had a legal status of slave, by 1810 about one third of African Americans were free people. These people were either born of free black parents, or more often, worked extra jobs to purchase themselves and others out of slavery. They purchased or rented homes in a few areas of Alexandria which became the first African American neighborhoods.

The numbers of free people expanded before the Civil War. Even more blacks moved into Alexandria during the Civil War (1861 to 1865). African American neighborhoods also grew in size, and two new neighborhoods began.

The Coleman Site on South Royal Street once had three rental properties which were predominantly occupied by African Americans from 1830 to 1890. The first occupants were free blacks, many of whom lived here for several years. They called their neighborhood "Hayti," the name at that time for the island we call Haiti today. This name was a symbol of freedom. The African peoples in Hayti won their freedom from the French in the second colonial revolution in the Western Hemisphere, 1791 to 1803. [Note: the American Revolution was first].

African Americans continued to live on the Coleman Site until 1910 when the last homes were torn down. Until quite recently, descendants of some of the early black families in Hayti continued to live on Royal Street. The Coleman site now has new townhouses on the property. The 75,000 artifacts excavated from the site, the historical documents and oral histories permit us to step back into the past and touch African American life in Hayti.



Hayti: Uncovering an African American Neighborhood Who lived in Hayti in the 19th century?

VOCABULARY (See Appendix I: Glossary, for more words and definitions)

- *Archaeology*—The scientific study of the human past through excavation and related research
- *Archaeologist*—A person who specializes in the study of material remains of past human life and activities.
- *Artifact*—An object made or modified by people.
- *Assemblage*—A group of artifacts which were found together.
- *Census*—An official, periodic count of the population.
- *Feature*—A distinct physical aspect of a site which is treated as a separate or discreet entity, for example, a trash pit or well. Each feature is recorded and analyzed separately (i.e., not grouping the artifacts with those found in surrounding soil layers).
- *Midden*—A trash pile or pit originally deposited on the ground surface, such as a midden outside a kitchen doorway, and later covered with soil was deposited on the ground surface.
- *Primary Resources*—The original written documents from the time period being studied; for example, tax and census records, newspapers, diaries, photographs and maps.
- *Relative Dating*—The determination of the chronological sequence of artifacts, assemblages or sites, rather than their actual date.

DISCUSSION TOPICS

Docents will discuss these topics with your students

- What would it be like to live in a house like the one on the Coleman site at 418 S. Royal Street? The house did not have running water, electricity or gas and many people shared just two small rooms.
- What would it be like to be freed after living as a slave? What would you do? Where would you live?
- Think about the artifacts in your assemblage. Were they used by a man, woman or child? What would a 1990s assemblage for each look like?

Hayti: Uncovering an African American Neighborhood



I. Coleman Site Map: Look at the site map and answer the following questions.

1. What is the number of your feature? _____
2. What kind of feature is it? _____
3. What is the address of your feature? _____

II. Artifact Identification: Look at the artifacts and artifact cards to answer the questions.
 What is it? _____ Can you tell when it was made? _____

- | | |
|----------|-------|
| 1. _____ | _____ |
| 2. _____ | _____ |
| 3. _____ | _____ |
| 4. _____ | _____ |
| 5. _____ | _____ |

III. Feature Date: Determine when all these artifacts were thrown away by answering the questions below.



What is the oldest artifact? _____

What is the newest artifact? _____

If all these artifacts were thrown out at the same time, on which date would it have been?

IV. The People at Your Site: Now that you know when the artifacts were thrown away, look at the census. Write the name of the person who could have used them below.



Name: _____

School: _____

Hayti: Uncovering an African American Neighborhood

Now that you know who used the artifacts, write a letter to a friend or your diary pretending that you are that person. What kind of work do you do? What do you use the artifacts for? How did you lose them or why did you throw them away?

Assembling the Past

Analyzing Ceramic Assemblages

PURPOSE

An artifact is an object made or modified by people. An artifact assemblage (a group of artifacts which were found together) can give archaeologists valuable clues about the people who once lived or worked at a site. The purpose of this lesson is to illustrate the value of artifact assemblages in interpreting a site's history, such as dates of occupation, activities that took place and status of occupants.

LEARNING OBJECTIVES

The Student will

- categorize individual artifacts in an assemblage.
- crossmatch artifacts, e.g. fit together two or more pieces of the same artifact.
- refer to lists and photographs to compare and contrast ceramic wares, decoration and function.
- apply supplied information and data on artifacts to determine dates, site activities and status of individuals at the site, i.e. the “when, what and who” of a site.

SYNOPSIS

Artifact analysis is a critical part of uncovering the “when, what and how” of activities at an archaeological site. Students will analyze artifact assemblages from an Alexandria well. After sorting the artifacts, they will inventory them by ware, function and decoration. Based on these results, historic interpretation for the site can be completed.

Assembling the Past

Analyzing Ceramic Assemblages

BACKGROUND INFORMATION

Artifacts such as the ceramic sherds, or fragments of pottery, are unearthed during excavation, the systematic and controlled removal of soil to uncover the past. Ceramics, or pottery, are full of clues about the people who lived and worked at a site in the past. They are also useful in dating the site. After digging, archaeologists must analyze artifacts and data so that they can theorize about the history of a site. This methodical examination of data allows the archaeologist to draw conclusions based on the remains.

Ceramics provide a practical means of dating due to their distinguishable stylistic and technological traits. Ceramics are identified by ware (color and texture of the body and glaze) and by type (method of decoration). Ceramic vessels can be further categorized by form (shape and size), and function (the way it was used).

Dates have been established for the various types of wares (i.e., porcelain, pearlware, creamware, stoneware and earthenware), and the manner in which they are decorated (i.e., transfer printed, hand painted, shell edged, annular, plain and salt-glazed, slip decorated or plain earthenware) all of which have been found at the sites excavated in Alexandria. From these established dates, the various levels of earth from which an artifact comes can be dated. Further, knowledge of the types of artifacts based on their function allows us to predict what activities occurred at the site. The style and technology can not only lend information on dates, it serves as an indicator of the socioeconomic status, or social standing, of those who lived or worked at the site, as the known cost or value of various wares would suggest. Some of the wares that are commonly found in Alexandria are described below.

Wares

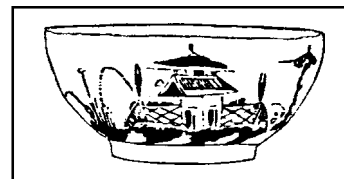
Porcelain—Porcelain is the hardest ware, whose white body surface is glassy, appearing blue or grey. It is usually translucent, or see-through when held up to the light. Usually painted blue or bright colors, these pieces were most often tea wares, serving pieces and at times, dinner plates.

Made in China from 1780 - 1830, this ware was the most expensive available.

Pearlware—Pearlware has a white body with a blue tint and blue pooling due to cobalt in the glaze that pools in cravices. It could be hand painted, transfer printed, shell edged or with annular decoration, bands of colored slip, in blues and muted earth tones. From England, between 1780 - 1820, these were mid-priced wares used for serving, eating and tea.

Creamware—Creamware has a cream colored body and a glaze that appears yellow where it pools in crevices. It is usually undecorated and was most commonly used for eating and serving. Made in England, it was popular from 1770 - 1820. It was a mid-priced ware.

Stoneware—Stoneware, with its heavy brown or grey body, usually had a salt glaze, most commonly on the outer surface. It could be painted blue and was most often a kitchen ware used for storage. In Alexandria, grey stoneware was produced



from 1813 - 1876 at the Wilkes Street Pottery. In England, brown stoneware was produced from 1780 - 1810. It was an inexpensive ware.

Earthenware—Earthenware was a coarse, red bodied ceramic, usually having a shiny interior surface. It was often unglazed on the outside. It could be decorated with lines of yellow slip and was a common kitchen ware for cooking and storage. It is dated in Alexandria from 1790 - 1840 and was inexpensive.

Decoration

The various wares found at Alexandria sites are identified not only by the technological attributes described above, but by the style of decoration. Frequently found ceramic styles in Alexandria are:

Transfer printed—Wares that were transfer printed were highly detailed and the most expensive. Transfer printing was most often done on pearlware, with the designs printed onto the ceramics using copper plate engravings.

Hand painted—Hand painted wares were brush decorated mostly in blues or other bright colors. These designs appeared on creamware, pearlware and porcelain and although not as expensive as transfer printed designs, they were somewhat costly.

Shell edged—Shell edged designs appeared as molded rims on plates in blue and green. They were of a median price range.

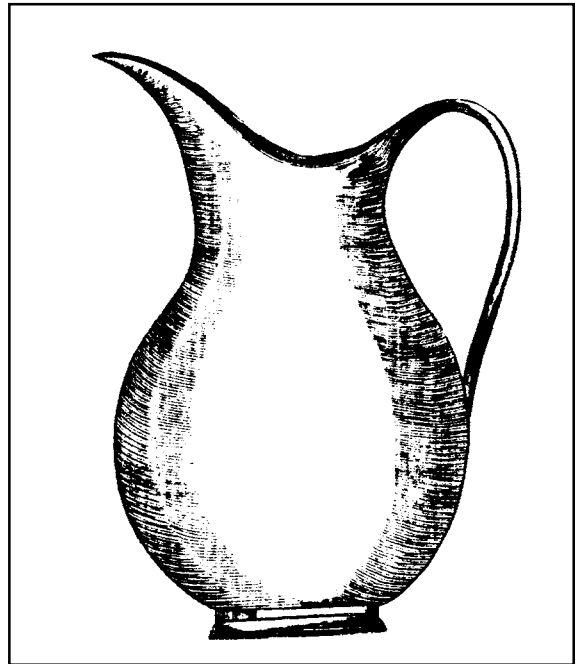
Annular—Annular designs featured decorated bands of colored slip and gave a vessel a ringed effect. One technique produced treelike or dendritic designs. This style was found on pearlware and creamware and was in a mid-priced range.

Plain—Plain pieces, glazed in clear or solid glaze, were common on creamware. It was mostly found on inexpensive eating, tea and serving wares.

Salt-glazed—Salt-glazed refers to the shiny surface on stoneware achieved by throwing salt into the kiln while the piece is firing. This process produces a texture like orange peel. Pieces with this form of decoration were inexpensive.

Slip decorated—Slip decorated earthenware has decorative lines of yellow slip. It was inexpensive.

Plain Earthenware—Plain or glazed, usually used for food storage. It was very inexpensive.



Examples of these ceramics and their characteristic decorations can be seen in the museum's study collection. Each ware has a its own drawer in the lab containing sample artifacts, and cards with photographs of the various styles of decoration with information on each.

Assembling the Past

Analyzing Ceramic Assemblages

VOCABULARY (See Appendix I: Glossary, for more words and definitions)

- *Analyze*—To study and interpret.
- *Artifact*—An object made or modified by people.
- *Assemblage*—A group of artifacts which were found together.
- *Ceramics*—Pottery or objects of clay.
- *Crossmending*—The process of fitting sherds together in order to see the form of a vessel. The sherds may come from more than one area of the site.
- *Form*—The shape and size of an object which helps determine its function.
- *Function*—What the vessel is used for, such as a cup for holding liquid.
- *Sherd or Shard*—A fragment of pottery or glass.
- *Slip*—A solution of clay and water used for decoration, often with added color.
- *Status*—Social standing.
- *Theorize*—To draw conclusions based on findings.
- *Vessel*—A ceramic or glass object such as a dish or teacup, made up of one or more sherds.
- *Ware*—A term used to describe the body and glaze of ceramics.

DISCUSSION TOPICS

Docents will discuss these topics with your students

- What kind of dishes does your family use? Are some dishes saved for guests? How are these different from everyday dishes?
- Does your family use ceramic vessels for cooking and food preparation? If not, what do they use instead?
- If an archaeologist in the future excavated your classroom, list the “artifacts” which they would find together in an “assemblage.”

ASSEMBLING the PAST: ANALYZING CERAMICS ASSEMBLAGES

Name: _____

Assemblage #: _____

I. COUNT THE ARTIFACTS

Count the number of vessels in your assemblage. Sherds that are part of the same vessel have been placed together and should be counted as one artifact.

How many vessels (not sherds) are in your assemblage? _____




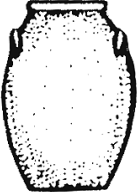
II. ANALYZE THE ARTIFACTS

A. Decoration—Examine the artifacts in your assemblage. Compare them to the artifact cards with GREEN dots. Determine what technique was used to decorate each vessel. Write the total number of each in the appropriate box below.

DECORATION	# VESSELS IN YOUR ASSEMBLAGE	TOTALS
TRANSFER PRINTED \$\$\$		
HAND PAINTED \$\$\$		
SHELL EDGED \$\$		
ANNULAR \$\$		
PLAIN \$		
SALT-GLAZE \$		
SLIP DECORATED EARTHENWARE \$		
PLAIN EARTHENWARE \$		

B. Wares and Function—Look at your vessels again. Compare them to the artifact cards with the BLUE dots. Determine the type of ware and function of each vessel. Write the total number of each in the appropriate box on the chart on the other side of this page.

WARES & FUNCTIONAL GROUPS

WARE	 Tea / Coffee	 Serving	 Eating / Drinking	 Storage	TOTALS
PORCELAIN \$\$\$ ca. 1780 - 1830					
PEARLWARE \$\$ ca. 1780 - 1820					
CREAMWARE \$\$ ca. 1770 - 1820					
STONEWARE \$ ca. 1780 - 1870					
EARTHENWARE \$ ca. 1790 - 1840					
TOTALS					

C. Answer the following questions when you have completed the two charts.

- 1) *What type of ware is the most common in your assemblage?*
- 2) *What type of ware is the least common?*
- 3) *Which functional group is the most common?*
- 4) *Which functional group is the least common?*
- 5) *Are any of the wares or functional groups not included in your assemblage?*
- 6) *What is the overall value of the artifacts in your assemblage?*
- 7) *From what time period is your assemblage?*

III. RESULTS

Based on the information you have obtained about your assemblage, what can you tell about the people who used these artifacts?

IV. DISCUSSION

What other types of artifacts or historical information would shed more light on these people and how they lived?

How would the people who used your assemblage differ from those who used the other assemblages?

INTERPRETING THE PAST: *Discussion with Docents*

You have been fortunate enough to find a receipt book from 1810. This book contains records for a family living in Alexandria, including the foods they purchased. One entry indicates that beef, both steaks and roasts, were purchased. Additionally, quantities of coffee and sugar were bought.

- 1) *What do you think the status of this family was?*
- 2) *With which ceramic wares do you think they set their table?*
- 3) *What functional groups of ceramics do you think were most common on this family's table?*
- 4) *What kinds of decorations do you think would be found on their ceramics?*

You have been excavating at a site in Alexandria. Lots of pork bones have been recovered. Most of these are from the pig's feet, with a few chicken bones and no beef. You also know that the ceramics recovered at the site were mostly earthenware bowls and creamware soup plates.

- 1) *What do you think the status of the people at this site was?*
- 2) *What kind of decoration would you find on the sherds recovered from this site?*
- 3) *What would be a likely meal served at this family's table?*
- 4) *During what time period do you think the people used these ceramics?*

Artifact Identification

How do you identify and date artifacts?

PURPOSE

A discussion format workshop provides students with the opportunity to examine glass, ceramics, organic or metal materials. Decoration, ware type and manufacturing techniques are emphasized in artifact identification and analysis. These are important components in the laboratory steps of the process of archaeological research.

LEARNING OBJECTIVES

The Student will

- distinguish between ceramics, glass, metals or organics.
- distinguish differences in ceramic color, pattern and manufacture technique.
- determine methods of glass manufacture by identifying characteristics left by their production.
- sort glass by color (type) and use black lights to determine two types of clear glass.
- distinguish between different organic materials by identifying objects of wood, textile, bone, horn, shell and leather.
- state what organic materials were used by Alexandrians in the 19th century, and the function of objects made from an organic material.
- distinguish between objects of different metals by noting color differences.
- explain what happens to buried metals by distinguishing old from new metals or comparing/contrasting artifacts with newer objects.

SYNOPSIS

Students examine artifacts of ceramic, glass, metal or organic materials with an instructor. The dating of artifacts based on ware and method of manufacture is discussed, as well as the utility of artifacts in dating an assemblage or site. Discussion, handling of the actual artifacts and a worksheet are used in teaching students to identify the different materials and make use of the other clues artifacts may hold to further our understanding of the past.

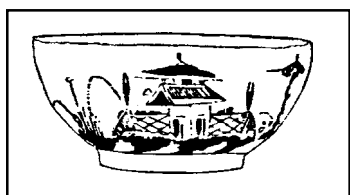
NOTE: This lesson must be presented to groups of 8 students or less. This means that one group may be working with ceramics while another works with glass. The teacher must choose which materials the students will study prior to lesson presentation.

Artifact Identification

How do you identify and date artifacts?

BACKGROUND INFORMATION

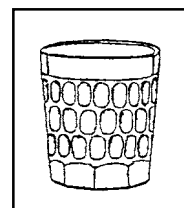
Artifacts such as the ceramic sherds, glass sherds, organic materials and metals are unearthed during excavation--the systematic and controlled removal of soil to uncover the past. Such artifacts are full of clues about the people who lived and worked at a site in the past. They are also useful in dating the site. After digging, archaeologists must analyze artifacts and other data so that they can theorize about the history of a site. This methodical examination of data allows the archaeologist to



draw conclusions based on the remains. Artifacts are examined to learn more about their decoration, function and texture, since it is these traits that allow for further reconstruction of what went on at the site where they were recovered.

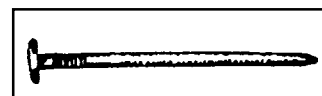
Ceramics provide a practical means of dating due to their distinguishable stylistic and technological traits. Ceramics are identified by ware (color and texture of the body and glaze) and by type (method of decoration). Ceramic vessels can be further categorized by form (shape and size) and function (the way it was used).

Dates have been established for the various types of wares (i.e., porcelain, pearlware, creamware, stoneware and earthenware), and the manner in which they are decorated (i.e., transfer printed, hand painted, shell edged, annular, plain and salt-glazed, slip decorated or plain earthenware), all of which have been found at the sites excavated in Alexandria. From these established dates, the various levels of soil from which an artifact comes can be dated. Further, knowledge of the types of artifacts based on their function allows us to predict what activities occurred at the site. The style and technology can not only lend information on dates, it serves as an indicator of the socioeconomic status, or social standing, of those who lived or worked at the site, as the known cost or value of various wares would suggest.

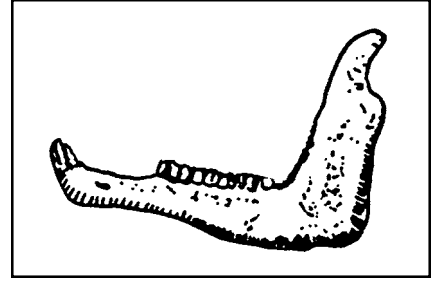


Glass is much harder to date than ceramics. However, we can use evidence from manufacture to date these artifacts. Molds, bottle lips and seams are indicators of change over time in decoration and manufacture technique, as well as the material from which the glass was produced, i.e. lead or soda lime.

Artifacts of metal are commonly found in assemblages from Alexandria sites. Nails, coffin hardware, pewter dinnerware, flatware, belt buckles, coins, bullets and objects of silver have all been recovered. Although these artifacts are greatly affected by their environment, as they are easily corroded (resulting in flaking and color changes), they too can be dated stylistically and in some cases, by material.



Organic artifacts are made from living organisms including plants and animals. Organic artifacts survive when the burial environment is either very damp or very dry. In Alexandria, such sites might include water-logged wells or privies. Organic materials include wood, textiles (cloths or fabrics), bone, horn, shell, leather and teeth. These items can tell archaeologists about what activities occurred at a site. Some examples include the type of bones and the butchering marks on them, which may tell what was being eaten at a site. Other organic items such as combs and toothbrushes are indicative of grooming. Leather shoes have been recovered, as well as items such as gloves, lending clues to dress and fashion.



VOCABULARY (See Appendix I: Glossary for more words and definitions)

- *Alloy*—A mixture of metals.
- *Archaeology*—The scientific study of the human past through excavation and related research.
- *Archaeologist*—A person who specializes in the study of material remains of past human life and activities.
- *Artifact*—An object made or modified by people.
- *Blown three-mold glass*—Glass that was blown into a three-piece decorative mold and whose curves follow the exterior contours.
- *Body*—Fired clay underneath the glaze of pottery.
- *Ceramics*—Pottery or objects made of clay.
- *Corrosion*—Rust or decay.
- *Crazing*—Cracks on the surface of pottery.
- *Cut Glass*—Glass that is decorated by cutting a pattern into the surface so that the vessel is smooth inside with a design with sharp edges on the outside.
- *Faunal*—Animal remains, usually bone.
- *Form*—The shape and size of an object, which helps to determine its function.
- *Glass*—A hard, transparent substance made of sand, soda and lime; or a container made of glass.

- *Glaze*—Shiny surface applied to pottery.
- *Kiln*—The oven in which pottery is baked.
- *Manufacture*—The act of making a raw material into a finished product.
- *Molded*—Shaped in a form.
- *Organics*—Artifacts from living things like plants and animals.
- *Pattern Molded Glass*—Glass that was blown into a mold, removed and then blown again such that the pattern is the same on the inside and outside.
- *Pressed Glass*—Glass that is pressed into a decorative mold using a machine such that it is smooth inside and patterned outside.
- *Potter's Wheel*—Device that turns, upon which clay is placed to shape pottery.
- *Sherd or Shard*—A fragment of pottery.
- *Slip*—Clay mixed with water applied to pottery for decoration.
- *Textiles*—Cloth or fabric.

DISCUSSION TOPICS

Docents will discuss these topics with your students

- Do you have a hobby such as collecting coins or baseball cards? Tell what material your collection is made of and then tell how you arrange or categorize your collection.
- Think about your room at home. Write down items from each material group: ceramic, glass, metals and organics, that can be found in your room.
- How do you categorize the clothes that you wear? How do you sort them and store them in your closet or dresser?
- Think about the items in your kitchen. What materials are they made from? How would you group them in the kitchen?



CERAMIC WARES—ARTIFACT IDENTIFICATION WORKSHOP

Write the correct tray number in the space by the correct artifact's description.

_____ **Yellowware** (1830-1920) yellow body and glaze

How is this decorated?

What was it used for?

_____ **Rockingham** (1845-1920) brown and molded, often tea pots

_____ **Coarse Earthenware** (18th-20th century) like flower pots, porous

_____ **Stoneware** (18th-19th century) gray, “orange peel” texture

What kind of flower is in the design?

_____ **White Salt-glazed Stoneware** (1740-1775) molded, “orange peel” texture

_____ **Porcelain** (18th-20th century) Chinese, very fine, translucent

What was this vessel used for?

_____ **Ironstone** (1860s-20th century) Heavy, gray, has crazing (cracking)

What was this vessel used for?

What design is printed on the bottom?

In what country was it made?

Why does it say “China” on the bottom?

_____ **Creamware** (1768-1820) yellow pooling, not decorated

Can you read the mark impressed on the bottom of the vessel?

What was this vessel's function?

_____ **Pearlware** (1779-1830) blue pooling, decorated in blues and earthtones

Can you tell what these vessels were used for?

_____ **Whiteware** (1820-present) whitest ware

Two of the pieces are plates with flat rims. What was the 3rd piece used for?

GLASS—ARTIFACT IDENTIFICATION WORKSHOP

I. METHODS OF MANUFACTURE - *If we can figure out how a piece of glass was manufactured, we can often figure out how old the object is. On bottles, we look at the shape of the lip, at the mold seams and at scars on the bottle base. On tablewares, we also look for scars on the base, and at the method of decoration.*

Mold Seams - Two of the bottles were made in two-part molds. In earlier bottles, the lip was finished by hand, but after 1903 the entire bottle was made in a mold.

_____ & _____ Find the bottles made in two-part molds.

What were these bottles used for?

Which one has a lip finished by hand?

Pontil Marks - Look at the four bottle bases. Until around 1870, all glassware had scars on the base from an iron rod used to hold the vessel while the lip or rim was formed. Different kinds of marks were left by the pontil rod.

_____ **Sand Pontil** - The rod was dipped in a large blob of molten glass, which was rolled in sand so that the rod could be removed from the bottle base. It left a big rough scar.

_____ **Blow-pipe Pontil** - The blow-pipe was broken from the neck of the bottle, and reattached to the base. It left a ring of glass the same size as the bottle neck on the base.

Which of the bottles could have been made between the 1870s and 1903? Why?

Which was made after 1903? Why?

Embossed Advertising - Words molded on a bottle are "embossed." After 1867, an interchangeable piece called a plate mold was inserted into the bottle mold so that a variety of products could be cheaply advertised.

_____ **Embossed Plate Mold**

What is the modern name of the disease that this medicine was used for?

GLASS—ARTIFACT IDENTIFICATION WORKSHOP

I. METHODS OF MANUFACTURE- continued

Decoration - *Fill in the space with artifact numbers for each decorative ware.*

_____ **Pattern Molded** - The glass was blown into a small mold with a pattern such as diamonds or curved lines on the inside. Then the glass was moved from the mold and blown until it was larger. Where the design bulges out on the outside of the vessel, there is a corresponding bulge on the inside.

_____ **Blown Three-mold** - The glass was blown into a three-piece mold that was the same size as the finished object. The design could be very elaborate. The glass follows the contours of the mold, so that where the design bulges out on the outside of the vessel, it goes in on the inside. This kind of glass was made in the 1820s and 1830s.

_____ **Pressed** - The glass was forced into a mold with a plunger, so there is an elaborate pattern on the outside, but the vessel is smooth on the inside.

_____ **Cut** - The design is cut into the glass with a diamond-tipped knife. The deep design has sharp edges, and is often not perfect. The inside is smooth like pressed glass, but the design is simpler.

_____ **Engraved** - The shallow design is cut into the glass with a small, rapidly revolving copper wheel.

II. GLASS TYPES - Glass is sorted by color, or type (olive green, aqua-tinted, clear etc.). Clear glass, with no tint, is then divided into lead glass or soda glass. (Other kinds of clear glass were also made in the last century).

Use the BLACK BOX and the ultraviolet lights to tell which drinking glass is lead glass and which is soda glass. USE ARTIFACTS #1 and #2 ONLY.

_____ **Lead Glass** (fluoresces bluish purple under short-wave UV light)

_____ **Soda Glass** (fluoresces lime green under long-wave UV light)

Which other artifacts can be tested with the UV light?

METALS—ARTIFACT IDENTIFICATION WORKSHOP

Metals corrode or rust unless kept dry and in a pollution-free environment. Archaeologists can use clues to determine the type of metal and whether it is old or new. Fill in the spaces below with the number of the artifact of each type of metal.

Iron

- _____ New Iron - polished, gray-black, positive magnet test
_____ Old Iron - orange, flaky surface (rust) positive magnet test

What is the handle made of that is attached to the old iron?

Lead

- _____ New Lead - bright bluish-gray, heavy, soft, easily scratched
_____ Old Lead - dull gray color, white powdery surface, soft/folded

What is the old lead object?

Pewter

- _____ Old Pewter - gray with black, hard, shiny corrosion

What are the initials on the back of this old pewter object?

Tin

- _____ New Tin - silver, coats iron sheets, positive magnet test
_____ Old Tin - silver with more gray, rust from iron sheets it coats

Can you tell what the words say on the old tin artifact?

What was the new tin artifact used for?

Silver - frequently mixed with copper and gold for strength, tarnishes easily in the air to a purplish-grey to black.

What is the date on the silver object?

Copper

- _____ New Copper- yellow/gold, lustre (shine)
_____ Old Copper- corrodes easily -usually green

What is the date on the new copper object? Where was it minted?

Which of the old copper objects had corrosion?

ORGANICS—ARTIFACT IDENTIFICATION WORKSHOP

ORGANICS are artifacts made from living organisms such as plants and animals. They survive in very damp or very dry environments.

Can you name a very damp environment in Alexandria where organic materials might be preserved?

_____ **Wood** - artifacts made from trees, have "grain," warps & cracks.

For what was the wooden artifact used?

_____ & _____ **Textiles** - cloth and fabrics, threads woven together.

Can you guess from where each of these comes?

WOOL -

LINEN -

SILK -

COTTON -

Of what type of material is the textile with the red dots made?

_____ **Shell** - hard calcium exterior, food source, from water environments.

Name the three types of shells:

_____ OYSTER

_____ CLAM

_____ CORAL

What is the shell object (#1) ?

_____ **Leather** - made from the thick part of the animal skin.

What is the leather object?

To whom do you think this artifact belonged?

ORGANICS ARTIFACT IDENTIFICATION WORKSHOP**Bone - Faunal Remains - animals bones**

_____ Large Mammal Bone

From which animal do you think this bone came?

_____ Fish Bones - thin and transparent

Do you know what part of the fish this is?

_____ Bird Bones - light and hollow

_____ & _____ Objects of Bone - carved from thickest parts of bone

What are these two objects? _____ & _____

What do you think caused the green stains on the object?

Do you know from what material the bristles are made?

Teeth- animal teeth are often found still intact in the jaw or mandible.

_____ Mandible with the "W" shaped teeth.

To which animal does this belong?

_____ Nubbly teeth with tusk.

To which animal does this belong?

How & Why We Protect:

Identification and Preservation of an Archaeological Site

How do archaeologists locate and protect sites?

PURPOSE

Primary sources such as United States Army Quartermaster and insurance maps are used to track changes in historic sites through time. Older students or parent-child teams must determine where undisturbed areas might exist and where to excavate to recover evidence of Civil War structures. Slides of Civil War photos are used to focus on hospital sites in Alexandria.

LEARNING OBJECTIVES

The student will

- analyze historic quartermaster maps to identify structures on the site.
- determine who lived or worked on the sites.
- predict what Civil War artifacts might be associated with a site.
- evaluate maps and artifact data to determine makeup of a neighborhood.
- assess changes over time as indicated by use of overlay maps.
- synthesize new information to determine site value and areas of preservation.

SYNOPSIS

Using historic map overlays, students track changes on Alexandria Civil War sites over 125 years. They assess the possibility that archaeological resources associated with the Civil War may still survive under ground. Students develop a plan to test their ideas and discuss site preservation methods.

**How & Why We Protect:
Identification and Preservation of an Archaeological Site
How do archaeologists locate and protect sites?**

BACKGROUND INFORMATION

Alexandria had a unique role in the Civil War (1861-1865). Although the city was not the scene of major battles, it served a vital purpose as supply center for the Union forces. Alexandria was occupied by 2100 Union troops on May 24, 1861, the day after Virginia voted for succession. It became a hub of Union activities, such as the transportation of supplies to the battlefields, fortifications, encampments, warehouses, hospitals and prisons. Thousands of African Americans moved into Alexandria and the surrounding countryside seeking freedom and work.

As William Smith and T. Michael Miller write in their book, *A Seaport Saga*:, "For four long years Alexandria was occupied by foreign forces and suffered under the yoke of Northern oppression. Indeed the town endured the longest military occupation by Union troops of any town during the conflict."

A journalist from the *New York Herald* wrote two years after the war began in August 1863:

Many hamlets and towns have been destroyed during the war. But of all that in some form survive, Alexandria has most suffered...Its streets, its docks, its warehouses, its dwellings and its suburbs have been absorbed to the thousand uses of war.

Alexandria is filled with ruined people; they walk as strangers through their ancient streets, and their property is no longer theirs to possess. I do not know any Federal functionary was accused of tyranny, or wantonness, but these things ensued as the natural result of Civil War.

Little remains of Alexandria's four year military occupation, the structures built by the Union and the freedmen's villages. Touring Alexandria today, it seems as if there is very little left from the thousands of military personnel that once camped on the hillsides and occupied the forts.

Where are the four forts that once encircled the city and joined with 146 others to protect Washington, D.C.? Fortunately, Fort Ward's northwest bastion has been reconstructed and the museum interprets Civil War history. What about the others, do any still survive? Where are the thirty-four hospitals which cared for thousands of hurt and dying men? In some cases, Union troops seized the homes of wealthy Alexandrians and churches for use as hospitals. In other cases, temporary wooden structures were constructed as operating rooms and barracks.

In order to study and preserve our Civil War history it is necessary to find these sites and determine whether any historic resources—artifacts, above ground structures, underground remains of buildings, privies or trash pits—still survive. The next task is to develop a research strategy to test the site and locate the specific resources. Lastly, a protection plan is made to preserve the site in the future to enrich our knowledge and sense of the past.

Fortunately, the U.S. Army drew excellent maps before it left Alexandria. Used in conjunction with more recent maps of the sites, we can determine what the possibility is that history still remains. Even though 20th century townhouses occupy the site today, it is possible that African American artifacts could still exist within the buried evidence of their military barracks? Is there any chance that materials associated with dead houses in the hospital complexes have been preserved for 130 years?



L'Ouverture Hospital, upper left corner, looking North with Duke Street. The brick house in the center of the photograph remains standing today. *National Archives.*

How & Why We Protect: Identification and Preservation of an Archaeological Site

VOCABULARY (See Appendix I: Glossary for more words and definitions)

- *Archaeology*—The scientific study of the human past through excavation and related research.
- *Archaeologist*—A person who specializes in the study of material remains of past human life and activities.
- *Artifact*—An object made or modified by people.
- *Artillery*—A large caliber firing weapon such as a cannon, which is too heavy to carry.
- *Battery*—A fortification mounted with artillery.
- *Barracks*—Buildings used to house soldiers.
- *Bastion*—A well fortified or defended position.
- *Contraband*—An escaped slave who fled or was taken over Union lines during the Civil War. This term was originated by Major General Benjamin Franklin at Fort Monroe, Virginia when he refused to return three escaped slaves, stating his legal authority to confiscate the slaves as contraband of war; thus allowing them to stay at the fort.
- *Dead House*—A building near Civil War hospitals where dead soldiers were put before burial.
- *Dispensary*—An office in a hospital or school where medicines are given out.
- *Disturbed Site*—A site where the original layers of soil and archaeological material have been disturbed or mixed by natural or human action.
- *Excavation*—An archaeological dig.
- *Excavation Unit*—A section of the site measured and designated for excavation, such as a one square meter square.
- *Feature*—A distinct, physical aspect of a site which is treated as a separate entity, for example a trash pit or well. Each feature is recorded or analyzed separately (i.e., not grouping the artifacts with those found in surrounding soil layers).
- *Field Reconnaissance*—The visual survey of an area for surface evidence of archaeological sites, to determine the feasibility of future excavation.

- *Filling House*—The protected area of a fort where shells are prepared for firing. It is usually near the mounted guns.
- *Fort*—A strengthened position stationed with troops, fortifications or bastion.
- *Fortification*—A building or structure that serves to strengthen a military position.
- *Free Black*—Until the end of the Civil War, an African American who had been born free or who had gained freedom through manumission.
- *Magazine*—That part of the fort where ammunition is stored.
- *Manumission*—The legal emancipation of a slave.
- *Mess Hall*—The place where meals are served in the military.
- *Occupy*—Seizure and control of a place or region by military conquest.
- *Primary Resources*—The original written documents from the time period being studied; for example, newspapers, deeds, tax and census records, photographs, diaries and maps.
- *Privy*—An outdoor toilet or outhouse. They were often converted to trash pits.
- *Provenience*—Specific location where an artifact or feature is found.
- *Quartermaster*—Military officer responsible for food, clothing and equipment of troops.
- *Quarters*—Buildings or barracks for housing soldiers.
- *Roundhouse*—A circular building for housing and switching locomotives.
- *Secondary Resources*—A compilation of information from primary resources; for example, a history book.
- *Sink*—Military term for a privy or outhouse or merely a water source.
- *Site*—An area containing remains of human occupation or activity.
- *Stockade*—A barrier or wall of posts or timbers standing side by side in the ground which are used for protection or defense of an area or building.
- *Sutler*—A camp follower or a merchant appointed to each regiment to sell goods to soldiers.

DISCUSSION TOPICS

Docents will discuss these topics with your students

- Why is it important to preserve artifacts and archaeological sites.
- How would you approach a site to determine whether any material evidence remains from the Civil War?
- What do you have or use today that you feel might be of value or interest to an archaeologist in the future.
- What would you say to the present day owner of a Civil War site to assure its protection?

HOW AND WHY WE PROTECT

DIRECTIONS

1. *Find the Quartermaster map from the Civil War Period.* Look at it carefully. On the chart provided, list all structures on your site during the Civil War and describe their uses and sizes.
2. *When you have finished filling in your chart, answer the questions on page 2 of your worksheet.* Use the resource files to discover more about Alexandria during the Civil War and who might have lived or worked on your site. While answering the questions, think carefully about the types of buildings on your site and the people who may have lived there.
3. *Look at the two maps or your site from later years.* Make sure you fill in the date of each map on the worksheets attached. Try to determine what kind of neighborhood your site became. Using page 4, go to the map station to see the large copies of the maps, as they give more detail.
4. *Draw your own preservation map.* There are three acetate overlay maps of your site which match the three maps you have been studying.
 - a. *Tape the acetate map from the most recent period to the table.* Cover it with a sheet of tracing paper and draw in the area of your site. Shade all buildings or features on your site from this period in PURPLE.
 - b. *When you have finished with the most recent map, take the map from the middle period.* Using YELLOW, shade in what was on your site at that time.
 - c. *Follow the same procedure, and use the RED pencil to shade in the Civil War features.*
5. *Answer the questions in PART A of page 5 of the worksheets.* Study the different shaded areas. They will act as clues as to what might remain on your site.
6. *Answer PART B of page 5 of the worksheets after the field reconnaissance slides.*

SITE NAME: _____

Examine the Quartermaster map. From the information on the map, fill in the chart below. Put a checkmark (3) next to buildings built by the army.

NAME OF STRUCTURE	USE	CONSTRUCTION MATERIAL	DIMENSIONS

SITE NAME: _____

MAP YEAR: _____

DIRECTIONS

Look at the Quartermaster Map to answer the questions.

1. Who do you think lived or worked on this site during the Civil War?
Give one example (see resource file).

2. What do you think will be found from the Civil War period in an archaeological excavation of this site?

3. Why will different types of artifacts appear in different areas of the site?

A. DIRECTIONS

Look at the map you drew and answer the questions.

1. What is left from the Civil War period?

2. What was destroyed from the Civil War period? Why or how?

3. Where on your site is the best place for the City archaeologists to investigate? Why?

B. DIRECTIONS

Answer the questions after viewing the slide show.

After field reconnaissance, what are the next steps for the study and preservation of your site?

Is your site worth preserving? Why do you think so?

How would you let the public know what happened on your site?

—SECTION 4—

CLASSROOM ACTIVITIES

The *Classroom Activities* included in this Teacher's Guide have been designed to help you and your students investigate how we can learn about people and culture from the step-by-step process of *archaeology*.

The *excavation*, analysis and interpretation of a historic site is a complex process. Before archaeologists excavate a site, they must conduct careful research. They consult *primary sources* such as maps, tax assessment records, census information, newspapers, insurance documents and diaries. They may also refer to history books or conduct interviews to compile *oral histories*.

Archaeologists collect the artifacts from a site in a very organized, scientific manner. They use a *grid system* to map the site, and study soil *stratigraphy* to date it. A simplified introduction to the grid system, soil stratigraphy, artifact dating and other techniques used by archaeologists will help your students understand how archaeologists conduct their research.

NOTE: Sites must be registered with your state preservation office and the artifacts uncovered must be curated according to professional standards. Projects may take months, or even years, to complete. Therefore, we do not recommend that you organize your own outdoor dig. See “Teachers, Please Don't Touch That Trowel!” on page xi of this *Guide*.

CLASSROOM ACTIVITIES

The following is a list of Section 4 *Classroom Activities*:

- ACTIVITY 1—Learn about Preservation and Archaeology
- ACTIVITY 2—Working with Primary Sources
- ACTIVITY 3—“Grid It”
- ACTIVITY 4—Trash Can Archaeology
- ACTIVITY 5—Mock Excavations: “Message in a Bottle”
- ACTIVITY 6—Artifact Assemblage Analysis
- ACTIVITY 7—20th Century Artifact List
- ACTIVITY 8—Artifact Time Line
- ACTIVITY 9—Measuring Time
- ACTIVITY 10—“Who Am I?”
- ACTIVITY 11—The Archaeology of Words
- ACTIVITY 12—Archaeology Quiz

ACTIVITY 1—LEARN ABOUT PRESERVATION AND ARCHAEOLOGY

Background

Protection of archaeological resources is of prime importance in any study of archaeology. Sites are lost to development, vandalism and looting in the United States and worldwide. One way to protect cultural resources is to heighten awareness through public education programs. Such programs exist on local, regional and national levels. See Appendix III, Washington Area Public Archaeology, page 171.

Learning Objectives

The students will

- express value judgments on conservation of archaeological resources when faced with sample scenarios.
- state one local, one regional, one national and one global program where archaeological resources have been successful preserved.
- state three reasons why archaeological resources should be preserved.
- state three methods of conservation of archaeological resources.

Teacher Preparation

1. *Consult local, state and national organizations.* Look for information on archaeology-related programs, events and exhibits in your area.

The Virginia Department of Historic Resources publishes a poster and calendar of events for the state. Included is information on *Virginia Archaeology Month* in October. Write or call:

Department of Historic Resources
221 Governor Street
Richmond, VA 23219
(804) 786-3143
TDD (804) 786-1934

The National Trust for Historic Preservation sponsors *Preservation Week* during the third week of May. Curriculum materials are available for teachers and students. Write or call:

The National Trust for Historic Preservation
Office of Public Affairs
1785 Massachusetts Avenue, NW
Washington, DC 20009
(202) 673-4141

The Washington metropolitan area offers many opportunities for your class to acquire a sense of the value of preserving archaeological resources. The Friends of Alexandria Archaeology (FOAA) plan tours and programs for youth. You can contact FOAA at (703) 838-9304. Also, see Appendix III, Washington Area Public Archaeology, page 171, for a list of the many local archaeology groups and facilities.

2. Read Section 2, “Archaeologists at Work,” page 5. Discuss archaeology and the step-by-step process of archaeological research with your class.

3. Review the preservation vocabulary list below. Refer to the Glossary section for more detailed definitions.

Vocabulary List

Review and discuss the following key words and their definitions.

- *Conservation*—Maintenance of a cultural resource using mechanical or chemical means.
- *Cultural resource*—Material source of information from the time period under study.
- *Ethic*—Principle or moral sense of “good” or “right” behavior.
- *Preservation*—Protection of a cultural resource from damage or destruction.
- *Site*—An area containing remains of human occupation or activity.
- *Value*—Principle or standard considered worthwhile, such as conservation or preservation of cultural resources.

Activities

1. *Visit an archaeological site.* The Alexandria Archaeology Museum or a local museum will interpret history, via programs such as Alexandria Archaeology's *Adventure Lessons*, or display exhibits. Create a task for your students to perform during or after the museum visit, such as writing or drawing a description of the exhibit. Be sure to incorporate information on the process of archaeology and the preservation vocabulary. Have students explain why they think historic sites or objects are valuable and why the subject of their description should be preserved for the future.

2. *Review the archaeological “Dilemmas.”* Use the scenarios described in the “Dilemmas” section (see next page) to stimulate analysis, evaluation, decision making and problem solving. Each archaeological “Dilemma” is designed to provide the student with the opportunity to debate an issue and form a value judgment concerning cultural resource problems.

3. *Choose a related appendix topic.* Select an appendix topic and, using reprinted articles, review the material with your class. Refer to the Appendix VI, Archaeology and the Law, page 193 for more information. Create a “congress” of students and have them write a law that conserves a particular cultural resource of interest to the class.

4. *Discuss students' family “artifacts.”* Make preservation more relevant to the students by discussing what family “artifacts” they preserve now. Ask students what objects they have now that should be preserved for the future. Depending on their age, students can describe these items in writing or draw pictures.

Dilemma 1—Metal Detecting and Civil War Sites

Read the paragraph below and discuss the questions that follow.

You and a friend are playing in a field near an historic battlefield, a site where Civil War battles took place. Looking down, you notice a belt buckle. Using your fingers to pull it free of the dirt, you find a minie-ball nearby. Your friend starts running toward home, yelling back that he will get his father's metal detector so that the two of you can uncover more artifacts. You know that probably isn't right, but think how fun it would be to use a metal detector and maybe even find something valuable.

Discuss the Facts

1. *Should you and your friend use a metal detector on the battlefield?* Metal detecting on public lands (federal, and often state and local) is against the law. Alexandria has an ordinance prohibiting use of metal detectors on public lands. Refer to Appendix VI, Archaeology and the Law, page 193 to read the ordinance.
2. *Should you take the artifacts home with you? What might happen if you do?* If the artifacts were on private property, they would belong to the property owner, and it would be considered stealing if you took them.
3. *Should you tell anyone that you have found the artifacts?* If you find artifacts, you should immediately tell local museum or park authorities. If they were found at a grave site, it would be considered desecration of the grave if they were removed. This is against state law.
4. *Do the artifacts belong to you, since you were the one that found them?* No. Artifacts belong to the property owner. Removal of artifacts destroys the context (the history or cultural environment relevant to a situation or person) and the stratigraphic record, making historic interpretation and/or reconstruction impossible.
5. *Do you think the artifacts are worth a lot of money?* Most artifacts are valuable only in a historic sense. And even if you were to find a monetarily valuable artifact, it is against the law to take it if it was not found on your property.
6. *Why would it be important to tell museum or park authorities about what you have found, rather than removing them from the site?* Museum or state park authorities could help determine the history of the artifact, which tells us something about our past. Understanding the past can make today and the future better. If the artifact was found on your land, wouldn't you want to learn something about the history of your property? Artifacts tell the story of the past. Removing them from their surroundings is like taking a page from a book—with no way to complete the story.

Dilemma 2—A Site in Your Back Yard

Read the paragraph below and discuss the questions that follow.

The lot next to your house has been sold. The buyer plans to build a house. You go over to the construction site on your bike to ride through the dirt piles. When you get to the top of the biggest pile, you notice a sunken, round area in the soil. You've heard your mother talk about the fact that a house used to be on the property a long time ago, but you're too young to remember the house. You ride your bike home to get a shovel, since you want to see if anything might be left from the old house. You dig where the soil is a different color in the sunken area. Eventually artifacts begin to turn up. Even though you're tired, you keep digging, looking for more artifacts.

Discuss the Facts

1. *Should you tell anyone what you have found?* If you find artifacts, you should immediately tell the owner and encourage them to tell a local museum or state official. Unless the preservation of a site is actually threatened, archaeologists would probably choose not to excavate. Artifacts are better preserved in the ground for future generations since, technically, archaeology is a destructive process. Besides, archaeological research should be conducted only in response to specific research questions.
2. *Is it legal to dig holes on someone else's land?* If the artifacts were on private property, they belong to the property owner and it would be considered stealing if you took them.
3. *Is it safe to dig a deep hole?* It is very dangerous to dig in holes. They could be part of old wells. The sides of the well could collapse and you could be trapped or hurt.
4. *Do the artifacts belong to you, since you were the one that found them?* No. Artifacts belong to the property owner. Removal of artifacts destroys the context (the history or cultural environment relevant to a situation or person) and the stratigraphic record, making historic interpretation and/or reconstruction impossible.
5. *Do you think the artifacts are worth a lot of money?* Most artifacts are valuable only in a historic sense. And even if you were to find a monetarily valuable artifact, it is against the law to take it if it was not found on your property.
6. *Why would it be important to tell museum or state authorities and the owner of the land about what you have found?* Most artifacts are valuable only in a historic sense only. If you remove them, it destroys the chance to learn more about the past.

ACTIVITY 2—WORKING WITH PRIMARY SOURCES

Background

An important part of the step-by-step archaeological process is *primary source* research prior to *survey* and *excavation* of the *site*. Archaeologists must consult many resources before digging. *Primary sources* are original written records from the time period being studied. These sources would include deed books, tax assessments, census, letters, newspapers and diaries.

Learning Objectives

The student will

- obtain information from *primary sources*.
- apply prediction skills to describe an archaeological site.

Teacher Preparation

1. *Choose a historic newspaper article or an old published diary from the library.* Select a passage to read aloud to your students. The *primary source* you select should contain plenty of details about the people, places and artifacts of its time period.

2. *Obtain a copy of a probate inventory (a list of personal belongings for someone who has passed away) from your local courthouse.* Refer to the sample probate inventory in Section 3, The Archaeology Adventure Lessons, “Archaeology Sets the Tavern Table” on page 31.

Vocabulary List

Review and discuss the following key words and their definitions.

- *Primary source*—An original written record from a specific time period.
- *Feature*—A distinct, man-made physical aspect of a site which is treated as a separate entity (e.g., a trash pit or a well).
- *Provenience*—The context or original environment of an object.

Activities

1. *Read aloud to your class from the primary source you selected.* While you are reading, have your students make a written or pictorial list of artifacts mentioned in the source material. Then ask them to describe possible *features*, or activities, these artifacts might have been used for. They should also keep a record of places and people mentioned in the *primary source* and try to determine each person's age, occupation and relationship to the writer.

2. *Compare the students' lists with artifact lists from a known site.* For example, refer to an excavation report on file, or research a specific historic activity (such as pottery-making) and make a list of artifacts you might expect to find at that activity site.

3. *Compare the contents of the inventory to what students have in their homes today.*

ACTIVITY 3—"GRID IT"

Background

Many Alexandrians find fragments of *artifacts* in their backyards and basements while gardening or after a heavy storm. You or your family and friends have probably discovered these bits of the past, too. They arouse our curiosity, and we ask: "What was this used for?," "Who owned it?" and "How did it get here?" *Archaeologists* ask these same questions. Through careful study of artifacts, archaeologists try to learn more about the daily lives of people who lived at sites hundreds, or even thousands, of years ago. In order to answer these questions the archaeologist must conduct a systematic, controlled recovery of the artifacts.

Before any *excavation* can begin, the archaeological team must create a map of the site and establish a *grid*. They use a compass, *transit* and stadia rod to accurately measure the boundaries of the site and record the elevation of the ground. Archaeologists use the grid as a guide to draw maps, and they keep detailed notes about where they find artifacts and features.

The importance of drawing maps and keeping notes should be emphasized. Since archaeology requires the destruction of a site in order to glean historic information, accurate records must be kept to justify the excavation. Therefore, archaeologists take careful measurements and place stakes in the ground at regular intervals. String is tied between the stakes to form a network of squares, or *excavation units*, over the site. The sides of each unit intersect at right angles. The resulting pattern of strings, laid out in squares, forms a *grid*.

Each *grid* has a point of reference, from which all measurements are taken, called the *datum*. The *datum point* helps archaeologists document exactly where the artifacts were found. Because it links the artifact to its *provenience*, the *datum point* is recorded in all artifact inventories. It is also written in ink on each artifact. In this way artifacts can be *crossmended* (reconstructed) or used in displays without losing the *provenience*.

Learning Objectives

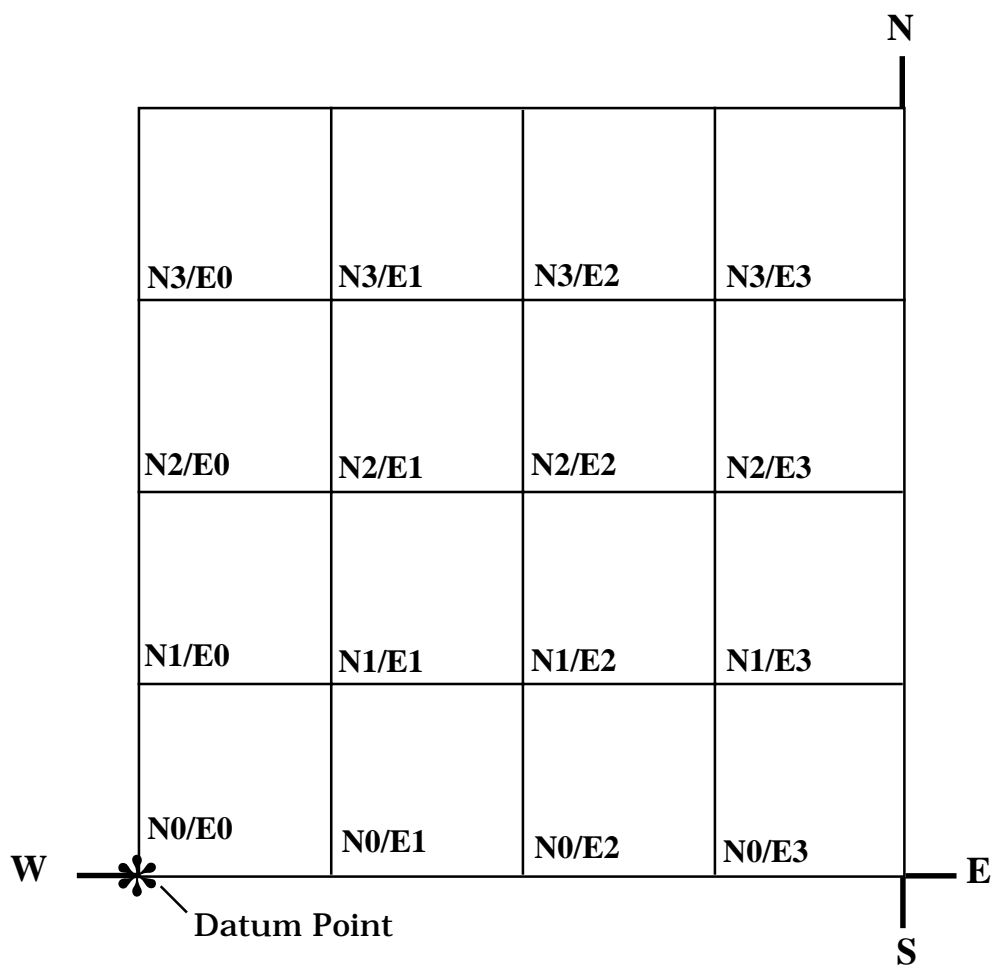
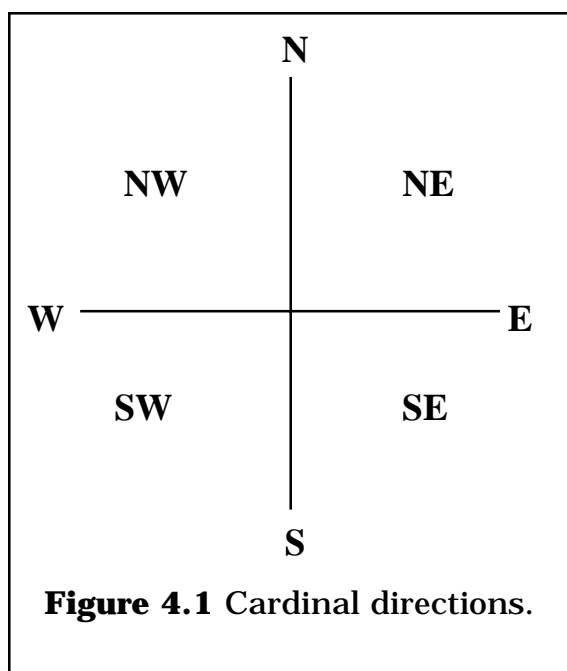
The student will

- label the cardinal directions on a *grid*.
- show how archaeologists use a *coordinate* system when excavating a *site*.

Teacher Preparation

1. *Review the cardinal directions.* Draw an axis and label the cardinal points of the compass on the blackboard, as shown in **Figure 4.1**. (The excavation units of the grid are oriented by direction; the grid axis is aligned with the cardinal points of the compass.)

NOTE: Teachers in the Alexandria Public Schools may want to use the "Grid It" activity to review lessons on cardinal and intermediate points of the compass in *Alexandria Is...* (pp. 7-14).



2. Ask your students to refer to the blackboard drawing of **Figure 4.1** and determine the intermediate directions. The four quadrants representing the four possible intermediate directions (northeast, southeast, northwest or southwest) indicate archaeologists' work areas.

3. Draw a grid in the northeast quadrant of the blackboard. Refer to **Figure 4.2**, which shows a grid in the northeast (NE) quadrant. Each pair of coordinates identifies an excavation unit according to the number of units north and the number of units east from the datum point. For example, unit "N2/E1" is north [up] two squares and east [right] one square.

NOTE: Teachers in the Alexandria Public Schools can mention that the grid system was used to plan the city blocks of Alexandria. In Old Town, the addresses are denoted by either North or South for those streets that run in those directions. King Street is the dividing line. For example, there is a "100 North Fairfax" address and a "100 South Fairfax" address.

Vocabulary List

Review and discuss the following key words and their definitions.

- **Datum**—A permanent point used as a standard from which to measure other points at a site both horizontally and vertically to develop a grid; usually a point marked on a U.S. Geological Survey map.
- **Grid System**—A network of strings stretching over the ground surface that intersect each other at right angles. A grid system is used to establish a horizontal control for mapping a site.
- **Excavation unit**—A section of the site measured and designated for excavation such as a one-meter square.

Supplies

- pencils
- student worksheets
- rulers, yardsticks (straight edge)

Activities

1. Ask your students to name things that look like a grid. (Examples include a checkboard, a piece of graph paper and a tile floor.)

2. Ask your students to look at a road map or an atlas and locate the grid. Ask them to use the coordinates to locate areas on the map.

3. Tell your students to imagine they have just entered the basement of the *Stabler-Leadbeater Apothecary Shop* at 105 S. Fairfax Street. The Apothecary Shop was a family operated business considered important to the history of Alexandria. See Section 2, "An Archaeological Case Study: The Excavation of the Stabler-Leadbeater Apothecary Shop," page 21.

In 1982 and 1986 city archaeologists conducted excavations in the basement of the Shop. Many artifacts were discovered during the excavation including an eyedrop-

per, graduated cylinders (measuring cups), bones and glass medicine bottles. Complete the mapping of the units and artifacts.

2. *Discuss the use of a grid system on an excavation.* Explain that it is used to help map the location of artifacts, a critical step in archaeology. Excavation by its very nature is destructive and this record is all that archaeologists have once they finish digging a site.

3. *Introduce the grid diagram on the student worksheet.* Point out

- the compass points—North, South, East and West.
- the quadrant “North/East”—where students will work.
- the datum point—N0/E0 (*).

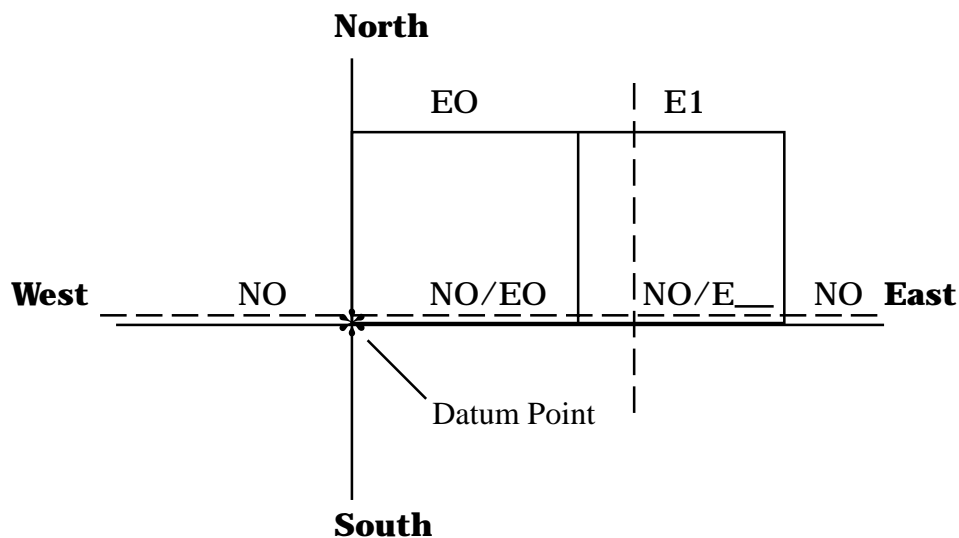


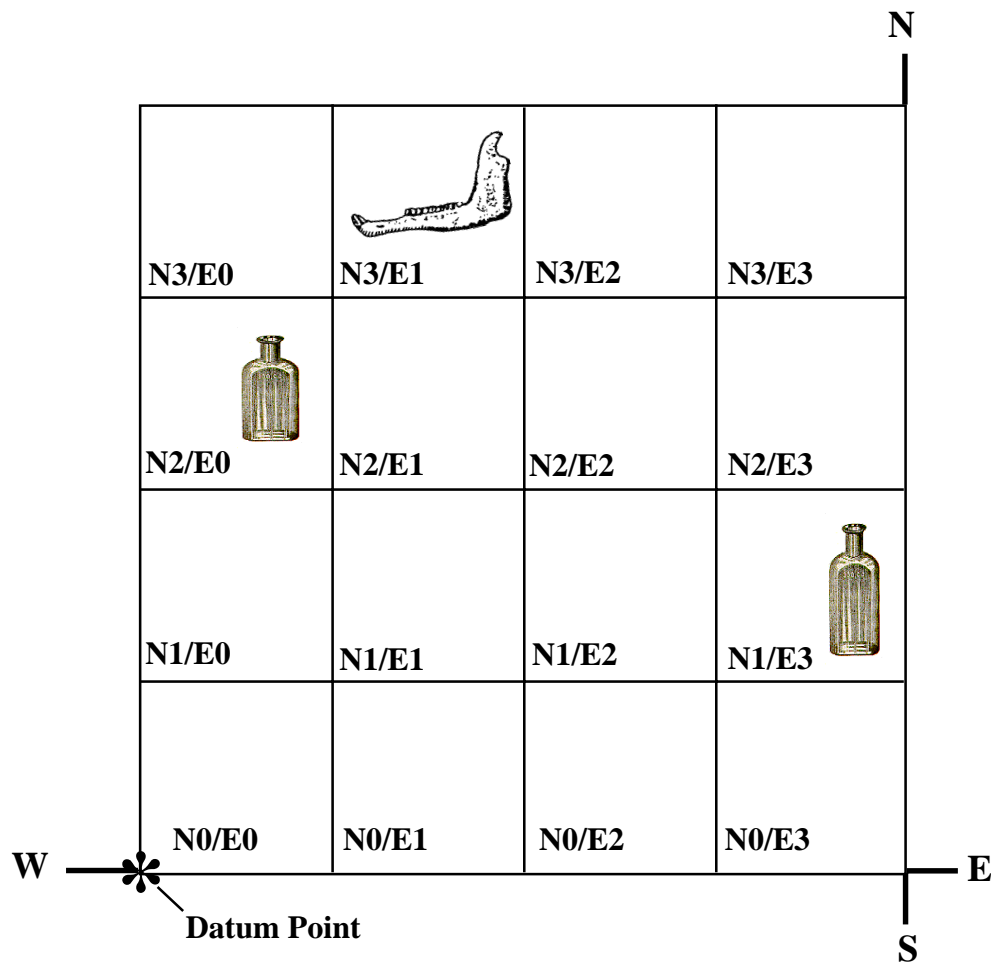
Figure 4.3 North/East coordinate pairs.

4. *Explain how the units are labeled using the coordinate system.* Draw a grid on the blackboard and have the students help you label the coordinates.

5. *Ask students to identify the intersection points of the north/east coordinate pairs.* (Students can use rulers to extend the coordinates and locate the intersection points.) Fill in the blank unit numbers (“N0/E__”) and identify where artifacts were found. In Figure 4.3, dashed lines represent the ruler lines which align the coordinates. For example, “N0/N0”). It may be necessary to help your students label the units.

6. *Review the completed worksheets with the class.* Discuss the artifacts found on the site. Ask the students to explain how and why these artifacts indicate that an apothecary once operated there.

“GRID IT” TEACHER ANSWER SHEET



1. The archaeologists found artifacts in some of the units. The pictures on the grid show where they were found. Write the coordinates on the grid and in the blanks below.

- An eye dropper was found in unit N2/E2.



- A measuring cup was found in unit N0/E1.

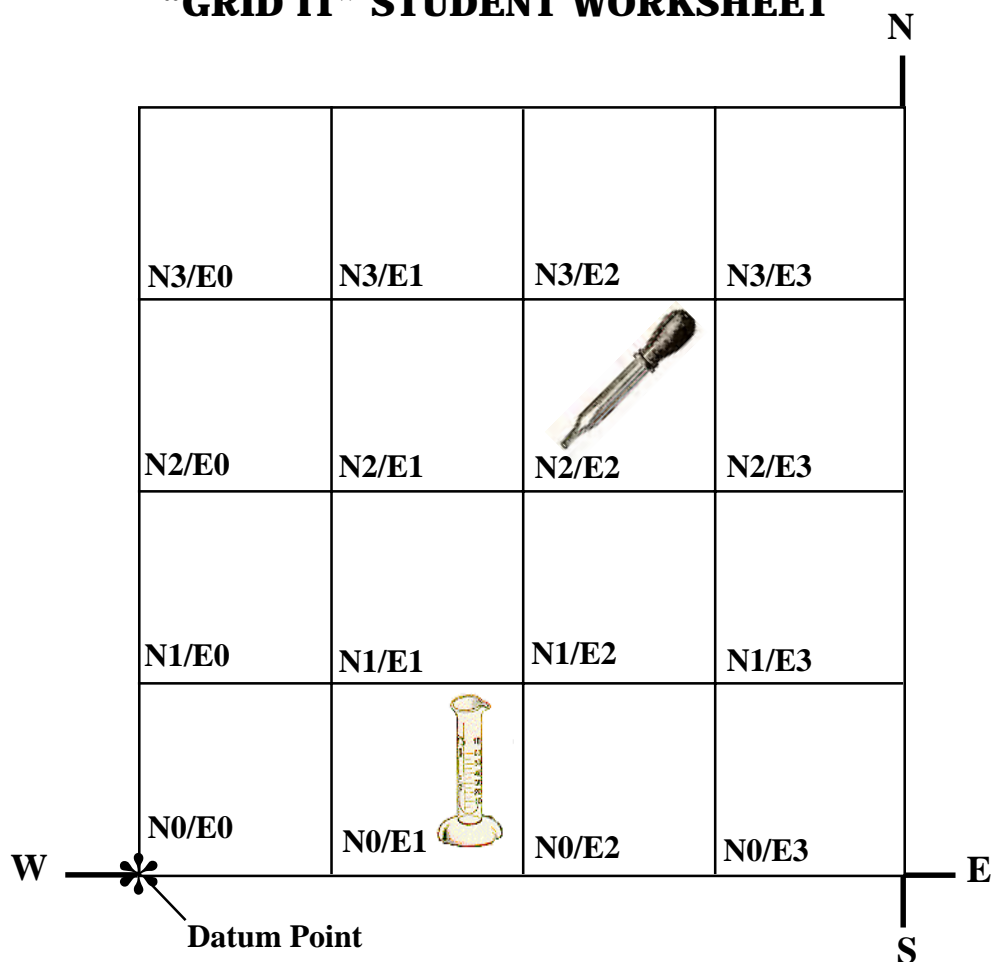


2. Glass bottles were found in units N1/E3 and N2/E0.
Draw the bottles in those units

3. A bone was found in unit N3/E1. Draw the bone in that unit.

NAME: _____

“GRID IT” STUDENT WORKSHEET



1. The archaeologists found artifacts in some of the units. The pictures on the grid show where they were found. Write the coordinates on the grid and in the blanks below.

• An eye dropper was found in unit _____ .

• A measuring cup was found in unit _____ .

2. Glass bottles were found in units N1/E3 and N2/E0.
Draw the bottles in those units.



3. A bone was found in unit N3/E1. Draw the bone in that unit.



ACTIVITY 4—TRASH CAN ARCHAEOLOGY

Background

“Trash Can Archaeology” is a simple, yet effective, method of introducing the process and concepts underlying an excavation. In essence, archaeologists study trash (discarded, lost or forgotten items) from a particular site to gain insight into the daily lives of those who lived there.

Alexandrians of the 18th and 19th centuries did not have weekly trash collection like we do today. They threw their trash into trash pits, privies or abandoned wells. For example, in 1853, the Stabler-Leadbeater Apothecary Shop was connected to the city water supply. The wells in the basement of the Apothecary were no longer needed as a water source. The clerks in the shop then began to throw trash into the wells. See Section 2, *Archaeologists At Work*, page 5.

Today, some archaeologists examine the trash generated by people in modern American cities in order to study consumer habits and trends. You and your students will conduct your own investigation using the trash cans in your school.

Learning Objectives

The student will:

- analyze school trash to determine “cultural” traits of the school.
- recover trash materials, sort the materials and state the concepts of the systematic archaeological approach.

Teacher Preparation

1. *Divide the class into excavation crews of three or four students.* Each crew will need their own trash can.

2. *Select trash cans from different grade levels or areas of the school for your students to excavate.* Allow several days or even a week’s worth of non-spoiling trash to be deposited in the cans if possible. Your students should be able to recognize and interpret change over time. Try to have trash cans of uniform size and not so large that the class cannot complete the project.

NOTE: Be sure to tell the school’s custodial staff about your project if they usually empty the trash each night. You do not want the strata to be disturbed. Ask the other teachers or administrators in the school for permission to use their trash cans.

Supplies

- several [filled] trash cans from different areas of the school
- newspaper, shelf-paper or plastic to cover the desks or floors
- rubber gloves (in case organic materials have been discarded into the cans)
- aprons or old shirts
- pencils and chalk
- rulers, yardstick (straight edge)

Activities

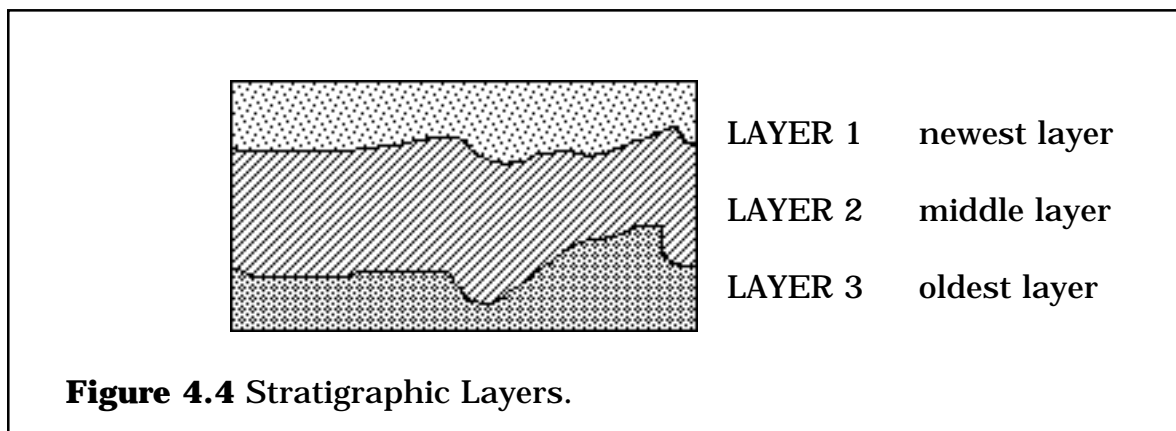
1. *Prepare for trash can analysis.* Bring all of the trash cans to your classroom. Distribute the “Trash Can Archaeology” Worksheets and trash cans to the students. Have them place newspaper on the area where they will work (on desks or floor).

2. *Introduce the term stratigraphy, the study of soil layers.* Draw a simple diagram on the board showing three strata. The most recently deposited levels are on the top and the older levels are on the bottom. The numbers represent the soil and artifacts from the respective layers, as shown in **Figure 4.4**.

3. *Point out the different strata or layers of soil and artifacts.* Ask your students to answer the following questions.

- *Which is the newest layer?* Usually the top layer.
- *Which is the oldest layer?* Usually the bottom layer.
- *Why does this happen?* The layers of soil and artifacts build up over a long period of time due to the effects of human activity and to natural causes. Archaeologists see this passage of time by observing changes in the artifacts as well as the color and texture of the soil.

NOTE: A layer cake, a stack of pancakes, layers of lasagna or newspapers are examples of strata or stratigraphic layers your students may be able to visualize.



3. *Explain to the class that they will excavate and compare three levels in each trash can.* The depth of each level will depend on the size of the can. For example, a 15-inch trash can will have three 5-inch layers. You might want to draw chalk lines on each can to designate the three levels. These marks are simply guidelines, so your students should not be too worried about excavating a perfectly even level. They can also try holding a ruler or yardstick inside the can to help them keep track of their levels. They should be careful not to mix or stir the contents of the can with the yardstick.

4. *Excavate each container piece by piece.* Remind the students that they are a crew and must keep pace with each other. They should place all of the items from each level in three separate piles. Label the work surface using the chalk so that the piles for Level 1, Level 2 and Level 3 are distinct.
5. *Answer the questions on the student worksheets.* After each crew excavates their trash can they should analyze each level and answer the questions on the "Trash Can-Archaeology" Worksheet.
6. *Discuss the results.* Select one person from each crew to discuss the results of their excavation.

Discussion Topics

1. *What conclusions can the students draw from the excavations?*
2. *Is the information different or the same from each trash can? Does this indicate anything about the location of the trash cans when they were being filled?*
3. *How accurate do the students think their interpretation is, given the amount and type of information they recovered?*
4. *Do the trash cans provide all the information that they need to understand what took place at the school for that week? What information is missing?*
5. *Why is it important to keep the artifacts in each level together? What would happen if an archaeologist was not careful and combined the artifacts from different layers together?*

TEAM MEMBERS: _____ DATE: _____

“TRASH CAN ARCHAEOLOGY” WORKSHEET

WHAT DID YOU FIND IN EACH LAYER?

• LEVEL 1 _____

• LEVEL 2 _____

• LEVEL 3 _____

WHAT ARE MOST OF THE ARTIFACTS MADE OF? _____

WHERE DID THE TRASH CAN COME FROM? _____

WHAT ACTIVITIES TOOK PLACE THERE? _____

WHAT DIFFERENCES DO YOU SEE BETWEEN THE THREE LAYERS? _____

WHAT IS THE NEWEST ARTIFACT? _____

WHAT LEVEL WAS IT FOUND IN? _____

WHAT IS THE OLDEST ARTIFACT? _____

WHAT LEVEL WAS IT FOUND IN? _____

HOW LONG DID IT TAKE TO FILL THE TRASH CAN? _____

ACTIVITY 5—MOCK EXCAVATIONS: “MESSAGE IN A BOTTLE”

Background

Archaeological excavation is completed to either fulfill a research goal or to rescue the site and to record the data it holds. It is done carefully, keeping accurate records of all information. Each student will build a mock dig that describes him/herself for another student to excavate and analyze. This process is similar to the real step-by-step process of archaeological research.

Learning Objectives

The students will

- build a “self-site,” inserting artifacts they associate with themselves.
- demonstrate an understanding of stratigraphy by creating a four layer site.
- map and list excavated artifacts.
- analyze artifacts to determine whose site they have excavated.

Supplies

- 2-liter plastic soda bottles with tops cut off for each student
- four distinct “soil” materials (e.g., sand, perlite, potting soil, kitty litter)
- artifacts or representations of artifacts that students feel describe themselves
- spoons
- copy of “Bottle-Site Map and Field Log” (see next page) for each student
- rulers (for measuring levels, or layers)

Activities

1. *Have students construct “bottle-sites.”* Each student should cut off the top of a 2-liter soda bottle. Each bottle should be assigned a “site #,” which should be written in indelible marker on the bottle. Be sure to keep a list of student’s site numbers for reference when identifying the sites.

2. *Create four different site-layers.* Four distinct materials are needed to create several soil levels in which the student should hide artifacts. The students should choose artifacts or representations of artifacts that they feel best describe themselves as unique individuals.

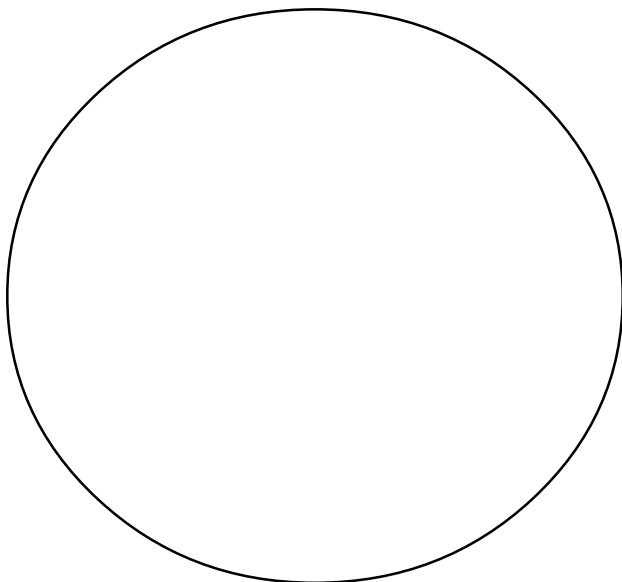
3. *Excavate each bottle and record the results.* Once the sites are completed, students exchange sites and excavate. The actual excavation can be done with spoons, and should be carefully controlled as in any real excavation. Students should map and measure their sites as they dig, keeping records of location of finds, measurements of the levels and artifact lists.

4. *Analyze the findings.* Following excavation, students should attempt to determine whose site they have excavated, providing information or “analysis of artifacts” to justify their prediction.

NAME: _____

“BOTTLE-SITE” MAP AND FIELD LOG

SITE # _____

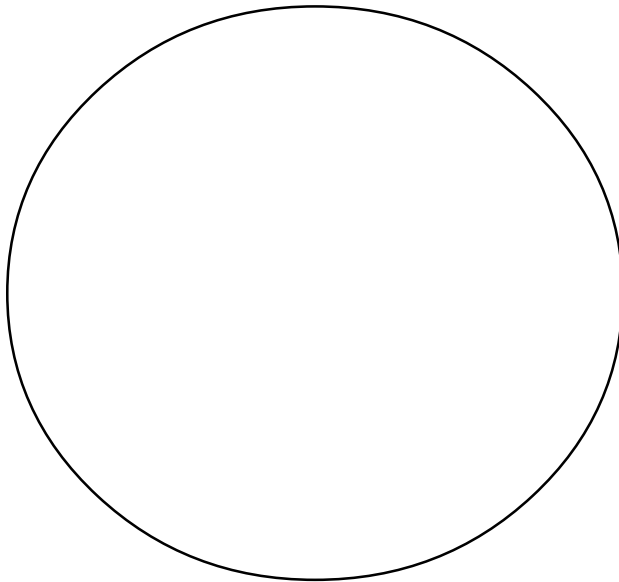


LEVEL 1

DEPTH: _____

SOIL COLOR: _____

ARTIFACTS FOUND: _____

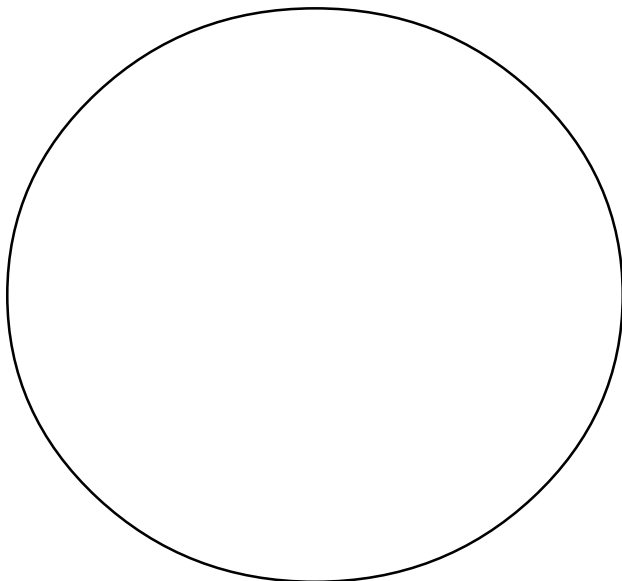


LEVEL 2

DEPTH: _____

SOIL COLOR: _____

ARTIFACTS FOUND: _____

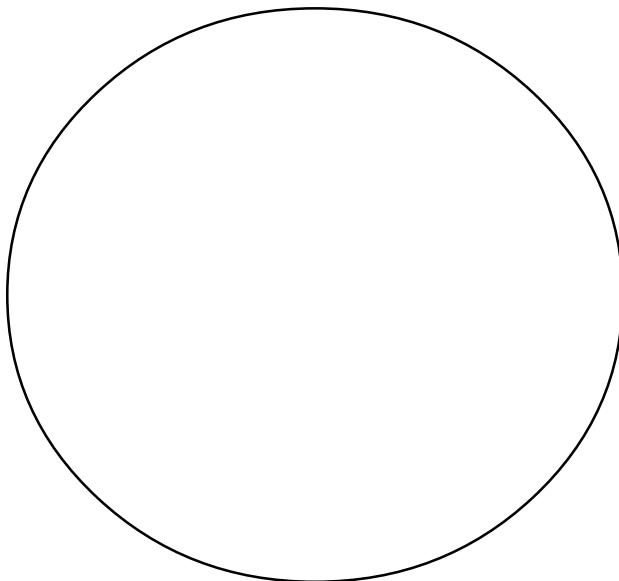


LEVEL 3

DEPTH: _____

SOIL COLOR: _____

ARTIFACTS FOUND: _____



LEVEL 4

DEPTH: _____

SOIL COLOR: _____

ARTIFACTS FOUND: _____

NAME: _____

“BOTTLE-SITE” ARTIFACT ANALYSIS WORKSHEET

DATE:

SITE #:

1. List the artifacts recovered from the dig, by level:

- Level I:
- Level II:
- Level III:
- Level IV:

2. Would these artifacts be used by a male or a female?

3. Would they be used by a child, teenager or adult?

4. Who is the person whose site you excavated?

5. What evidence points to this individual?

ACTIVITY 6—ARTIFACT ASSEMBLAGE ANALYSIS

Background

Archaeologists sometimes find artifacts in a feature that was filled with soil and artifacts at one time, such as a trash pit, posthole, or a foundation trench.

Certain objects in an assemblage can be used to determine the date of the layer or area of the site in which these artifacts were found. The artifacts in each assemblage were thrown away some time after the most recent artifacts were manufactured. This is called the *terminus post quem* or “date after which.”

Learning Objectives

The student will

- define four archaeological terms.
- determine the dates for five artifacts and establish their date range.
- determine the *terminus post quem* for the assemblage.

Teacher Preparation

1. Read about the step-by-step process of archaeology in Section 2, *Archaeologists At Work*, page 5.
2. Collect “artifacts” as described in the supply list below.

Vocabulary List

Review and discuss the following key words and their definitions.

- *Artifact*—An object made or used by people.
- *Assemblage*—A group of artifacts which were found together.
- *Feature*—A distinct, man-made physical aspect of a site that is treated as a separate entity (e.g., a trash pit or a well). Each feature is recorded or analyzed separately (i.e., not grouped with those in surrounding soil layers).
- *Terminus post quem*—Latin for “the date after which;” the earliest potential date for an artifact assemblage based on the earliest date of manufacture of the most recent artifact in the assemblage.

Supplies

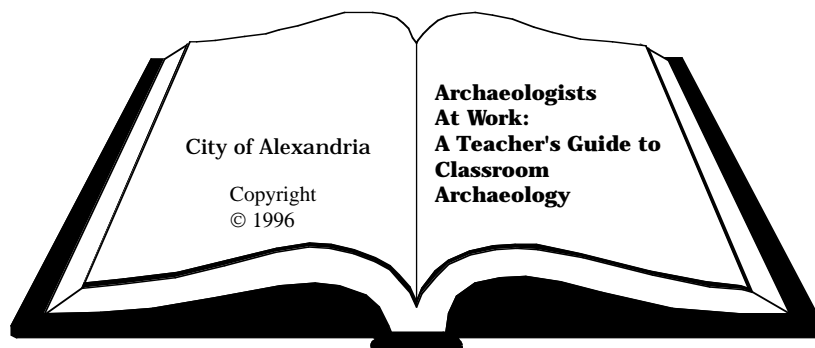
- sets of five artifacts of varying dates (or of an unknown date). Examples include a book with a copyright date (could also have a 2nd edition date), a newspaper with a print date, a soda can with a patent date, a telephone message with a written date including the day only (e.g., “Monday”), and an object without any date.
- “Artifact Assemblage Analysis” worksheets.

Activities

1. *Discuss and define the vocabulary terms above.* Consult Section 2, *Archaeologists at Work*, after you have already discussed the step-by-step process of archaeology. Be sure that the students understand that this exercise is part of the artifact analysis aspect of archaeological research.
2. *Review the “artifacts” you provide.*
3. *Fill in the “Artifact Assemblage Analysis” worksheets (see next page).*

Discussion Topic

1. *Some artifacts can help provide a terminus post quem, while others may not.* For example, a newspaper may be thrown away on or after the print date which appears on it. A soda can may have been manufactured and thrown away many years after the patent date that appears on the can. The written message dated only "Monday," for example, would not provide enough information to determine the *terminus post quem*.
2. *Discuss items or objects in the classroom and determine whether you can assign a date of manufacture to each one.* Keep a list on the blackboard. For homework, students could locate and attempt to date the manufacture of three items from their home.



NAME: _____

ARTIFACT ASSEMBLAGE ANALYSIS WORKSHEET
(TERMINUS POST QUEM)

If you went to the dump and found a trash bag with several artifacts inside, you might be able to tell exactly when the trash bag was tied up and thrown away. However, you might not be able to, as some of the artifacts inside might have been used for many years before being thrown away.

1. Find the date on each artifact in the trash bag and fill in the boxes above.
2. What is the date range of the artifacts (the oldest and newest artifact dates)?
3. What is the *terminus post quem* of this assemblage?

ACTIVITY 7—20TH CENTURY ARTIFACT LIST

Background

Archaeologists help us learn about the past. They uncover objects left behind by people who lived long ago. These objects are called artifacts. Archaeologists use these artifacts as clues to discover how people in different times lived, worked and played.

Imagine what it would be like to be an archaeologist in the year 2196 A.D. Many things have changed in 200 years. What would that archaeologist think if he or she uncovered a video game, a soda can, or a tennis racket? Do you think the archaeologist would recognize what they are or how they were used? What would these items tell him or her about our society?

Learning Objectives

The student will

- analyze five “artifacts,” determining the material from which they are made, how they were used and who used them.
- predict the function of “artifacts,” and infer activities at a site where they were recovered.

Supplies

- “20th Century Artifact” worksheets
- pencils
- blackboard
- chalk

Activities

1. *Have students describe and analyze five of their own “artifacts.”* Ask the students to close their eyes and think of their bedroom in their house or apartment, visualizing all of the items that are in that room. Have them list five items from this room on their activity worksheets. Pick two students to write their lists on the classroom blackboard. Fill in the rest of the worksheets together by asking the students appropriate questions. For example:

- What are these items made of?
- What were these items designed to be used for?
- Are these items used by everyone in the house or apartment or only by certain people?

2. *Have the students imagine that they have taken the items from their lists, dug a hole and buried them.* Have the students consider and discuss how these items would look if they were uncovered 200 years from now. Remind the students that metal rusts and cloth and paper deteriorate.

3. *Ask the students to imagine that they are archaeologists of the future.* Have students describe their future society and discuss the following topics.

- What is Alexandria like in the 2190s?
- How does this future society view Alexandrians of the 1990s?
- How do we view Alexandrians of the 2190s?
- What artifacts, if any, would archaeologists of the future have difficulty in identifying?

Sometimes archaeologists find artifacts that cannot be readily identified as to form or function. This is because these objects or the technology are obsolete. For example, the earthenware sugar molds used to make sugar loaves are no longer used by commercial sugar refineries in this country. Removable pull tabs on soda cans have been replaced due to the potential hazard of humans or animals swallowing them. Could paper, for example, be an obsolete product in the future?

4. *Ask the students to describe what tools or resources they would use to unlock the mysteries of the 20th century.* Examples might include photographs, old catalogues or newspapers.

NOTE: The "20th Century Artifact" worksheets (see next page) could also be completed by students at home and brought in and discussed the following day.

NAME: _____

20TH CENTURY ARTIFACT WORKSHEET

Archaeologists help us learn about life in the past. They dig in the ground and uncover objects left behind by people who lived long ago. These objects are called artifacts. Archaeologists use these artifacts as clues to learn more about people in different times.

Think of a room in your house or apartment. List five (5) items in the boxes below that could be found in that room.

ITEM:	MADE OF:	USED FOR:	USED BY:

Imagine what it would be like to be an archaeologist 200 years from now. What would that archaeologist think if he or she uncovered a video game, a soda can or a tennis racket? Do you think that the archaeologist would recognize what they are or how they were used? What would items such as these tell him or her about our society?

ACTIVITY 8—ARTIFACT TIME LINE

Background

Archaeologists use *artifacts* to help them determine the “date” of a site and understand more about the people who lived and worked there. Knowing exactly when various technologies were introduced helps archaeologists establish a chronology for the artifacts.

Archaeologists want to know when the artifact were made as well as when one type of artifact or technology replaced the other. The artifacts within each *stratigraphic level* are compared within the unit and then across the site. This relative dating technique is called *stratigraphy*. It tells us the order, or chronological sequence, in which events occurred, but not an exact calendar date.

Archaeologists compare the artifacts excavated from a site with others for which the dates of manufacture are known. This is referred to as a comparative or *type collection*. Although most people do not use type collections to distinguish stylistic or technological changes, we are aware of and understand changes in car design, architecture and fashion (clothing, shoes or hair) to name a few.

Learning Objective

The student will

- place objects that reflect changes in technology in a chronological sequence to represent the passage of time.

Teacher Preparation

1. *Select several topics or technologies where objects can be used to represent change over time.* For example, lighting, including candles, oil or gas lamps and lightbulbs.
2. *Use the artifact cards from the Inside Old Town activity “Time Line Lesson” (see note below) or make your own time-line cards using pictures from magazines, catalogues or the newspaper.* (You may even want to make your own drawings, if you are artistic). Mount the pictures on index cards or matte-board. You can be even more specific by showing changes in cars, airplanes, clothing or even toys. Try to limit the number of cards for each topic to avoid confusion.

NOTE: See “Time Line Lesson” (copyright 1980) in the Alexandria Lyceum’s *Inside Old Town* curriculum package.

Vocabulary List

Review and discuss the following key words and their definitions.

- *Artifact* - An object made or modified by humans.
- *Type or Study Collection* - Examples of artifacts that are used for comparison in identifying objects recovered at a site.

Supplies

- *Inside Old Town* artifact cards (or hand-made "time-line" cards, described on the previous page)
- blackboard

Activity

1. *Discuss why it is important for students to know the chronological sequence of events in history.* You can ask them why it is important to know when Columbus made his voyages to the New World, or when and why the Declaration of Independence was signed. What difference does it make knowing which event happened first and how much has happened in between?

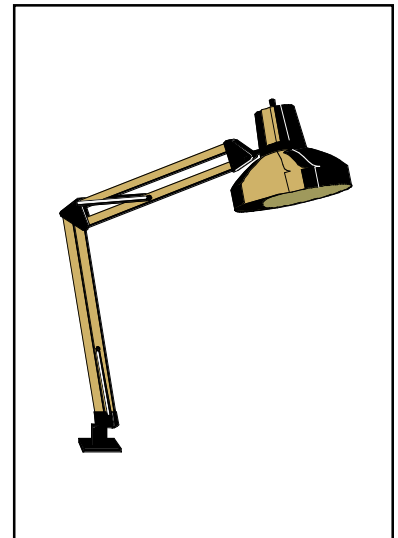
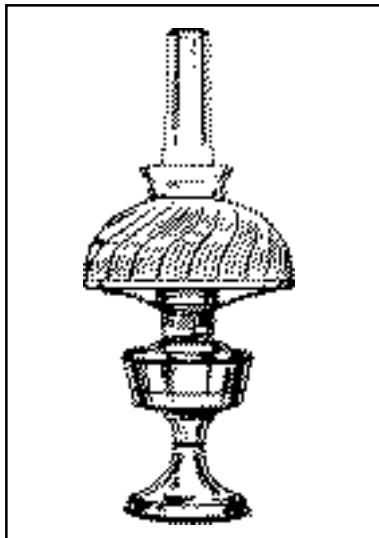
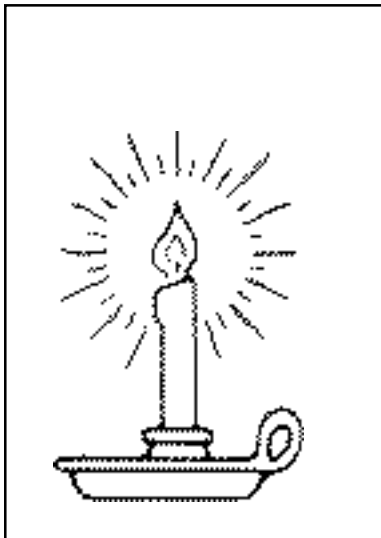
NOTE: Teachers in the Alexandria Public Schools may do the above activity in conjunction with the Time Line activity on page 65 of *Alexandria Is. . . .*

2. *Discuss why it is important for archaeologists to know when artifacts were made and how they are used to date a site.*

3. *Use an example, such as lighting, to explain chronological sequence.* Show the students the cards. Identify each card and place it in chronological sequence as to when it would have been the primary source of light. You can tape these cards to the blackboard or use the time line from Activity 9, "Measuring Time," page 118.

Although, on some occasions, we still use fire, candles and oil lamps for light, we do not depend on these technologies. When do we use these sources of light rather than lightbulbs? What might replace lightbulbs in the future?

4. *Have the students place the other artifact cards in the correct chronological sequence on the Time Line or on the board.* Many of the artifacts on the cards will not have an identifiable date when they were invented or used. What is important is for the students to understand the chronological sequence.



ACTIVITY 9—MEASURING TIME**Background**

Time is a difficult concept to fully comprehend. To imagine the passage of hundreds or even thousands of years is difficult for young children. Learning the “date” of a significant event, such as Columbus’ first voyage to the New World, is a basic step in studying history. Learning the correct *sequence* of dates establishes a chronology of events that have shaped history, leading to a better understanding of the past as well as the present.

Learning Objective

The student will

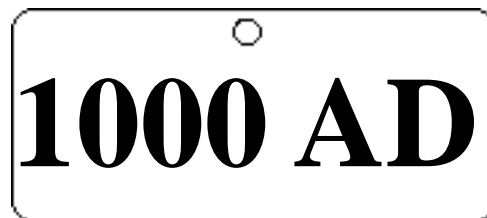
- sequence dates and events using meter sticks, pictures and labels.

Supplies

- meter sticks
- push-pins or carpenter nails
- tags
- magic markers

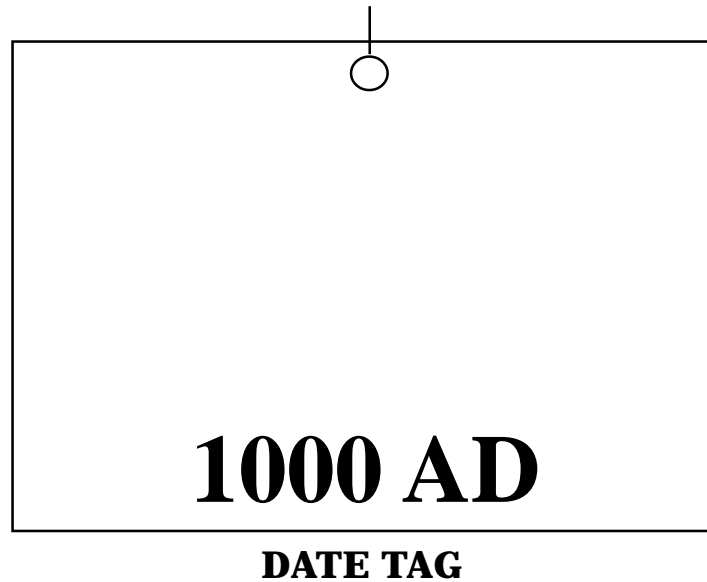
Teacher Preparation

1. *Use meter sticks to create a time line.* Find sufficient space— using meter sticks to represent millennia requires a large classroom, a hall, or a gymnasium. If your space is small, limit your date range.
2. *Select a date range.* Set up your time line, beginning with modern *homo sapien's* appearance on earth 100,000 years ago. Don't use too many dates, but be sure to select some that are relevant to your community and state. (Don't use references to dinosaurs, as paleontologists, not archaeologists, study dinosaurs.)
3. *Make time tags.* Use tags or index cards labeled with key times (e.g., 0, 500, 1000, 10,000). Attach these tags to the meter sticks with push pins or carpenter nails. Make them large enough to be easily read by the students.



TIME TAG

4. *Make date tags.* Make date tags for the historic dates you wish to discuss. Include the actual date, as well as any text, illustrations or graphics that would emphasize the changes occurring over time. For example, use pictures of Romans, Medieval Europeans and Jamestown settlers dressed according to their time period.



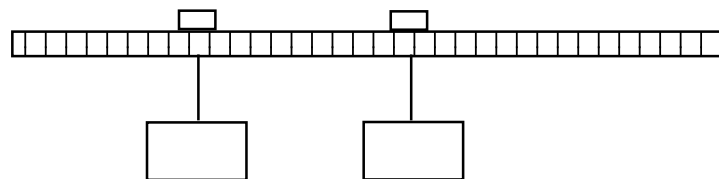
Activities

1. *Review the metric system and relate it to time.*

- millimeter = 1 year
- centimeter = 10 years
- decimeter = 100 years
- meter = 1000 years

2. *Lay out the meter sticks in chronological order with the time tags attached.*

3. *Have students place date tags in appropriate chronological order. Work from the past to the present.*



4. *Compare the distances between events and discuss the passage of time.*

NOTE: This activity is adapted from a presentation by Dr. John Cotter, University of Pennsylvania, during the session "Archaeology and the Public I: Education and Perception" at the *Joint Archaeological Congress*, January 7, 1989, Baltimore, Maryland.

ACTIVITY 10—“WHO AM I?”**Background**

Archaeologists learn about life in the past by studying the *artifacts* people have discarded or forgotten long ago. Sometimes the *types* and quantities of artifacts found on site provide clues as to who might have owned the objects, what sort of occupation that person might have had and how old the objects are.

At the Stabler-Leadbeater Apothecary Shop (see note below), large quantities of medicine bottles, ointment jars, graduated glass cylinders and other items associated with an apothecary were recovered. Archaeologists and historians had excellent documentation (such as receipts, tax and census records) that the shop had existed at that location for 136 years. However, the large quantities of artifacts substantiated the research and added to our knowledge about the shop.

NOTE: See Section 2, An Archaeological Case Study—Excavations at the Stabler-Leadbeater Apothecary Shop, page 21 for a description of the site and its artifacts.

Many sites have only a minimal amount of written historic resource material such as insurance maps, census or tax records. The average person in the 18th and 19th century did not keep a detailed account of their daily routines. Archaeologists must rely on the artifacts to give them insight into the daily activities of the occupants.

Ceramic and glass artifacts are particularly helpful in dating sites. The method of manufacture, decoration and ware allow archaeologists to date a site using stylistic trends over time. These factors also allow archaeologists to determine the historic monetary values of some artifacts. As some artifacts cost more or were harder to obtain than others, their presence on a site can indicate socioeconomic status.

Archaeologists look for clues about people by examining and comparing the artifacts from a site. Questions they seek to answer could include:

- Was the site commercial, residential or both?
- Were there children on the site?
- What foods did the people eat?
- Where did the people come from (another state or country)?
- How old is the site?
- What was the socioeconomic status of the artifact's user?

It is also imperative for archaeologists to know exactly where the artifacts were found. Concentrations of specific types of artifacts in a particular area of the site could indicate that a certain activity took place there (e.g., bones, seeds and food preparation utensils could indicate a kitchen *assemblage*). Refer to Activity 7, “20th Century Artifact List” for examples.

Learning Objective

The student will

- state three reasons why artifacts provide archaeologists with important information about the occupants of a site. Examples might include artifacts' use in determining occupants' gender, age and socioeconomic status, as well as the type of activities (residential or commercial) they pursued on the site.

Teacher Preparation

1. *Look through magazines and newspapers to find pictures of objects that represent different occupations, or objects that would easily distinguish a child from an adult or a man from a woman.* Glue the pictures to note cards or cardboard. Provide three or four object cards for each person.

Supplies

- paper
- notecards
- pencils
- pictures of artifacts

Activities

1. *Discuss the Stabler-Leadbeater Apothecary Shop.* Discuss the following questions:

- Who worked there? (druggist)
- What did they do? (prepare and sell medicines)
- What tools they did they use? (medicine bottles, ointment jars, graduated cylinders, syringes, dental tools)
- How might you tell how old the objects are? (manufacturing technique, decoration, material)

2. *Use the chart on the next page with the artifact cards you prepared.* Discuss why the students wrote the answers that they did.

NOTE: "WHO AM I" is a social history game adapted from educational activities suggested in an NEH Planning Grant, "Artifacts," written for the Alexandria Archaeology Museum by Barbara Carson and Dennis O'Toole.

Name: _____

“WHO AM I?” WORKSHEET

Fill in the chart below for each artifact asking yourself what it might have been used for, who might have used it (and what their job was) and how old the artifact might be.

[illegible]

ACTIVITY 11—THE ARCHAEOLOGY OF WORDS

Background

Many words in our contemporary English vocabulary are derived from other languages. The dictionary is a valuable tool as it not only defines words and indicates their correct spelling but also includes their derivation, or roots.

“Language” changes over time in subtle, or sometimes drastic, ways. Many expressions that were common in 18th and 19th century America are no longer used today. Thus, their meaning is no longer understood. Today, new words (and concepts) are constantly being added to our vocabulary through the advances of technology (i.e. computer jargon) and interaction with different cultures.

The people who study languages, particularly literature, are called philologists or linguists. Their research often helps archaeologists and historians understand the writings of a culture and the development of its language. See the definitions below:

- *philology*, n. [Gr. *philologia*, love of literature; study of words; *philein*, to love, and *logos*, word].
- *linguist*, n. [L. *lingua*, the tongue], a person skilled in languages.
- *language*, n. [ME. *langage*; OFr. *langage*; L. *lingua*, a tongue, language, lit., the tongue].

The story of how the Rosetta Stone was deciphered is a good example of word archaeology. The Rosetta Stone was found by French soldiers during Napoleon’s invasion of Egypt in 1799. Three different inscriptions of a 196 B.C. decree by King Ptolemy V, were decipherable on the black basalt stone—two in ancient Egyptian (hieroglyphics and cursive) and the third in Greek.

Scholars of the day were familiar with the Greek writing and used it as a guide to translate the Egyptian sections of the stone. The French linguist Jean-Francois Champollion is credited with deciphering the Egyptian text in 1823 after fourteen years of intensive work.*

Learning Objective

The student will

- read about the origin of common words in the English language in order to gain some understanding of language development.

Supplies

- several unabridged dictionaries (e.g., *Webster's*, *the Oxford English Dictionary*) that show the derivations of common words
- “The Archaeology of Words” Teacher Answer Sheet
- paper and pencils

*SOURCE: “The Practical Archaeologist,” by Jane McIntosh, in *Facts on File Publications*, New York, 1986.

Activities

1. *Discuss how English was influenced by many different languages throughout history.* Describe the influence of Latin and Greek as well as the languages of the early invaders of England (e.g., the Saxons and the Normans), which also helped shape modern English.

2. *Discuss how conversational English has been influenced by modern languages such as Spanish, French and Italian.* You may want to include the effect of other modern languages as well (e.g., African, Asian, or Middle Eastern).

3. *List English words or names derived from Native American language (e.g., "Potomac").*

NOTE: Webster's New Universal Dictionary of the English Language describes the origin and influence of other languages on modern English. See the illustration entitled "The Indo-European Family of Languages."

4. *Ask students to look up the word "archaeology" in their dictionaries.* Write the word on the board and discuss its origin. Students' dictionaries may have slightly different definitions, so try to discuss the word and its origin in general terms.

5. *Review the idea of language derivation with the class and list the most common languages of origin on the board.* The root of a word is often designated by italics and an abbreviation indicating the language of origin (e.g., "L." = Latin). Most dictionaries list such abbreviations.

NOTE: Robert MacNeil, of the MacNeil/Lehrer News Hour, coauthored The Story of English, which was also a PBS series of the same title. The book is available at many bookstores and is a good reference or extra credit assignment for older students.

6. *Assign students to look up words and find their origins.* You may use the words listed on "The Archaeology of Words" Teacher Answer Sheet or any others that you think are appropriate.

NOTE: This activity can be done as a homework assignment or a classroom activity. Just be sure that there are enough dictionaries to go around (for individuals or groups) if the activity is done in class.

7. *Discuss the results of the above assignment.* Ask students to give you ideas about how we have come to interpret modern English according to the original meanings of the "old" (i.e., original) words.

NOTE: The above activities are based upon an idea presented by Dr. John Cotter, University of Pennsylvania, during the session "Archaeology and the Public I: Education and Perception," at the Joint Archaeological Congress, Jan. 7, 1989, Baltimore, Maryland.

“ARCHAEOLOGY OF WORDS”

TEACHER DEFINITION LIST

ARCHAEOLOGY - n. [G. *archaeo*, *archaios*- ancient; arche - the beginning; archein - to be first; logia, from legein - to speak.]

APOTHECARY - n, [ME. *apothecarie*; from L. *apotheca*, a repository, from Gr. *apothēke*, a place where a thing is stored up; apo, away, and tithenai, to put.]

ARTIFACT - n. [L. *art* (artis), art, and *factus* pp of *facere* -to make.]

BALK (BAULK) - n [ME. balk, from AS. *balka* - a ridge, G. *balke* - a beam, bar.]

CENSUS - n. [L. *census* - registration of citizens, from *censere*, to assess, tax.]

CERAMICS - n. [Fr. *ceramique*, “of pottery,” from Greek *Keramikos*, from *Keramos*, potter's clay, earthenware.]

DATUM - n [L. *datum* - a gift, present, from neut. of *datus* pp of dare - to give.]

EXCAVATE - n.[L. *excavatus*, pp. of *excavare*, to hollow out; ex, out, and *cavare*, to make hollow, from *cavus*, hollow]

FEATURE - n. [ME. *feture*, *fetour*; OFr. *faiture*, from L. *factura*, a making, formation, from *facere*, to make]

PROVENIENCE - n. [L. *provenire*, to come forth.]

SITE - n. [L. *situs*, position, situation, seat, from the L. *sedere*, to sit.]

STRATIGRAPHY (OR STRATIGRAPHIC LAYERS) - n.

[L. *stratum* - a covering from *stratus* pp of *sternere* - to spread; stretch out , extend]

[L. *stratus* - a strewing, covering pp of *sternere* - to spread, stretch out , extend]

[L. *graphy*, *graphia*, Gr. *graphia* - writing or drawing, from *graphein* - to represent by means of lines; to write, draw]

TROWEL - n. [O Fr. *truelle*, LL *truella* - a variant of L *trulla* - a small ladel, scoop, trowel.]

SOURCE: the above language-origin definitions were extracted from *Webster's New World Dictionary of the English Language—Unabridged*, Webster's International Press, New York, 1976.

ACTIVITY 12—ARCHAEOLOGY QUIZ**Background**

There are a lot of common misconceptions about archaeology. It is hoped that the information in Section 2, *Archaeologists At Work*, page 5 and the activities contained in this section will help dispel some of those incorrect ideas. A brief quiz on archaeology and the general concepts behind the step-by step process of archaeological research would be appropriate at this point to check for levels of understanding.

Learning Objective

The student will

- answer ten questions regarding archaeology and the step-by-step process of archaeological research.

Supplies

- “Archaeology Quiz” worksheets (see next page)
- pencils

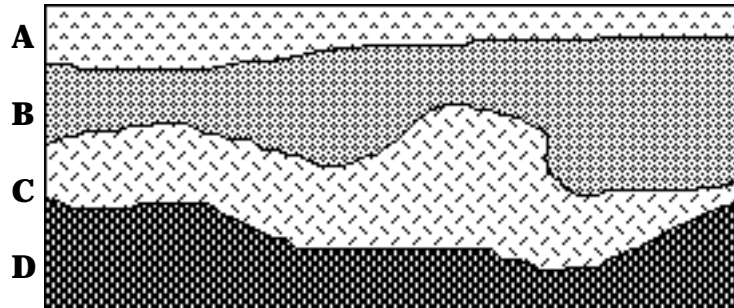
Activity

1. *Distribute the “Archaeology Quiz” worksheets (see next page).* You may have students complete the quiz as a form of assessment, or you may use the questions as key topics for more study and research. You could also assign students to complete brief written assignments on one or several of the quiz topics.

Name: _____

ARCHAEOLOGY QUIZ

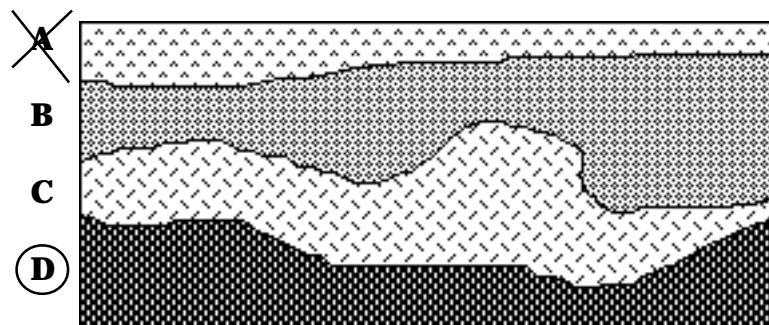
1. What is archaeology?
2. How does an archaeologist find out about the past?
3. What is an artifact?
4. Before archaeologists begin to excavate, what kinds of records do they consult?
5. Why do archaeologists survey a site before digging?
6. Circle the letter of the oldest soil layer. Put an X on the letter of the newest layer.



7. What types of tools do archaeologists use?
8. If you are playing in a field and discover artifacts, what should you do?
9. If you found a ceramic cup, oyster shells, pork bones and a clay pipe stem at a site, what type of activity would you think went on there?
10. How do archaeologists tell how old a site is?

ARCHAEOLOGY QUIZ—TEACHER ANSWER SHEET

1. What is archaeology? *The scientific study of the human past through excavation and related research.*
2. How does an archaeologist find out about the past? *Archaeologists follow a step-by-step process to study the material remains of past human life and activity. Research techniques may include the study of primary sources, excavation, dating of artifacts through chemical analyses and artifact analysis.*
3. What is an artifact? *An object made or modified by people.*
4. Before archaeologists begin to excavate, what kinds of records do they consult? *Primary sources, secondary sources and oral histories.*
5. Why do archaeologists survey a site before digging? *Since archaeology involves the destruction of the site in order to understand its history, adequate record keeping is a justification for the excavation. The grid that archaeologists set up allows them to maintain accurate records and maps of where artifacts and features are found on the site, so that historical interpretation is possible.*
6. Circle the letter of the oldest soil layer. Put an X on the letter of the newest layer.



7. What types of tools do archaeologists use? *Backhoe, shovel, trowel, dental pick, toothbrush, whisk broom, dust pan, bucket, screen, string, line level, plumb bob and transit.*
8. If you are playing in a field and discover artifacts, what should you do? *Tell a local museum, the National Park Service or a state authority. Don't dig for artifacts!*
9. If you found a ceramic cup, oyster shells, pork bones and a clay pipe stem at a site, what type of activity do you think went on there? *Eating, smoking - maybe it was a tavern site or could have been a feature related to a kitchen.*
10. How do archaeologists tell how old a site is? *They use absolute or relative dating techniques such as C-14, tree ring or potassium argon dating and seriation.*

ARCHAEOLOGY ISN'T JUST A TOPIC FOR SOCIAL STUDIES CLASSROOMS

Archaeological research combines the concepts and technologies of many other fields of study. By nature, archaeological research is truly multi-disciplinary. Research skills such as those used by archivists allow for the historic documentation of finds. The brief review below reveals that archaeology is tied to many other disciplines. In the same way, archaeology can be successfully integrated into classroom studies in many different subjects. Below is a short list of ideas to stimulate thinking on other ways to use archaeology in the classroom, any classroom!

- **English** - Archaeologists must write up their findings and publish them, requiring proper grammar and good writing skills.
 1. Write sentences using the glossary terms.
 2. Base a creative writing assignment on an artifact assemblage from the past or future.
- **Art** - Artifacts, excavation units and features are all sketched and drawn for records and for publications.
 1. Photocopy the outlines of Alexandria pots from Section 3, The Archaeology Adventure Lessons, The Potter's Art, pages 37 - 46. Have students decorate the pots, then glue them to poster board or cardboard. Cut them into medium size, irregularly shaped pieces. Have the students crossmend the pots!
- **Mathematics & Geography** - Geography and mathematics play key roles in the *survey* and mapping of a *site* prior to its *excavation*, and also during the dig as *profile drawings*, mapping and the recording of measurements necessitate a firm grasp of geographic and mathematical principles.
 1. Have students practice setting up squares into grids and then name the coordinates. Use blackboard drawings or blocks.
 2. Students can practice measuring using the metric system. See Activity 8, page 116. Also, American historical archaeologists measure in tenths of feet. Using a ruler with this measure, have students compare/contrast the measured sizes of objects in the classroom using ratios or fractions.
- **Science** - Geologists study soil stratigraphy, the key concept in archaeological excavation. Once the excavated materials go to the laboratory, many scienceific activities are required to correctly process and curate the material. Knowledge of biology (including botany, zoology, nutrition, virology, bacteriology, etc.) enables archaeologists, with help from specialists, to further interpret the events that took place at a site. The curation and conservation of objects and artifacts relies on principles from chemistry.
 1. Assign research papers on dating techniques and chemical analyses used in archaeology.
 2. Create a box with different soil layers (see Activity 5, "Mock Excavations," page 107 for instruction). Students can practice distinguishing soil color and texture.

- **Government** - Governmental issues relate to archaeology as described in Appendix VI, Archaeology and the Law. Historic preservation legislation has been passed since 1906.
1. Acquire copies of legislation listed in Appendix VI, Archaeology and the Law, page 193. Evaluate older preservation laws. How are more recent laws different?
 2. Form a student “Congress,” and pass needed legislation for historic preservation in your school or town.

— SECTION 5 —

**ALEXANDRIA CITY PUBLIC SCHOOLS
AND ARCHAEOLOGY**

Alexandria has a rich heritage and is fortunate to have many historic buildings within the City, as well as a wealth of *primary sources* preserved in local libraries and at City Hall. Archaeology has been conducted in Alexandria since the 1960s. This research has shed light on the events and people of the City's past, so that residents today can better understand their community. The Alexandria City Public Schools include *archaeology* in the Social Studies curriculum. Students learn that the study of material culture contributes to our knowledge of both contemporary and ancient societies.

Social Studies Educational Objectives Related to Archaeology:

Three essential learnings are targeted in the study of history in the Alexandria City Public Schools' Social Studies Curriculum:

1. Students will acquire historical knowledge and understanding of major events and trends in Virginia, United States and world history;
2. Students will demonstrate an understanding of history as a series of chronological events that influences present and future societies;
3. Students will gather, examine, interpret, and analyze historical information.

The information and activities recommended in this Section reinforce the following objectives, which correspond to the learnings, indicators and objectives established for the schools.

The student will

- *define spatial relationships* between artifacts and features. Mapping and geographic skills are a key to interpreting the past.
- *define the concept of passage of time* using time lines and objects. Manufacture dates provide clues as to when a site was occupied.
- *apply reference skills* by using historic documents, maps and related resources.

- *develop creative thinking, problem solving, analysis and evaluation skills.* The process of archaeological research is a means of discovery and contributes to our understanding of the past.
- *recognize that diverse ethnic, religious and social groups have made contributions* to the richness of the community, nation and the world.
- *appreciate and have pride in the City.* Alexandrians value their historic and prehistoric past.
- *develop positive, responsible citizenship characteristics and ethical standards.* Preservation and proper treatment of cultural and archaeological resources is important.
- *define the role of government* (local, state, national and international) in protecting, preserving and interpreting cultural, natural and archaeological resources.
- *demonstrate social skills and cooperation among students.* Archaeology is a group investigative process.
- *explain basic principles and practice* of archaeological research.
- *define vocabulary* and terms related to archaeology.
- *identify programs, exhibits, materials and resources* related to archaeology available to teachers in the Washington Metro area, the region, nationally and internationally.
- *formulate* ways to further investigate archaeology.

The supplemental information in this section of *Archaeologists at Work: A Teacher's Guide to Classroom Archaeology* expands upon the basic information presented in the third grade textbook, *Alexandria Is....* This text, now in its fourth edition, introduces children to the community in which they live. Alexandria Archaeology has been part of the team which updates *Alexandria Is...* since its first edition was published in 1979. In addition to the supplemental readings and activities recommended in this section, visits to the many Alexandria museums and historic sites will greatly enhance a study of history and archaeology. For information on scheduling visits, see Section 1, The Alexandria Archaeology Museum, Planning for a Museum Visit and Additional Alexandria Museums and Historic Sites, page 1-3.

ALEXANDRIA IS...

CHAPTER 8: ALEXANDRIA IS... HISTORIC PLACES,

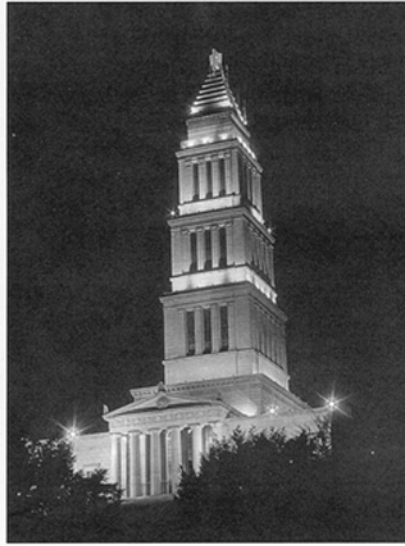
Alexandria City Public Schools, Fourth Edition, 1992, pages 75 through 79.

Chapter 8

ALEXANDRIA IS... HISTORIC PLACES

A historic place such as Alexandria is fortunate to have many of its early buildings still standing. Most of the homes and buildings of long ago have been renovated. Some buildings are important because of the important people who came there. Some buildings are important because of the role they played in Alexandria.

What can we learn about our city when we learn about our historic places?



George Washington National Masonic Memorial (1932)
The Memorial is a shrine to George Washington and contains his family bible and a clock which stopped at the time of his death. It was built by the Masonic Fraternity of the United States on a site known as Shooters Hill.



The Apothecary Shop (1792)
From its beginning until 1933, the shop was a pharmacy or drug store. It is now a museum and displays some of the original items that could be found in a drug store during the 1800's.

Purpose of Chapter 8 from the Teacher's Edition of *Alexandria Is...*

1. To focus upon Alexandria's historical buildings and places.
2. To help students realize that all the buildings were new at one time and that renovation has been necessary.
3. To note changes occur in people and in things.
4. To use maps and newspaper articles to retrieve information.
5. To note changes have taken place in employment patterns.
6. To discuss the concept of a time capsule and why people would create one.
7. To focus attention on the importance of the Alexandria City archaeologists and learning about some of the objects from the past.

-Chapter 8- ALEXANDRIA IS ... HISTORIC PLACES—SUPPLEMENTAL INFORMATION

The Alexandria City Archaeologists and those in other communities try to learn as much as they can about life in the past. Although archaeologists look for clues about the past in the soil, changes can also be seen above ground through architecture. We are fortunate that many of Alexandria's early 18th and 19th century buildings have been preserved. *Preservation* and particularly historic preservation and *historical archaeology* are other ideas that can be discussed along with renovation.

Vocabulary List

- *Datum*—A permanent point used as a standard from which to measure other points at a site both horizontally and vertically to develop a grid; usually a point marked on a United States Geological Survey map.
- *Grid system*—A network of strings stretching over the ground surface that intersect each other at right angles. It is used to establish a horizontal control for mapping the site.
- *Historical Archaeology*—The archaeological study of places and time periods for which there is written history.
- *Preservation*—Maintenance and protection of buildings or archaeological sites.
- *Renovate*—Restore a building to good condition.
- *Transit*—An optical instrument used to sight distant points to determine angles and elevations for establishing a grid and mapping the site.

Activity 1—"Reading a Map of Alexandria"

Understanding geographical coordinates is critical in archaeology. Sites are mapped using a *transit*, *datum point*, *site grid* and the cardinal directions. With these, archaeologists can identify the exact location of a site and the artifacts found there. A good map allows archaeologists to reconstruct the site's history more accurately.

1. *Have students identify the cardinal directions (North, South, East and West) in relation to the classroom.*
2. *Ask students why archaeologists measure and record exact locations in their examination of a site.*
3. *Do the worksheet included—"Reading a Map of Alexandria."*

Activity 2—Classroom Activities—See Section 4

Choose activities from Section 4: Classroom Activities.

1. Activity 1—Learn About Preservation and Archaeology, page 92
2. Activity 8—Artifact Time Line, page 116
3. Activity 9—Measuring Time, page 118

Activity 3—“Before and After”

Gadsby's Tavern Museum, Christ Church and the Stabler-Leadbeater Apothecary Shop are examples of preserved 18th century structures.

Although these buildings have retained their historic character, what renovations have been done to make them adaptable to 20th century use? Electricity, plumbing, central heating and air-conditioning are examples. Indoor plumbing [water pipes and toilets] eliminate the need for wells and privies.

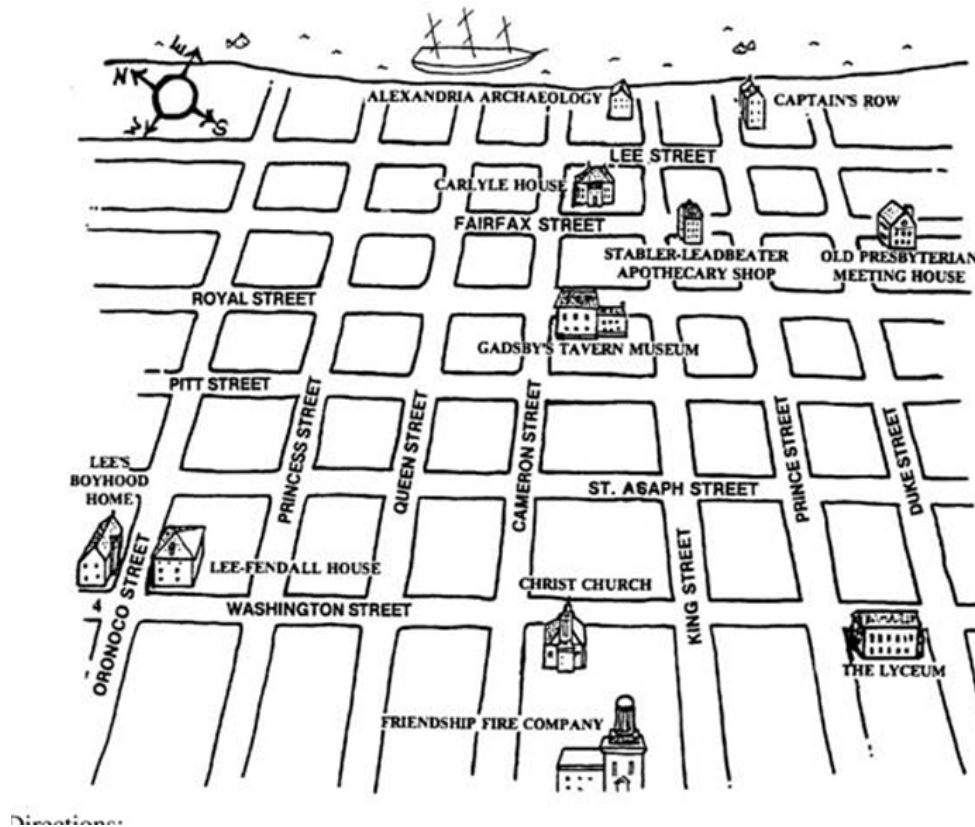
1. *Have your students look at the pictures of different historic places in the textbook Alexandria Is....* Next, show them comparative photographs and sketches of these historic buildings so that a “before and after” effect is achieved. Refer to the list below, which includes the page numbers from the book: *A Seaport Saga, Portrait of Old Alexandria, Virginia*, by William Francis Smith and T. Michael Miller, Norfolk, Virginia: The Donning Company, 1989.

"Before and After" - Historic Building Photographs and Sketches:

BUILDING	<i>Alexandria Is...</i>	<i>Seaport Saga...</i>
Masonic Memorial	p. 75 - 1932	p. 151 - 1930
Apothecary Shop	p. 75 - Today	p. 33 - c. 1852
Gadsby's Tavern	p. 76 - sketch	p. 40 - 1863
City Hall at Market Square	p. 76 - Today	p. 59c - 1864
Ramsey House	p. 77 - Today	p. 128 - 1920
Friendship Fire House	p. 77 - Today	p. 111b - 1900
Union Station	p. 78 - Today	p. 150 - 1918

2. *Ask students what old or historic buildings they can identify in their own neighborhood.* If you don't live in Alexandria, use your own city or town.
3. *Read Section 2: Archaeologists At Work: An Archaeological Case Study: Excavations at the Stabler-Leadbeater Apothecary Shop, page 21 or read Appendix VII: Selected Articles, “Community Archaeology in Alexandria, Virginia,” page 221 for a more intensive look at the changes that a building may undergo over time.*

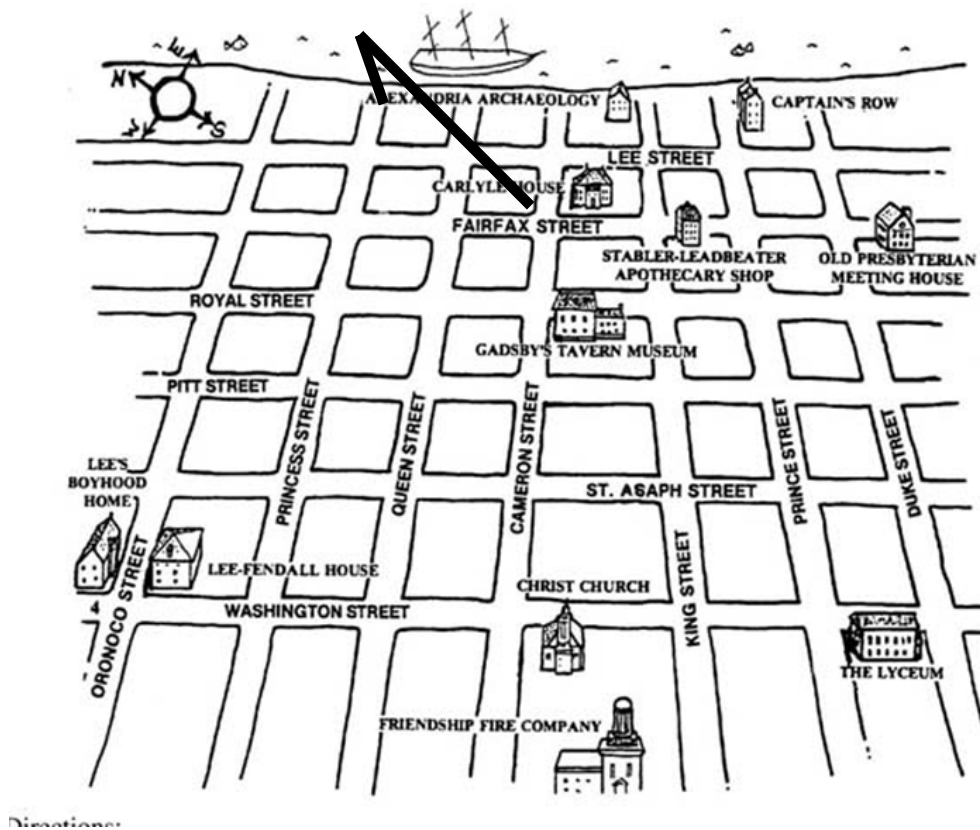
NAME: _____

READING A MAP OF ALEXANDRIA

Directions—Answer the questions about historic buildings in Alexandria.

1. In which direction is the Old Presbyterian Meeting House from Alexandria Archaeology?
2. In which direction is The Lyceum from Friendship Fire Company?
3. Washington, D.C. is to the north of the Carlyle House. Draw an arrow pointing toward our nation's capitol.
4. In which direction is the Waterfront from Lee's Boyhood Home?
5. If you worked as a fireman at the Friendship Fire Company and there was a fire in the kitchen at Gadsby's Tavern, which direction would you travel to help put out the fire?

READING A MAP OF ALEXANDRIA TEACHER'S ANSWER SHEET



Directions—Answer the questions about historic buildings in Alexandria.

1. In which direction is the Old Presbyterian Meeting House from Alexandria Archaeology?

NORTHEAST

2. In which direction is The Lyceum from Friendship Fire Company?

SOUTHEAST

3. Washington, D.C. is to the north of the Carlyle House. Draw an arrow pointing toward our nation's capitol.

4. In which direction is the Waterfront from Lee's Boyhood Home?

EAST

5. If you worked as a fireman at the Friendship Fire Company and there was a fire in the kitchen at Gadsby's Tavern, which direction would you travel to help put out the fire?

EAST

ALEXANDRIA IS...

CHAPTER 9: ALEXANDRIA IS... PAST, PRESENT AND FUTURE, LOST IN HISTORY SINCE 1949: TIME CAPSULE LOST, THEN FOUND,
 Alexandria City Public Schools, Fourth Edition, 1992, pages 88 through 89.

LOST IN HISTORY SINCE 1949

Time Capsule Lost, Then Found

by Bill Cormier, Journal Staff Writer*

Remember the time capsule that Alexandria's city fathers embedded in the base of a flagpole in 1949? You probably don't and neither do most Alexandrians. That's why befuddled city officials have been scrambling for the past couple of months to answer a question as perplexing as that of finding the lost continent of Atlantis: Where was it hidden? Ah, but the mystery has been solved. Sometime after the hunt for the capsule began, city archaeologist Pamela Cressey, who is always delving into some historical enigma or another, was tipped off to its location.

In 1949 on a brisk September day, city officials conducted a ceremony before the Quantico-Virginia Polytechnic Institute football game at the stadium behind what is now George Washington Junior High School, at which they embedded a long metal cylinder in the concrete base of a flagpole.

The capsule, constructed specially by the old Torpedo Factory, was between two and three feet in length and six to eight inches in diameter.

It contained a trove of historical loot: 1949 rosters of civic and fraternal clubs, maps of the city from 1749 and 1846, a telephone book, a city directory and issues of newspapers published that week. Also preserved were aerial photos of Alexandria, pictures of area businesses, booklets and leaflets from the George Washington Masonic National Memorial temple, souvenirs from the old Naval Ordnance plant, and a copy of *The Virginia Reader* by F. C. Rosenberg.

All this preserved for time immemorial, well errr..., for as long as anyone cared to remember. Unfortunately, the plaque marking the location of the time capsule had disappeared and even the most reliable eyewitnesses are as apt to forget an event in

1949 as they might forget last night's TV dinner. "One hundred years is a long time and things can easily be forgotten," said Charles Everly, the city's director of building and mechanical inspection.

"In less than 40 years people's recollections are already fuzzy," he added. Everly was a teenager then and barely recalled the event. But his cousin, Julian Everly, then a student at the old George Washington High School remembered. "If you go out there to the stadium and go up by that scoreboard, up by that flagpole, you'll find it.

"I remember that. They put a whole bunch of things in there and put it down in this cement cylinder in this time capsule."

Today the time capsule remains tucked away, marking time until the year 2049, when authorities will break open its seal and discover a world strange and distant from their own. And as Charles Everly, 52, said, "Digging it up will be quite an event. I wish I could be there but I don't suspect I'll be around."



*(Printed in *The Alexandria Journal*, August 5, 1983)

Objectives from Teacher's Edition of Alexandria Is...

1. To use a newspaper article to gather information about the lost and found time capsule.
2. To discuss the concept of a time capsule and why people would create one.
3. To have students become aware of life as it is today.

—Chapter 9—

Alexandria Is... Past, Present and Future—Lost In History Since 1949: Time Capsule Lost, Then Found—Supplemental Information

Alexandria's archaeologists discovered numerous abandoned wells and *privies* during the urban renewal of King Street during the 1960s and 1970s. Wells and privies are usually brick or wood-lined shafts that allow ground water to flow in or seep out. For many years these deep shafts were used as trash dumps, once they outlived their usefulness. The archaeologists realized they offered important information on the daily lives of Alexandrians from long ago.

Abandoned wells and privies like those found on King Street are known as **features**. They often contain broken *ceramic* table-wares like earthenware and stoneware used for food preparation and storage; glassware like drinking glasses, wine and medicine bottles; bits of clothing, buttons and pins; bones and seeds thrown away after a meal; toys; bone toothbrushes and other personal items. For more information see Section 2: Archaeologists At Work.

Abandoned wells, *privies* and trash pits are like time capsules when they contain objects that provide information about how people lived in the past. But the two actually are very different. The objects thrown into wells and privies were trash and never meant to be retrieved. Time capsules are buried on purpose, with the intent of uncovering them many years later.

The Alexandria time capsule (pages 86 and 87 of *Alexandria Is . . .*) was buried in 1949. The objects chosen were intended to show future residents what Alexandria was like during that time. It included a phone book, newspapers, club rosters and maps. They were sealed in an airtight, waterproof capsule to ensure that they would remain in good condition until 2049, when it was to be retrieved.

Vocabulary List

Artifact—An object made or modified by people.

Feature—A distinct, man-made physical aspect of a site which is treated as a separate entity, for example a trash pit or a well. Each feature is recorded or analyzed separately (i.e. not grouping the artifacts with those found in surrounding soil layers).

Preservation—Maintenance and protection of a building or an archaeological site.

Privy—The latrine or outhouse.

Activity 1—Time Capsules and Privies

Even though the function of the time capsule and historic wells and privies are different, the objects retrieved from both containers are useful in discussing the concept of change over time. Look at the artifacts on page 88 of *Alexandria Is...*

1. *Make a chart on the blackboard comparing and contrasting time capsules with wells or privies. Ask students how the artifacts in the capsule differ from those found in a well or privy?*
2. *Ask students what the objects in the time capsule can tell archaeologists about Alexandria in 1949?*

Activity 2—Time Lines

The time line exercise on page 65 of *Alexandria Is...* is another way to look at the passage of time. During the class discussion of the Time Capsule:

1. *Ask the students to make their own archaeological time line. They should list objects which represent the span of their life - toys, books, clothing, food.*
2. *Ask students to make a list of changes they see in the things they played with, wore and ate when they were one, three, five and eight years old.*

Activity 3—Classroom Activities—See Section 4

Choose activities from Section 4, Classroom Activities.

Activity 4—Trash Can Archaeology, page 103

Activity 7—20th Century Artifact List, page 113

Activity 8—Artifact Time Line, page 116

ALEXANDRIA IS...

CHAPTER 9: PAST, PRESENT AND FUTURE, LEARNING ABOUT ALEXANDRIA'S HISTORY FROM OBJECTS

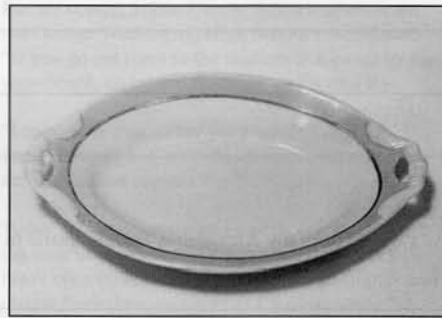
Alexandria City Public Schools, Fourth Edition, 1992, pages 88 and 89.

LEARNING ABOUT ALEXANDRIA'S HISTORY FROM OBJECTS

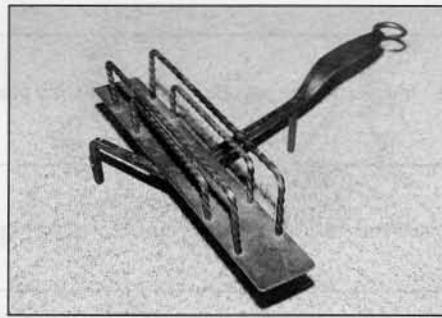
We can learn about Alexandria's history from objects people used, just as we can learn history from reading books. The things people leave behind tell us a lot about the way they lived and what was important to them. The things that are left behind and found later are called artifacts. Looking at an artifact, though, is different than reading a book. Careful study of artifacts could tell how wealthy a family was, what kinds of food they ate, perhaps how they cooked their food, and possibly the occupation of the head of the family.

The artifacts below were dug up from a site in Alexandria built in 1801.

NAME OF OBJECT	WHAT IS IT MADE OF?	HOW WAS IT USED?



NAME OF OBJECT	WHAT IS IT MADE OF?	HOW WAS IT USED?



Objectives from Teacher's Edition of Alexandria Is...

1. To learn about Alexandria's history by studying objects found by archaeologists.
2. To acquire an appreciation for protecting archaeological sites so that people can enjoy Alexandria's heritage.

—Chapter 9—

Alexandria Is... Past, Present and Future

Learning About Alexandria's History From Objects— Supplemental Information

Archaeologists study *artifacts* to understand what life was like long ago. The questions posed in this lesson are similar to those that archaeologists ask to learn about history from objects.

Archaeologists can learn a lot by studying the collection or *assemblage* of objects, or artifacts that have been excavated from the site. Although one cannot actually “read” the artifacts, an archaeological site is comparable to a book. The artifacts, bones and seeds deposited within each *stratigraphic layer* or *feature*, are like the pages in an exciting novel. When individual artifacts are removed from the site in an unscientific manner, it is as though someone has cut words, sentences or paragraphs from the pages. Cutting up a book, like removing individual artifacts from a site, obscures or destroys the information for both the reader and the archaeologist.

In order to use the artifacts to learn about a site, it is important to know exactly where each artifact was found. Archaeologists record information about the stratigraphic level or feature in which artifacts were found. The location and depth, or *provenience*, is recorded. Older artifacts are generally found in lower levels of the site, with newer levels of soil and artifacts on top. For more detailed information about how archaeologists discover, excavate and study sites see Section 2, Archaeologists At Work.

Locally produced salt-glazed stoneware pottery is often found on archaeological sites in Alexandria. Archaeologists examined newspaper advertisements, tax rolls, census records, city maps and insurance records to learn about Alexandria merchants and craftsmen who produced pottery during the late 18th and 19th centuries.

Hugh C. Smith is one of these potters. He was a well known merchant in 19th century Alexandria. He owned Alexandria's most successful pottery manufactory site, located on Wilkes and Washington Streets. Shuman's Bakery and The Tannery House condominiums are now on the site of the Wilkes Street Pottery.

Salt-glazed stoneware vessels were very useful items in Alexandria kitchens during the 18th and 19th centuries. People of all social and economic groups used this durable, utilitarian pottery for food storage and preparation. It is comparable to our Tupperware, Corningware and other modern food storage containers. The salt-glaze provided a leak proof container that was safe for acidic foods such as pickles or tomatoes. It was easily cleaned and did not retain odors. The thick walls of the stoneware vessels kept foods cool when stored in root cellars and ice wells cool. Milk pans, butter jars, jugs and crocks were made in a variety of standard sizes and marked according to the approximate volume. For example, a ‘1’ impressed on the

vessel signified one gallon. Salt-glazed stoneware mugs, spittoons and chamber pots were also produced.

The Alexandria Archaeology Museum has a collection of stoneware and earthenware vessels that were made at the Wilkes Street Pottery, as well as other pottery manufacturing sites in the City. School groups visiting Alexandria Archaeology may schedule an Archaeology Adventure Lesson which examines the salt-glazed stoneware. See Section 3, The Archaeology Adventure Lessons, The Potter's Art, page 37.

Vocabulary List

Artifact—An object made or modified by people.

Feature—A distinct, man-made physical aspect of a site which is treated as a separate entity, for example a trash pit or a well. Each feature is recorded or analyzed separately (i.e. not grouping the artifacts with those found in surrounding soil layers).

Provenience—Specific location where an artifact or feature is found in the ground.

Sherd—A fragment of pottery or glass.

Stratigraphic layer—Soil level in an archaeological excavation.

Vessel—A ceramic or glass object, such as a dish or teacup, made up of one or more sherds.

Activity 1—Artifact Discussion

The artifacts on page 88 of *Alexandria Is...* are in excellent condition. They are pictured as whole objects so their shape and function can be easily determined.

1. *Ask students what the objects are and for what activities they might have been used.*
2. *Ask students the following questions*
 - * *What do you think these objects looked like when the archaeologists removed them from the ground?* The objects were probably broken. Ceramic sherds are crossmended so that the whole vessel can be studied.
 - * *Would the archaeologists be able to recognize what the artifacts were made of and how they were used?* Archaeologists study artifacts to better understand history. The type, ware and method of manufacture are often discernible on even the smallest sherds recovered during an excavation.
 - * *Do you think that any or all of them would be whole?* The plate would probably be chipped or broken. It might be slightly stained by the soil or by nearby rusting metal. The toaster would rust, but the shape could be recognized.

Activity 2—Ask The Archaeologists

Several discussion topics are suggested at the bottom of page 88 of the Teacher's Edition. The highlighted questions excerpted from Section 6: Ask the Archaeologists provide additional information to augment your discussion.

SECTION 6—Ask the Archaeologists

The page numbers and question numbers are included in parentheses below.

- * How do artifacts get buried in the ground? (question #2, page 145)
- * Why did people throw trash into their wells? (question #9, page 147)
- How do you know how old an artifact is? (question #29, page 151)
- * What factors influence the degree of preservation of the various artifacts? (question #30, page 151)
- * What types of objects might be found in Alexandria and from what time periods? (question #34, page 152)

Activity 3— Classroom Activities—See Section 4

Choose activities from Section 4, Classroom Activities.

Activity 4—Trash Can Archaeology, page 103

Activity 5—"Message In a Bottle," page 107

Activity 6—Artifact Assemblage Analysis, page 110

Activity 7—20th Century Artifact List, page 113

—SECTION 6—

ASK THE ARCHAEOLOGISTS

“How do *artifacts* get buried in the ground?” “When did *archaeology* begin in Alexandria?” Such questions are commonly asked by students, museum visitors and during site tours. The staff of Alexandria Archaeology has put forth its best effort to answer the most frequently asked questions. Please feel free to pose any question that you or your students may have as you work with the Guide. We will do our best to find an answer.

Note: You can e-mail questions to alexarch@gwis2.circ.gwu.edu. Be sure to type “Ask the Archaeologists in Alexandria” in the subject area of the message.

Questions and Answers

1. *Why do archaeologists find things in the ground?* Objects, or *artifacts*, are found in the ground because people did not want them or need them anymore, so they were thrown away. Also, items may have been lost or misplaced by those who owned them. Underground structures such as building foundations, abandoned *privies* or wells were often covered over and forgotten.

2. *How are artifacts buried in the ground?* *Artifacts* are buried in the ground through natural processes. Dirt and leaves accumulate over the objects and cover them. Over time, the soil builds up in layers. Archaeologists discover artifacts within layers of soil called *strata*. The study of strata is called *stratigraphy*. The study of artifacts within the stratigraphic layers of the *site* help the archaeologist understand what happened on the *site* and when.

Objects that were thrown away are often discovered in old trash pits or abandoned wells/*privies* deep below the ground. Layers of dirt or rubble were sometimes used to cover the trash. Archaeologists find large quantities of artifacts in abandoned well/*privies*, trash pits or *middens* in backyards, basements of historic houses or, as in the case of the Alexandria Canal, in the abandoned canal locks. It makes sense that someone would dispose of trash in a deep hole, since there was no city or county trash disposal at this time.

3. *How do archaeologists know where to dig?* The City Archaeologists in Alexandria locate sites by reviewing site plans, building permits, zoning changes and subdivision applications submitted to the City. Staff members consult historic documents to find out what structures were on a given property and who lived there. It is then determined whether the property needs further archival study and archaeological investigation. If a significant archaeological site will be destroyed by a large development project, it must be *excavated* to preserve the information.

Sites are also discovered by homeowners and building contractors who uncover *artifacts*, foundations of old buildings and abandoned *wells or privies* on their property. The City Archaeologists examine and record these artifacts and underground structures. Some sites are excavated for specific research purposes. This helps archaeologists gain knowledge about aspects about the past of which little is known. See Section 2: "Archaeologists at Work," "How Archaeological Sites Are Discovered and Selected," page 7, Appendix VII: Selected Articles, "Community Archaeology In Alexandria, Virginia," "Conserve Neighborhoods," page 221 and Appendix VI: Archaeology and the Law, page 193.

4. *What tools do archaeologists use?* Archaeologists use a variety of tools to do their job. The one most commonly used is the mason's pointing trowel. The trowel (the same one a bricklayer uses) is a versatile tool. Using the trowel blade's side (not the point) archaeologists scrape away the dirt to see *artifacts* and different soil layers. Heavy machinery such as a backhoe or small bulldozer are used when deep deposits of fill or pavement cover the site. A skilled backhoe operator can remove the fill, or overburden, and not damage the site. Archaeologists also use hand-tools such as shovels, picks and posthole diggers as well as screens, buckets, rulers, cameras and surveying instruments.

5. *Do archaeologists use metal detectors to find artifacts?* Archaeologists use magnetometers, side scanning sonar, ground penetrating radar and metal detectors to survey a *site*. They use these tools to map sites, not to dig small holes on the "targets" of individual objects. These tools help archaeologists find areas within the site that contain clusters of objects.

The public is prohibited from using metal detectors on Federal land (National Parks and Forests), many state, county and municipal lands, including the City of Alexandria. Violators risk fines or imprisonment. See Appendix VI: Archaeology and the Law, page 193 and Appendix VII: Selected Articles, "The Green Mole," page 221.

6. *How do archaeologists prepare to dig a site? What must they do first?* Archaeologists dig a *site* in a systematic way in order to collect useful data. Digging big holes at random destroys the site and any important information concealed in the soil. The color, texture and location of soil layers contribute to understanding the past.

The first step is to establish a system for detailed record keeping and mapping. This is done by establishing a *grid*. Archaeologists stake the grid out over the site along the axis of the cardinal points of the compass (north, south, east, west). *Excavation*

squares are then measured from a central reference point called the *datum*. Each square is given a set of coordinates based on the direction and its distance from the datum. Archaeologists dig each layer of soil separately going from the top downward, following the contour of each *stratigraphic layer*. The *provenience*, or specific location of an *artifact* (Grid #) and vertically (Layer). Archaeologists use this information to reconstruct the site's history.

Excavation situations such as abandoned *wells* or *privies*, make it difficult to use a grid or follow the *stratigraphy*. These brick-lined shafts contain large deposits of artifacts and *organic materials*. The artifacts are jumbled, rather than in layers. The wells are dug in arbitrary levels, usually in increments of 10 to 20 centimeters, or .5 or 1 foot. See Section 2: Archaeologists at Work, page 5.

7. *How do archaeologists find abandoned wells/privies?* Often the ground above the well slumps and reveals a circular depression three to six feet in diameter. The fill, and sometimes the brick and mortar, will settle over time or even cave in. Although *artifacts* are frequently found in abandoned wells or *privies*, it is important to note that below ground structures are dangerous. Never attempt to dig out a well without the assistance of a professional archaeologist and safety equipment.

8. *How deep are the abandoned wells?* These shafts range in depth from six to forty feet. *Wells* were usually dug deep to tap the water table which insured a water supply even in the dry summer months. Some wells were left empty and capped over after their use had ended. Others were filled with trash and/or used as *privies*.

9. *Why did people throw trash into their wells?* Alexandrians threw trash into wells when they were no longer used as a source of water. By the early 1800s, the water table that supplied water to many individual wells became polluted. Many old backyard wells were then used as *privies* and trash receptacles. In 1810, a City law prohibited individuals from digging shafts to be used as privies, and all existing wells had to be filled in within ten years. By 1811, a law was passed prohibiting the construction of privies except those with boxes or buckets which could be cleaned out. In 1850, the Alexandria Water Company was founded and by 1852 residents and businesses could get their water piped from a reservoir on Shuter's Hill. Eventually, the wells were filled in with trash and forgotten.

10. *What do archaeologists learn by observing changes in soil stratigraphy?*

In addition to the *artifacts*, the soil on archaeological sites contains other important information. Archaeologists note the color, texture and general condition of the dirt within each *stratigraphic layer* or level. The top layer is usually darker and less dense, containing more organic material such as decayed grass and leaves. In Alexandria, the deeper levels of subsoil usually become increasingly dense, less organic and look yellow/orange in color, with a high clay content. Within these stratigraphic layers, archaeologists find artifacts, forgotten building foundations, shell, cobblestone and brick walkways, post-holes from decayed fence lines, and even evidence of utility and builders' trenches. See Section 2: Archaeologists At Work, page 5.

11. *How long does it take to dig a site?* That depends on how many *excavation units* are opened, the size of the field crew, the number, type and size of features found, the soil conditions (loose dirt or dense clay), the quantity and condition of the *artifacts*. The most important factor affecting the length of a dig is the weather. Snow or rain cause flooding of *excavation units* and erosion of their walls. Projects may be dug for several years, such as the Apothecary Shop basement, Sugar House and Coleman site, because of their significance and availability.

12. *How do archaeologists know when to stop digging?* Archaeologists dig until they have reached “*sterile soil*” or “*subsoil*” levels. This is soil produced through natural, not human processes. It does not show evidence of human occupation and contains no evidence of *artifacts* or *features* (walls, foundations, wells, etc.). Sterile soil may be reached only a few inches under the ground surface or more than ten feet down, below layers of fill soil.

13. *Do archaeologists excavate every site they find?* The preference is to *preserve sites* in the ground. A site is chosen for *excavation* for two major reasons. First, if it is endangered and data must be recovered before development. Second, if the site will provide missing information about the past. All significant sites are registered with the Virginia Department of Historic Resources in Richmond, VA. Registration is a way of keeping track of sites. The process of excavation ‘destroys’ the site. Often the best alternative is to preserve the site for future generations of archaeologists to excavate and study. Remember, a site is preserved as long as it is not *disturbed* by people or natural elements.

14. *Can archaeologists dig anywhere they want?* Archaeologists must get permission from the property owner before they dig on private, federal, state or municipal lands.

15. *What are the laws requiring archaeological investigation before construction takes place?* Federal law requires archaeological *preservation* procedures on federal land or on projects using federal funds or permits. State and local governments have similar laws.

The City of Alexandria passed the Alexandria Archaeological Protection Ordinance on November 18, 1989. The Ordinance requires an archaeological survey of any property proposed for development. A preliminary assessment is conducted by Alexandria Archaeology before the property owner submits site plans to the Planning Commission and City Council for approval. Full-scale archaeological recovery excavations proceed only if test *excavations* reveal significant resources. This process allows *preservation* actions to be completed well before construction activities begin. See Appendix VI, Archaeology and the Law, page 193 and Appendix VII: Selected Articles, “The Right Way To Dig At Home,” page 221.

16. *Are homeowners or contractors required to report archaeological sites?*

Homeowners or contractors are not required to tell us if they find a *site* on their property. Most people, however, ask us to look at what they have found. The Alexandria Archaeological Protection Ordinance is designed to screen building plans and permits for potential archaeological sites before work begins. We encourage reporting of all finds so that we can record the information. All *artifacts* found on private land are the property of the owner.

17. *Can archaeologists stop construction if a site is found?* Alexandria Archaeology cannot stop construction on land where a *site* is discovered unless provisions have been made as part of the City approved process. The Ordinance is designed to avoid work stoppage on construction projects in progress and to insure that all *preservation* measures are completed well before construction begins.

18. *What should I do if I think I have found a site? Should I dig up some of the artifacts and bring them to you for identification?* The best thing to do is leave the site undisturbed. Archaeological sites should be excavated by professional *archaeologists* who are trained to recognize *stratigraphic*, structural features such as post-holes or molds and trash pits, and to collect bones, seeds and even pollen. This type of information is easily overlooked, but is critical to understanding the history of the site.

Individuals who think they have discovered a site should contact Alexandria Archaeology if it is within the City limits of Alexandria. Sites within other jurisdictions should be reported to the archaeologist or an agency in charge of the preservation of archaeological sites for that area. It is helpful to draw a map, make some notes or take photographs, to help the archaeologists find and record the location of the site.

It is important to note that no one should dig on any public lands or private property without the permission of the property owner. Those who are interested in an archaeological experience can register for classes or participate as a volunteer in excavations supervised by professional archaeologists. See Appendix VI: Archaeology and the Law, page 193, Appendix III: Washington Area Public Archaeology, page 171 and Appendix VII: Selected Articles, "The Right Way To Dig At Home," page 221.

19. *Why is it important to dig when there is written information about sites and the City?* Written documentation is helpful in understanding what activities took place on the *site* or who lived there. Sometimes, however, sources may be incomplete, inaccurate, or biased. Nearly all documents were written for a specific reason with a conscious or unconscious intent to present information in a certain way. In addition, most people did not keep an account of their daily activities. *Artifacts* are often the only tangible record of the past. Most artifacts become part of the archaeological record unintentionally. Very few people ever imagined people in the future would carefully recover their trash and study it. See Section 2: Archaeologists At Work, page 5 and An Archaeological Case Study: Excavations at the Stabler-Leadbeater Apothecary Shop, page 21.

20. *What are primary and secondary source documents?* A *primary source* is an original document written during the time being studied. Deeds, wills, census, business directories, tax assessment rolls or diaries are examples. Primary documents also include unaltered microfilm or archival quality copies of the document. A *secondary source* is information derived from the primary source documents. Examples of secondary sources are encyclopedias or history books.

21. *How are artifacts collected at the site?* The soil from each *stratigraphic layer* or *arbitrary level* is removed from the unit and *screened*. All of the artifacts are put into paper or plastic bags that have been marked according to their *provenience* or specific place where they were discovered. Each bag is marked with the *site number*, the unit, the level and feature numbers plus the date. It is very important that the artifacts from each provenience be kept separate until they have been identified and individually labeled in the archaeology laboratory.

22. *Do archaeologists get to keep the artifacts that they find?* Archaeologists do not keep any of the *artifacts* they uncover. All artifacts belong to the individuals, businesses or government (municipal, county, state or federal) who own the property where the site is located. Artifact *assemblages* recovered from sites on private property by Alexandria Archaeology or archaeological contractors are frequently donated to the Alexandria Archaeology Museum. The artifacts are curated and exhibited by the City of Alexandria for the enjoyment and educational value of Alexandria residents and visitors.

23. *Why must archaeologists be careful not to mix a few broken artifacts from different units or sites?* Careful recording of the *type*, quantity and distribution of *artifacts* found in the ground is important. Archaeologists interpret a site by studying groups of artifacts found together (*assemblages*) and their relationship to other groups of artifacts, features and structures in the ground. If artifacts from unrelated *proveniences* are mixed, time periods, sequences of events or even “people” can be confused, thus their story cannot be told. The artifacts may be the only information archaeologists have about the people who occupied the site.

24. *What happens to the artifacts once they are brought into the laboratory?* First, the artifacts brought to the laboratory are cleaned. Second, they are marked and inventoried on *sorting* sheets. It is important to keep the artifacts and *organic materials* (seed, bone and shell) grouped according to their *provenience* until they are recorded on sorting sheets. Third, the *ceramic* and glass artifacts are *crossmended*, or reconstructed, to understand their size, shape and *function*. The artifacts are then catalogued on cards and added to a computer database. See Section 2: Archaeologists At Work, page 5.

25. *What is crossmending?* The purpose of *crossmending* is to find out the function (what it was used for, such as cooking or food storage), form (bottle, cup, dish, etc.) and number of *vessels* discarded on the *site*. The term crossmend is used because fragments can be found across various *proveniences*. Sometimes the *sherds* from one vessel are found scattered among different levels, *excavation units* and even

features. Knowing the quantities, size and appearance of the objects is more informative than just looking at mounds of broken fragments. Information on size and function of tableware pieces can be used to determine the relative (historic) value of the ceramics and indicate the socioeconomic status of the household with which they were associated.

26. *Do you ever find all of the fragments of the artifacts?* Archaeologists rarely find every *sherd* of a glass or ceramic vessel, so most vessels can be only partially reconstructed. Sometimes only a few small sherds are recovered and no *crossmends* can be made. These sherds are still important because they help the archaeologist determine when the *site* was occupied and what type of activities took place there.

27. *Is every crossmended artifact glued? What type of glue is used?* Crossmended artifacts are temporarily held together with tape to reveal the shape and size of the vessel. Not every crossmended vessel is glued together. Only artifacts that will be exhibited or photographed are glued. Otherwise the tape is removed and the *sherds* are bagged for safer and more compact storage.

Archaeologists do not use Epoxy or Super Glue which can damage or discolor the artifact. Archaeologists use a clear glue that can be dissolved with acetone, such as Duco Cement or UHU.

28. *Do you repair ceramic or glass antiques?* No. We only reconstruct *artifacts* for museum exhibition purposes. Antique repair specialists use different glues or may even reconstruct parts of a piece.

29. *How do you know how old an artifact is?* Alexandria Archaeology has an extensive library and study collection of glass and ceramics that volunteers, staff and researchers use for reference. Fortunately, *manufacturing* and stylistic changes have been well documented. For example, glass bottles were hand-blown until the 18th century. Later bottles were molded. Molding the glass left a scar, thus distinguishing the two types of bottles by dating the manufacturing technique. Dating techniques such as Radiocarbon Dating (Carbon 14), are not used on most historic sites in the United States because the error factor of ± 200 to 500 years for this technique is greater than the historic period being studied. See Section 2 Archaeologists At Work, page 5.

30. *What factors influence the degree of preservation of the various artifacts?*

Good preservation depends on factors such as the condition of the object was in before it was discarded, the material it was made of, the acidity of the soil, and the climatic and physical conditions of the *site*.

Artifacts are best preserved when they are undisturbed and in an environment of constant temperature, moisture, dryness or oxygen. Objects such as woolen and silk textiles, wood, leather or seed are often *preserved* in abandoned *well/privies* because they remained in a totally wet environment at a constant temperature. The absence of aerobic bacteria in water retards the decay of *organic materials*.

31. *Why does some glass look frosted or change color in the ground?* The frosted look is called a patina. Like a tarnish on metal, patina is essentially the decayed surface of the glass. It is caused by a chemical reaction between the soil or water and the glass.

32. *Do colors on ceramics fade after being buried in the ground?* That depends on how the decoration was applied and how the ceramic was fired. Fading or chipping will occur on ceramics that have a painted or enameled design applied after the piece was fired. Usually a glaze covers the design to make the piece water proof and to protect the surface decoration. Burning can also change ceramic colors.

33. *How do archaeologists determine when a site was occupied?* One method is to study the *artifacts* contained in the soil layers, or *strata*, at the *site*. *Stratigraphy* is a *relative dating* technique. *Relative dating* does not indicate the exact date of an event, but can tell us the order in which things happened. In theory, the artifacts in the top layer are newer and were thrown away later than those in the bottom layer. If possible, the dates of manufacture for the artifact groups within each *provenience* (such as the stratigraphic layers) are identified. The *archaeologist* can then estimate the *date of deposition*, or when the artifacts were thrown away. Archaeologists can also calculate a mean, or average, date that artifacts in a layer of soil were manufactured.

Absolute dating uses methods such as Radiocarbon dating. The dates they provide are not really any more accurate than *relative dating* methods because the +- factor is so great. Absolute dates are also found using written records and makers marks that identify when products were manufactured.

34. *What types of objects are found in Alexandria and how old are they?* Artifacts from 8000 years ago have been recovered in Alexandria, including stone tools and projectile points for spears. Artifacts from the late eighteenth through the nineteenth centuries are most common. Although a tobacco warehouse and a few houses existed before the City was chartered in 1749, very little archaeological evidence of urban life prior to 1790 has been recovered in Alexandria prior to 1790.

35. *How many artifacts have been found in Alexandria?* Alexandria Archaeology's collection includes over two million objects ranging from small glass fragments and seeds to whole ceramic vessels and an 1822 musket.

36. *Where are these artifacts stored? Are they sold when you run out of space?*

The Alexandria Archaeology collection belongs to the City of Alexandria. The collection is housed in the Alexandria Archaeology Storage Facility at the City Records Center. The staff of Alexandria Archaeology maintains this collection but there is no personal ownership of any of the artifacts. Each artifact assemblage is like a page in a book. To sell or discard *artifacts* is like cutting out key words or pages from the book. As a result, the content of the story is damaged or destroyed. None of the artifacts are sold. Alexandria Archaeology has a small storeroom at its museum in the Torpedo Factory for objects that are used frequently for exhibition and study.

37. *How do you assess the value of the artifacts?* Archaeologists do not assign monetary values to individual *artifacts* as is done with antiques. The “intrinsic value” of artifacts is as a complete assemblage from a documented site. Objects that are selected for exhibition are visually interesting, but they are not viewed as any more valuable than the rest of the assemblage. An artifact’s value comes from knowing more about the past through its study.

38. *Once the artifacts are analyzed, what happens to them?* Artifacts are stored in archival materials in a climate-controlled facility for the best *preservation*. They are used in exhibits and for research by people in Alexandria, and in traveling exhibits. They are also used for comparative study by researchers from other states and countries.

39. *What is the most important or exciting site discovered in Alexandria?* This is a difficult question to answer because each *site* is different. Identifying one particular site as the most valuable or important is not really the point. Each site contributes something new to our understanding of how the City developed and grew. For example, the Coleman Site on South Royal Street yielded significant insights into the lives of residents of an early free black neighborhood; and the Moore McLean Sugar Refinery Site on North Alfred Street contained important information on this early nineteenth century industry.

40. *Why do archaeologists collect and study bones, seeds and shells?* Animal and fish bones (through *faunal analysis*), seeds and shells tell an *archaeologist* about the diet of people in the past. Archaeologists want to know what foods were available. Questions they seek to answer include what cuts of meat were consumed by which socioeconomic groups, the proportions of domestic animals, vegetables and fruits compared to wild game and plants, and possibly what foods were imported to supplement the diets of Alexandrians in the 18th and 19th centuries. See Section 2, Archaeologists At Work, page 5.

41. *Do you find many human bones on sites?* A few human remains have been discovered in residential and business sites, but most human remains are found in cemeteries. A human skull, likely discarded from an 1830s doctor's office, was recovered from the Market Block (in front of City Hall) in the late 1960s. In 1977, the bones of an infant were *excavated* in a *privy/well* at the Courthouse site. Associated *artifacts* date the deposition to the 1820s or 1830s. In 1986, Alexandria Archaeology assisted Christ Episcopal Church of Alexandria in locating unmarked graves in the church yard before the construction of a new parish hall began. Many grave sites were located and the human remains were reinterred. A human molar was discovered in 1986 during the excavation of the Apothecary Shop basement. It is known that Edward Stabler occasionally extracted teeth in his shop.

In 1990, the Bloxham Family cemetery was uncovered eight feet under twentieth century fill. The coffins had been crushed under the weight of the fill, but the hardware and many human bones were in an excellent state of *preservation*. Preservation archaeology was conducted at the Society of Friends Burying Ground in 1993.

Prior to renovation of the Barrett Library fifty six graves were excavated, and the locations of about ninety more graves were recorded and protected during construction.

42. *How do interested people without the educational background or training get experience in archaeology? Are there any organizations that take volunteers?* There are many opportunities in the Washington Metro Area for interested people to learn and participate in archaeological research. Alexandria Archaeology recruits and trains volunteers to assist with *excavation*, *artifact* analysis, archival research and educational activities. Volunteers must be at least 16 years old and work at least six hours each month. See Appendix III: Washington Area Public Archaeology, page 171 and Appendix VII: Selected Articles, "Community Archaeology In Alexandria, Virginia," page 221

43. *How can I become an archaeologist?* Aspiring archaeologists first attend a four year college or university and study anthropology, history, classics, archaeology. They try to get as much work experience as possible by participating in summer field schools, volunteering and environment archaeology. Field supervisors usually have a Masters degree requiring two years of graduate school. Project managers college professors and some government employees must have a doctoral degree. This requires another two to four years of graduate school, and the completion of an independent project and dissertation.

Many archaeologists earn advanced degrees, gain experience in a particular field of study (historic, prehistoric, classical, Meso-American, etc.) and specialize in particular topics (ceramics, food and dietary studies, gender, ethnicity). Archaeology requires interest and dedicated work in both the classroom and the field. There is much to learn about field techniques and the diverse cultures and innovations that grew from and shaped civilizations throughout the world.

Archaeologists, like other professionals, have standards and ethics by which they must abide. National and local organizations for professional and avocational archaeologists include the American Anthropological Association (AAA), Society for American Archaeology (SAA), Society of Professional Archaeologists (SOPA), Society for Historical Archaeology (SHA), Council of Virginia Archaeologists (COVA), and the Archaeological Society of Virginia (ASV). See APPENDIX II: Publications, Curriculum Materials and Films, page 163.

44. *Do you like being an archaeologist?* Ninety-nine out of 100 *archaeologists* agree that they enjoy what they do! There is much more to *archaeology* than digging in the dirt and gluing broken dishes together. Archaeology constantly challenges us with new questions and facts. Education and training in anthropology and archaeology provide a background in everything from the classics to computer science.

45. *But even if I like archaeology, can I really do it for a living? Are archaeology jobs hard to find? Isn't the pay low?* Finding a job in any profession requires certain skills, expertise, and knowledge. Entry level jobs on a field crew or in an *archaeology*

laboratory pay hourly wages and are usually temporary. Some archaeological contractors provide housing and food or stipends for expenses. More experience and education increase your chances of finding a good job.

Many students or *archaeologists* with a B.A. get temporary jobs with private contract firms specializing in the *preservation* of archaeological and cultural resources. This may require moving from job to job. Supervisory positions come with experience and are usually permanent. It all depends on what the job entails. Graduate degrees in collections, conservation and education open additional job opportunities. Archaeologists work in both the public and private sectors. There are jobs in museums and historic sites, in the Federal government (National Park Service, Forestry Service, Geological Survey and other agencies) as well as for state, county, city governments, publishing, advocacy groups and academia. Archaeologists may make modest salaries, but the satisfaction gained from this work is an important reward.

An education in archaeology can prepare you for many other types of jobs. People with *archaeology* degrees work with computers or in government agencies, international businesses and maintain their interest in archaeology through volunteering or travel. See Appendix II: Publications, Curriculum Materials and Films, page 163.

46. What is Alexandria Archaeology? Alexandria Archaeology is one of the first city *archaeology* programs in the United States. It is one of, if not the first, continuously funded community archaeology programs in the country.

Alexandria Archaeology is one of eight historic sites, museums and programs included within the Office of Historic Alexandria. The museum, laboratory and offices are located in the Torpedo Factory Art Center; a department of the City of Alexandria. The collection is housed at the Payne Street Record Center. Thousands of volunteers have worked with the City Archaeologists to study, *preserve* and educate.

47. When did archaeology begin in Alexandria? The first archaeological investigation began in 1961 at Fort Ward, one of the twin Civil War fortifications located in Alexandria. A group of citizens led by Dorothy Starr persuaded the City Council to purchase the land and preserve the northwest bastion of the fort.

In the early 1960s, Alexandrians noticed that many artifacts were being unearthed during urban renewal projects on the 300, 400, and 500 blocks of King Street. Concerned citizens asked the Smithsonian for assistance and rescue work began. The Smithsonian provided support until 1971. The work was then funded by the donations of private citizens until City Council established the position of City Archaeologist in 1973. See Appendix VII: Selected Articles, "Landmarks: 30 years of Archaeology in Alexandria," page 221.

48. *Where does Alexandria Archaeology work?* Alexandria Archaeology works only within the City of Alexandria, from Old Town to the West End. *Archaeologists* who work for other public agencies (Federal, state, county or city government) in this area are responsible for the *archaeology* in their jurisdictions. See Appendix VII: Selected Articles, "Community Archaeology In Alexandria, Virginia, " page 221.

49. *How can I find out more about Alexandria Archaeology?* Alexandria Archaeology offers many opportunities to learn about the history and *archaeology* of Alexandria. A list of publications is available from the museum. Programs and *Archaeology Adventure Lessons* are available for school and public groups. Lectures are offered by museum staff. Researchers may gain access to the museum's research files, photograph and *artifact* collections by appointment.

50. *What is FOAA and the Alexandria Archaeological Commission?* FOAA stands for the Friends of Alexandria Archaeology. This group consists of volunteers who provide support at the museum and at public events. For information on joining the Friends, call 703-838-4399.

The Alexandria Archaeological Commission's 14 members are appointed by the Alexandria City Council. Originating in 1975, the AAC is thought to be the first local *archaeology* commission in the United States. The AAC's members provide advise on goals and priorities for archaeology in Alexandria and are strong advocates for the benefits of archaeology.

—APPENDICES—

Seven appendices have been included with this guide to help further expand your classroom study of archaeology. Even if you don't live near Alexandria, Virginia, there are many groups and resources in every state throughout the United States. One good way to discover who is doing archaeology in your area is to contact the National Park Service. You can also check with local museums or universities. The following appendices have been included:

Appendix I - Glossary of Excavation And Laboratory Terms The words which appear in the glossary have been typed in *italics* elsewhere in the guide. These are frequently used archaeology terms that your students will find challenging to learn and use.

Appendix II - Publications, Curriculum Materials & Films A list of newsletters, periodicals and curriculum guides with classroom materials is included, along with the names and addresses of appropriate contacts to acquire them. Additionally, a list of relevant films and videotapes has been attached.

Appendix III - Washington Area Public Archaeology Local archaeological groups, museums and facilities are listed here. Remember that such groups exist in most localities.

Appendix IV - Reading List of Recommended Books on Archaeology There are many books available on archaeology. Books are listed by topic: local archaeology, American archaeology, general topics and classical archaeology. Books are divided into those for adults and those for children.

Appendix V - Electronic Resources Internet resources, World Wide Web sites and home page addresses (URL's, universal resource locators) pertaining to archaeology are included.

Appendix VI - Archaeology and the Law The standards and ethics that archaeologists follow are explained in this section. A list of the laws applicable to archaeology that have been passed at the local and national levels is also included.

Appendix VII - Selected Articles A selection of articles which enhance the activities and exercises in the *Guide* are appended here. These will serve to further the teachers' understanding of archaeology, and in some cases are appropriate for students to read also.

— APPENDIX I —

GLOSSARY OF EXCAVATION AND LABORATORY TERMS

ABSOLUTE DATING - Methods for learning the specific date of artifacts, assemblages or sites. Chemical analyses such as Potassium Argon or Radiocarbon (Carbon 14) dating can determine dates to within 250-500 years and are used on very old organic materials. Other techniques such as dendrochronology (tree-ring dating) or a specific known date of an object's manufacture are also considered to be absolute dating methods.

ARCHAEOLOGY - The scientific study of the human past through excavation and related research.

ARCHAEOLOGIST - A person who specializes in the study of material remains of past human life and activities.

ARTIFACT - An object made or modified by people.

ARBITRARY LEVEL - A layer of soil, the thickness of which (usually 10 or 20 cm) is arbitrarily designated by the archaeologist to be studied as an individual provenience. Arbitrary levels are usually assigned when natural soil levels are very thick or not evident.

ASSEMBLAGE - A group of artifacts which were found together.

BASE MAP - A map showing the geographic location of a site and its components.

CERAMICS - Pottery or objects made of clay.

CODE BOOK - A list of standard terminology for describing artifacts to be catalogued.

CONSERVATION - The maintenance of a cultural resource through mechanical and/or chemical means.

COORDINATES - A mapping system which uses two numbers to indicate longitude and latitude.

CROSSMENDING - The process of fitting sherds together in order to see the form of a vessel. The sherds may come from more than one area of a site.

DATE OF DEPOSITION - The date when artifacts were deposited within a soil layer, arbitrary level or feature. This date is estimated by comparing the approximate dates of manufacture for the artifacts.

DATUM - A permanent point used as a standard from which to measure other points at a site both, horizontally and vertically, to develop a grid.

DISTURBED SITE - A site where the original layers of soil and archaeological material have been disturbed or mixed by natural or human action, for example by a flood or plowing.

EXCAVATION - An archaeological dig.

EXCAVATION UNIT - A section of the site measured and designated for excavation, such as a one meter square.

FAUNAL ANALYSIS - The study of animal bones which leads to an understanding of human diet and environment.

FEATURE - A distinct physical aspect of a site which is treated as a separate or discrete entity; for example, a trash pit or well. Each feature is recorded and analyzed separately.

FIELD SURVEY - The visual survey of an area for surface evidence of archaeological sites to determine the feasibility or desirability of future excavation.

FLOTATION SAMPLE - A technique for recovering lightweight floral and faunal remains by mixing soil and water in a container. Heavier debris sinks to the bottom while lighter materials such as seeds and fish bones float. These are skimmed off the water surface with fine wire mesh.

FORM - The shape and size of an object which helps determine its original function.

FUNCTION - What a vessel is used for, such as a cup for holding liquid.

GRID SYSTEM - A network of strings stretching over the ground surface that intersect each other at right angles. It is used to establish a horizontal control for mapping the site.

HISTORICAL ARCHAEOLOGY - The archaeological study of places and time periods for which there is written history.

IN SITU - The place where an artifact was found in the ground. Latin for "in place."

LINE LEVEL - A tool used to measure the depth of the excavation unit.

MANUFACTURE - The act of making raw material into a finished product.

MIDDEN - A trash pile or pit originally deposited on the ground surface, such as a midden outside a kitchen doorway, and then later covered with soil.

NUMBERING - The system of markings on each artifact which identify its site number and provenience.

ORAL HISTORY - The recording of recent history through interviews of people who lived or worked during the time period under study. It may include their memories, and perhaps even older information on traditions passed down through relatives or friends.

ORGANIC MATERIALS - Artifactual material that was once living (e.g. wood, shell, bone, leather, etc.).

PLUMB BOB - A pear-shaped weight hung from the end of a cord and used in mapping.

PREHISTORIC ARCHAEOLOGY - The archaeological study of places and time periods for which there is no written history.

PRESERVATION - The protection of cultural resources from damage or destruction.

PRIMARY RESOURCES - The original written documents from the time period being studied; for example, newspapers, census records, photographs, diaries and maps.

PRIVY - An outdoor toilet or outhouse. They were often converted to trash pits.

PROVENIENCE - The specific location where an artifact or feature is found.

RELATIVE DATING - The determination of the chronological sequence of artifacts, assemblages or sites, rather than their actual date.

SCREENING - The procedure used after soil is excavated. The dirt is shaken or sifted through a wire mesh screen (1/4" or finer). The artifacts, seeds and bones are removed from the screen, placed in bags, and labeled according to provenience.

SECONDARY RESOURCES - Compilations of information from primary resources or even other secondary sources; for example, history books.

SERIATION - A method of arranging artifacts and artifact assemblages chronologically based on physical similarities.

SHERD OR SHARD - A fragment of pottery or glass.

SITE - An area containing remains of human occupation or activity.

SITE NUMBERS - The numerical codes assigned to a site and the artifacts found there. A national system is used to number sites, beginning with a one- or two- digit number representing the state; a two-letter county/city designation, and a number for the site (e.g. 44AX44: 44 = Virginia, AX = Alexandria, 44 = Apothecary Shop).

SOIL SAMPLES - Small quantities of soil collected in the field and saved for special analysis in the laboratory. Soil analysis can indicate the presence of human or animal waste, a concentration of shell or bone, the degree of soil acidity or the presence of other chemicals or substances. Soil samples are also used for flotation.

SORTING - A mixed group of artifacts is divided into smaller and smaller groups based on shared characteristics (e.g. separating glassware, ceramics, marbles, etc. into separate piles). Each group can be further sorted according to color or decoration.

STERILE SOIL - Soil containing no evidence of human occupation. Excavation of a site is halted when sterile soil is reached.

STRATA OR STRATIGRAPHIC LAYERS - Layers of soil (which can contain artifacts) of different color or texture, usually representing different periods of time or episodes of deposition. The oldest layers of soil are generally on the bottom, the most recently deposited layers are on the top.

STRATIGRAPHY - The study of soil layers.

TERMINUS POST QUEM - The earliest potential date for an artifact assemblage based on the earliest date of manufacture of the most recent artifact in the assemblage. Latin for "the date after which."

TRANSIT - An optical instrument used to sight distant points to determine angles and elevations for establishing a grid and mapping the site.

TYPE - The method of decoration of an artifact.

TYPE OR STUDY COLLECTION - Examples of artifacts that are used for comparison in identifying objects recovered at a site.

VESSEL - A ceramic or glass object, such as a dish or teacup, made up of one or more sherds.

WALL PROFILE - A drawing of the side wall of an excavation unit showing features and stratigraphic layers.

WARE - A term used to describe the body and glaze of ceramics.

WELL/PRIVY - A brick-lined subsurface structure originally constructed as a well, and later converted to a privy (outdoor toilet) and often a trash receptacle.

WATER SCREENING - A screening procedure which involves spraying water on a screen to wash away the soil and recover small objects more easily.

—APPENDIX II—

PUBLICATIONS, CURRICULUM MATERIALS & VIDEOS

Publications

- *America's Ancient Treasures* - Contains detailed descriptions of museum exhibits and archaeological sites in the United States and Canada. Contact: Franklin and Mary Elting Folsom. Published by University of New Mexico Press, Albuquerque, NM 87102, 1983.
- *Anthro Notes* - A National Museum of Natural History bulletin for teachers. Published three times a year. Contact: P. Ann Kaupp, Public Information Office, Department of Anthropology, Stop 112, Smithsonian Institution, Washington, D.C. 20560; or call 202-357-1592. Free.
- *Archaeological Assistance Program Technical Briefs* - Designed and produced by Departmental Consulting Archaeologists and the Archaeological Assistance Division of the National Park Service, it includes a variety of topics and case studies. Contact: United States Department of the Interior, National Park Service, Cultural Resources, P.O. Box 37127, Washington, DC, 20013-7127; or call 202-343-4110.
- *Archaeology* - Published by the Archaeological Institute of America. Contact: Archaeology, Subscription Service, P.O. Box 928, Farmingdale, NY 11737.
- *Archaeology and Education* - Published two times per year. Carole Stimmell, editor. Contact: Archaeological Resource Center, Danforth Technical School, 840 Greenwood Avenue, Toronto, Ontario M4J 4B7, Canada.
- *Archaeology and Public Education* - A newsletter for archaeologists and educators. Published by the Society for American Archaeology's Committee on Public Education. Contact: SAA, 900 Second St., NE, Suite 12, Washington, DC 20002; or call 202-789-8200.
- *Archaeology and You* - A brochure describing the discipline of archaeology, career opportunities, and how to become involved in archaeological projects locally or nationally. Contact: SAA, 900 Second St., NE, Suite 12, Washington, DC 20002; or call 202-789-8200. Illustrations. Free.

- *Calliope* - A magazine for grades 5 through 10, published five times per year. Each issue treats a specific historical period and includes articles, maps, time lines, illustrations, art from major museums, activities and resource lists. Contact: Cobblestone Publishing, Inc., 7 School Street, Peterborough, NH 03458-1454; or call 1-800-821-0115. \$12 per year.
- *Careers in Anthropology* - A brochure discussing careers in anthropology. Provides information about publications which list employment opportunities in anthropology and archaeology. Contact: American Anthropological Association, 4350 N. Fairfax Drive, Suite 640, Arlington, VA 22203; or call 703-528-1902.
- *Cobblestone* - A magazine for grades 4 through 9. Each theme-focused issue includes articles, historic photographs, activities and contests. Themes have included: "Archaeology Digging Up History;" "History: What Is It?;" and "Historic Parks." Teacher's Guides available. Contact: Cobblestone Publishing, Inc., 7 School Street, Peterborough, NH 03458-1454; or call 800-821-0115. \$24.95 per year.
- *CRM* - Published by the National Park Service to promote and maintain high standards for preserving and managing cultural resources. Contact: CRM, United States Department of the Interior, National Park Service, Cultural Resources, P.O. Box 37127, Washington, D.C. 20013-7127; or call 202-343-3395.
- *Faces* - A magazine published nine times per year in cooperation with the New York American Museum of Natural History. Each theme-focused issue includes articles by anthropologists and archaeologists, photographs, recipes, resource lists and folklore. Topics include: "Archaeology: Finding the Past;" "Bones, What they Tell Us;" and "Fieldwork: Anthropologist At Work." For grades 4 through 9. Contact: Cobblestone Publishing, Inc. 7 School Street, Peterborough, NH 03458-1454; or call 800-821-0115. \$23.95 per year.
- *Federal Archaeology* - A quarterly publication of the National Park Service Departmental Consulting Archaeologists and the Archaeological Assistance Program. Contact: National Park Service Archaeological Assistance Division, P.O. Box 37127, Washington, D.C. 20013-7127; or call 202-343-4101, or fax 202-523-1547.
- *History News* - Published six times per year. Joy Dunn, editor. Available by subscription from the American Association for State and Local History, 172 Second Avenue, North, Suite 202, Nashville, TN 37201.
- *Passport in Time* - A newsletter containing the "Passport in Time Clearinghouse," which describes upcoming opportunities for volunteer participation and reports of heritage resource management projects. Contact: CEHP Inc., P.O. Box 18364, Washington, D.C. 20036; or call 202-293-0922.
- *Remnants* - Mike Corbishley and Ken Glen, editors. Contact: English Heritage Education Service, Keysign House, 429 Oxford Street, London W1R 2HD, England.

- *A Survey of State Statutes Protecting Archaeological Resources* - A compilation of all state laws protecting archaeological resources, including brief summaries on the types of resources protected, and texts on understanding state statutes. Contact: SAA, 900 Second Street, NE, Suite 12, Washington, D.C. 20002; or call 202-789-8200. Free.
- *Teaching Anthropology Newsletter* - Published twice a year. Contact: Department of Anthropology, Saint Mary's University, Halifax, Nova Scotia B3H 3C3, Canada. Free.

Curriculum Materials

- *Adventures in the Past* - Heritage education resources provided by the U.S. Department of the Interior, Bureau of Land Management, includes exhibits, hands on programs, articles for teachers and partnership project opportunities. Contact: Bureau of Land Management, Division of Recreational, Cultural and Wilderness Resources, 1849 C Street, NW, Washington, D.C. 20240; or call 202-208-3353.
- *Archaeologists of the Americas* - SAA's annual directory of members and a source book of individuals and institutions in archaeology. Contact: SAA, 900 Second Street, NE, Suite 12, Washington, D.C. 20002; or call 202-789-8200. \$39.95. Free with membership.
- *Archaeology!* - The steps of archaeology from site location to excavation. Includes activities and resources. By Hettie Boyce-Ballweber, from the Maryland Historic Press, 9205 Tuckerman Street, Lanham, MD 20706; or call 301-577-5308.
- *Archaeology: A Guide for Junior High School Teachers* - A teacher's guide to archaeology with a Canadian focus, this book tries to dispel the notion of archaeology as merely excavation. Contact: Northern Research Institute, P.O. Box 2799, Whitehouse, YT Y1A 8K4.
- *Archaeology In the Classroom: A Resource Guide for Teachers and Parents* - Resource guide to archaeological curriculum materials, books, films, museum programs and educator training for grades 1-12. Contact: Archaeological Institute of America Order Department, Kendall/Hunt Publishing Company, 4050 Westmark Drive, Dubuque, IA 52002; or call 800-228-0810
- *Archaeology on Film: A Comprehensive Guide to Audio-Visual Materials* - A guide to 750 films about archaeology, listed by geographic area and time period. Includes purchase and rental information. Contact: Kendall/Hunt Publishing Company, 4050 Westmark Drive, Dubuque, IA 52002; or call 800-228-0810.
- *Archaeological Resources for the Classroom: A Guide for Virginia Teachers* - Compiled by the Education Committee of the Archaeological Society of Virginia in 1991 and soon to be updated. Outlines teaching strategies for the classroom, lists films and books on Virginia's prehistory, archaeological museums, sites and resource people. Contact: ASV Press, P.O. Box 70395, Richmond, VA 23255-0395.

- *Archaeology: Walney* - Historical archaeology for grades 7-12, developed in coordination with the Fairfax County Public Schools by Michael Harrison in 1984 and revised in 1995. Includes teacher resources and student activities. Contact: A.T. Stephens at the Resource Management Division, Fairfax County Park Authority, 3701 Pender Drive, Fairfax, VA 22030; or call 703-437-7694. Free
- *The Archaeology Workbook* and *The Next Archaeology Workbook* - Created by Steve Daniels and Nicholas David, an archaeological exercise for use in the classroom. Contact: University of Pennsylvania Press, Philadelphia, PA 19104.
- *Classroom Sources for Archaeology Education: A Resource Guide*. A list of more than 100 publications and other materials dealing with archaeology. Includes grade level and publisher. Contact: SAA, 900 Second Street, NE, Suite 12, Washington, DC 20002; or call 202-789-8200.
- *Dig into the Past: How Old Is It?* - Available from Thinking Caps, Inc. Contact: Thinking Caps, Inc. at P.O. Box 17714, Phoenix, AZ 85011. Order no. 3106.
- *Digging Monticello: Archaeology at Monticello* - Workbook from the Monticello Department of Education, 1987. Contact Monticello Education Dept., P.O. Box 316, Charlottesville, VA 22902.
- *Directory of Cultural Resource Education Programs* - A compendium of long term education opportunities at high school and undergraduate levels. Contact Government Printing Office, Superintendent of Documents, P.O. Box 371954, Pittsburgh, PA 15259-7954; or call 202- 783-3238, or fax 202- 512-2250.
- *Doing Historical Archaeology: Exercises Using Documentary, Oral and Material Evidence* - Activities by Russell J. Barber. Contact: Prentice Hall, Englewood Cliffs, NJ 07632.
- *Exploring Archaeology* - Workbook and curriculum guide available from Patti Bell. Contact: P.O. Box 1032, Bloomfield, NM 87413.
- *Eyewitness History of the World* - CD-Rom formats takes students on a travel through 12 different time periods, complete with facts, stories and objects. Contact: Stefanie Jarrell, DK Family Learning Distributor, 8606 Camden Street, Alexandria, VA 22308; or call 703-780-5271; or e-mail DubbleCC@aol.com.
- *The First People of Maryland*. A 4-5th grade level reader with activities covering the history of Maryland occupants from its first people, the paleoindians, to European contact. By Hettie Boyce-Ballweber. From the Maryland Historic Press, 9205 Tuckerman Street, Lanham, MD; or call 301-577-5308.
- *First People - Native Americans in Virginia* - A history of Virginia's occupants from its first people, the paleoindians, through the arrival of Europeans. Contact: ASV Press, P.O. Box 70395, Richmond, VA 23255-0395.

- *Guidelines for the Evaluation of Archaeology Education Materials* - A set of suggested criteria and useful facts to apply when evaluating or developing educational materials to teach archaeology in the classroom. Contact: SAA, 900 Second Street, NE, Suite 12, Washington, D.C. 20002; or call 202-789-8200. Free.
- *Interact* - A catalogue of educational simulation games. Contact: 1825 Gillespie Way, #101, El Cajon, CA 92020-1095; or call (800) 359-0961. Games related to archaeology and anthropology are:
 - Maya by Peter Rotn (1993), for grades 5-12, Order #2054, \$32.50.
 - Dig 2 by Jerry Lipetzky (1982), for grades 5-12, Order #5030, \$50.
 - Mummy's Message by Tony Maggio (1989), for grades 5-12, Order #5062, \$52.
 - Puzzle by John McLure (1972), for grades 7-12, Order #3061, \$25.
 - Time Capsule by Don Eells (1978), for grades 5 - 8, Order #1221, \$21.
- *LEAP (Listing of Education in Archeology Projects)* - The Archeological Assistance Division of the National Park Service provides information about Federal and non-Federal public awareness products, i.e., posters, brochures, publications, news releases, videos, television segments, exhibits, displays and volunteer programs. Information about Federal and non-Federal curriculum materials is welcomed. Contact: Public Education and Outreach, Archeological Assistance Division, National Park Service, P.O. Box 37127, Washington, D.C. 20013-7127; or call 202-343-4101.
- *Local Archaeology Resource Packet: District of Columbia, Maryland and Virginia* - Teacher bibliography and classroom materials on archaeology. Contact: KC Smith, Museum of Florida History, 500 South Bronough Street, Tallahassee, FL 32399-0250; or call 904-487-1902. Free.
- *Native Life and Archaeology Workbook* - Curriculum guide for multi-disciplinary approach to archaeology. Contact: Suffolk County Archaeological Association, P.O. Drawer AR, Stony Brook, NY 11790. \$15.
- *The Native People of the Northeast Woodlands* - Available from the Museum of the American Indian, 1990. Contact: Museum of the American Indian-Heye Foundation, New York, NY 10001.
- *Participate in the Past and Archaeology and Education: The Classroom and Beyond* - A brochure and monograph published by the National Park Service Archaeological Assistance Division, PO Box 37127, Washington, DC 20013; or call 202-343-4101.
- *People in the Past* - Question/answer format for trivia and brain teasers, part of the A+ Quizmasters series. Contact: Stefanie Jarrell, DK Family Learning Distributor, 8606 Camden Street, Alexandria, VA 22308; or call 703-780-5271; or e-mail DubbleCC@aol.com.
- *Protection of Archaeological Sites* - Workbook available from Prehistorics/Culture Connection. Contact: Patti Bell, P.O. Box 1032, Bloomfield, NM 87413.

- *Resource Forum Guide* - A list of archaeology education materials available from the Society for American Archaeology's Public Education Committee. Contact: Dr. Edward Friedman, Bureau of Reclamation, P.O. Box 25007, Attn: D-5300, Denver, CO 80225; or call 303-236-1061 ext. 239.
- *Roster of Network Coordinators* - A list of individuals representing almost every state and province in North America, contacts for details about local archaeology education resources and activities. Contact: SAA, 900 Second Street, NE, Suite 12, Washington, D.C. 20002; or call 202-789-8200. Free.
- *Save the Past for the Future II: Report of the Working Conference* - A report presenting the recommendations made at the 1994 conference seeking improved ways to protect archaeological resources. Archaeology educators and law enforcement officials focus on specific public and private efforts to protect archaeological sites both today and in the future. Contact: SAA, 900 Second Street, NE, Suite 12, Washington, D.C. 20002; or call 202-789-8200. Free.
- *Save the Past for the Future II: Education Workshop Action Items and Recommendations* - Report from the conference detailing education-related issues and initiatives, including ways to improve public awareness of archaeology and protect archaeological resources. Contact: SAA, 900 Second Street, NE, Suite 12, Washington, D.C. 20002; or call 202-789-8200. Free.
- *Simulation Training Systems* - A catalogue of educational simulation games. Contact: Box 910 Del Mar, CA 92014; or call 800-924-2900. Games related to archaeology and anthropology are:
 - Talking Rocks, a game about the origins of writing, for grades 5 and up, \$20.
 - RaFa'RaFa' - Cross-cultural simulation, for grades 5 - 8, \$110.
 - BaFa'BaFa' - Cross-cultural simulation, for grades 5 - 8, \$225.
- *Stones and Bones: Archaeology* - A teacher's guide with lesson plans, projects, field trips and a bibliography by Edith Doherty and Louise C. Evans. Contact: Minnesota Historical Society Press, 690 Cedar St., St. Paul, MN 55101.
- *Teaching Archaeology: A Sampler for Grades 3 to 12* - Lesson plans from the Society for American Archaeology's Public Education Committee. Contact: Dr. Edward Friedman, Bureau of Reclamation, P.O. Box 25007, Attn: D-5300, Denver, CO 80225; or call 303-236-1061 ext. 239.
- *Teaching With Historic Places* - A National Trust for Historic Preservation brochure, bulletin and lesson plans. Contact: NTHP, 1785 Massachusetts Ave., NW, Washington, DC 20036; or call 202-673-4286.

Videos

These and other films and videos on archaeology are available from the following sources. Some may also be available in your school's media center.

Age Group: **EL** - Elementary, **JH** - Jr. High, **SH** - Sr. High **C** - College

Sources for Films on Archaeology:

ASV - Archaeological Society of Virginia Library
c/o Department of Anthropology
College of William and Mary
Williamsburg, Virginia 23185
Attention: Mr. John Sprinkle
804-221-1055

CW - Audio-Visual Distribution Section
Colonial Williamsburg Foundation
P. O. Box 1776
Williamsburg, VA 23187-1776
Phone: 804-229 - 1000

PBS - PBS Video
1320 Braddock Place
Alexandria, VA 22314-1698
Phone: 800-468-2207 (VA toll-free)
703-739-5000

Archaeology in Action - A "live satellite field trip" now available on a series of videotapes. The series includes many guest archaeologists discussing: "First People: The Early Indians," and "Colonial Life: Jamestown." This series was aired on the Prince William Network in the fall of 1995. \$25.00 per tape including teaching materials. Contact: Prince William Network, Media Production Services, Prince William Co. P.S., Box 389, Manassas, VA 22110. Fax: 703-791-7378 or call 800-609-2680.

Chaco Legacy - Why did the Anasazi Indians build a thriving culture in the Southwest, and then leave without a trace 700 years ago? Archaeologists try to solve this puzzle. Includes teacher resource materials.

PBS: \$69.95 to purchase videocassette - **SH**

Doorway to the Past - The life and activities of 18th century Williamsburg's Wetherburn Tavern are recreated using excavated artifacts as a link between past and present. Shows a "dig" in progress. 29 minutes.

CW: \$19.95 to purchase videocassette (#102806) - **JH-HS**

From Stone to Bronze - Archaeological digs of several ancient civilizations are shown in this film that illustrates how archaeologists uncover a culture's way of life. 60 minutes.

PBS: \$79.95 to purchase videocassette - **JH-HS**

The Incas - What was the legendary Inca empire like? Archaeological investigation and survey have revealed an extensive organized trading network of roads and market towns all controlled from Cuzco, Peru. Teaching materials included.

PBS: \$69.95 to purchase videocassette - **HS-C**

Maya Lords of the Jungle - Join archaeologists as they study remains of Mayan temples and tombs, searching for clues as to why this civilization declined after thousands of years. 60 minutes.

PBS: \$69.95 to purchase videocassette - **HS-C**

Myths and Moundbuilders - Evidence is uncovered during the excavation of a burial mound which lends clues to its origins and the people who built the great mounds of the midwest and southeast. 60 minutes.

PBS: \$69.95 to purchase videocassette - **JH-HS**

Other People's Garbage - Historical archaeologists show how their research sheds light on American history. Featured are an early 20th century coal-mining town in California, a 19th century slave cabin in coastal Georgia, and the 18th century remains found in the Harvard University Yard. 60 minutes.

PBS: \$69.95 to purchase videocassette - **JH-HS**

Pyramid: How Did the Ancient Egyptians Build the Great Pyramid at Giza? - Explores the geography, history, architecture and religion of ancient Egypt. Also available as a school kit with videos, a curriculum package and teacher's guide for \$150.

PBS: \$69.95 to purchase videocassette - **EL**

Search for a Century - Archaeologist Ivor Noel Hume describes the discovery of the remains of Martin's Hundred, a 17th century satellite community of Jamestown. The 1622 Powhatan uprising destroyed this settlement. It is told like a good detective story. 59 minutes.

CW: \$19.95 to purchase videocassette (#26344) - **JH-HS**

Seeking the First Americans - Smithsonian archaeologist Dennis Stanford confers with colleagues working on various North American Indian sites where they are hoping to prove that Indians came here from Asia over 12,000 years ago. 60 minutes.

PBS: \$69.95 to purchase videocassette - **JH-SH**

Surviving Columbus - Pueblo Indian culture over 450 years is chronicled via oral histories, interviews with scholars, archival photographs and historical accounts. 120 minutes.

PBS - \$99.95 to purchase videocassette - **JH-SH**

Williamsburg File - Archaeologists Glyn Daniel and Ivor Noel Hume talk about the restoration of eighteenth century Williamsburg, with emphasis on the role of archaeology in that restoration. The Governor's Palace and Public Mental Hospital sites are featured. 45 minutes.

CW: - \$19.95 to purchase videocassette #22723 - **SH-C**

—APPENDIX III—**WASHINGTON AREA PUBLIC ARCHAEOLOGY****Local Archaeologists**

Agricultural History Farm Park
18400 Mulcaster Road
Durwood, MD 20855
301-840-5848
James Sorenson

Alexandria Archaeology
105 N. Union Street #327
Alexandria, VA 22314
703-838-4399

Pamela Cressey, Steven Shephard, Barbara Magid & Francine Bromberg

*Archaeological Institute of America***Local Society Contacts:**

District of Columbia: 202-338-6536

Maryland: 410-661-3424

Virginia: 804-924-6128 or 804-384-8023 or 804-221-2163

Cultural Resource Protection Group—Stewardship Section

Resource Management Division
3701 Pender Drive
Fairfax, VA 22030
703-827-8672
Richard Sacchi

County Archaeology—Stewardship Section

Resource Management Division
2855 Annandale Road
Falls Church, VA 22042
703-237-4881
Michael Johnson & Kay McCarron

Historic Preservation Division DCSHPO

D.C. Department of Consumer and Regulatory Affairs
614 H Street, N.W. Room 305
Washington, D.C. 20001
202-727-7360
Nancy Kassner

The Maryland-National Capital Park &

Planning Commission Natural and Historical Resources Division

801 Watkins Drive
Upper Marlboro, MD 20774-8889
301-779-2011
Donald Creveling

Mount Vernon Ladies' Association

3200 Mount Vernon Memorial Parkway
Mount Vernon, VA 22121
703-799-8604
Nancy Hayward

National Park Service

1100 Ohio Drive, S.W.
Washington, D.C. 20242
202-619-7280
Stephen Potter

National Park Service Archaeological Assistance Division:

Departmental Consulting Archaeology

P.O. Box 37127
Washington, D.C. 20013-7127
202-343-4101

Archaeological Groups and Facilities

American Anthropological Association

4350 N. Fairfax Drive, Suite 640
Arlington, VA 22203
703-528-1902

Archaeological Society of Virginia

P.O. Box 70393
Richmond, VA 23255-0395

Association for the Preservation of Virginia Antiquities

c/o Mary Washington House
1200 Charles Street
Fredericksburg, VA 22401
703-373-1569

Baltimore Center for Urban Archaeology
Baltimore City Life Museums
802 E. Lombard Street
Baltimore, MD 21202-4511
410-396-3523

Biblical Archaeology Society
3000 Connecticut Avenue, Suite 300
Washington, DC 20008
202-387-8888

Colonial Williamsburg Foundation
Department of Archaeological Research
P.O. Box 1776
Williamsburg, VA 23187
804-220-7331
Marley R. Brown, III

Department Of Anthropology
Washington Hall
College of William and Mary
Williamsburg, VA 23185
804-253-4369
804-229-0898

Fredericksburg Area Museum and Cultural Center
P.O. Box 922
Fredericksburg, VA 22404
703-371-5668
Jeanne Finnegan

Friends of Alexandria Archaeology
P.O. Box 21475
Alexandria, VA 22320-2475
703-838-9304

Historic Annapolis Foundation with the University of Maryland
"Archaeology in Annapolis"
77 Main Street
Annapolis, MD 21401
410-268-7770
Lynn Jones

Historic Fredericksburg Foundation. Inc.
P.O. Box 8327
Fredericksburg, VA 22404
703-371-4504
Renee Viers

Jamestown Settlement
Williamsburg, VA 23187
804-229-1607

Jamestown Visitor Center
Colonial National Historical Park
Jamestown, VA 23081
804-229-1733

Jefferson Patterson Park and Museum
10515 Mackall Road
St. Leonard, MD 20685
410-586-8500
Sharlene Thompson

The Manassas Museum
9101 Prince William Street
Manassas, VA 22110
703-368-1873

Mary Washington College
Department of Historic Preservation
Center for Historic Preservation
Fredericksburg, VA 22401
703-899-4037
Doug Sanford

Historic St. Mary's City Commission
P.O. Box 39
St. Mary's City, MD 20686
301-862-0980
Dorsey Bodeman

Society for American Archaeology
900 Second Street, NE, Suite 12
Washington, D.C. 20002-3557
202-789-8200

Society for American Archaeology Education Network
Bushy Run Battlefield
P.O. Box 468
Harrison City, PA 15636-0468
Beverly Michem

Society for American Archaeology Resource Forum

Museum of Florida History
500 South Bronough St.
Tallahassee, FL 32399-0250
904-487-1902
KC Smith

State Historic Preservation Officers

To request a listing for the U.S.:
National Confederation of SHPO's
444 N. Capitol Street, NW #342
Washington, DC 20001-1512
202-624-5465

Thunderbird Research Corporation

126 E. High Street
Woodstock, VA 22664
703-459-4017

Virginia Department of Historic Resources

221 Governor Street
Richmond, VA 23219
804-786-3143

—APPENDIX IV—

READING LIST of RECOMMENDED BOOKS on ARCHAEOLOGY

Listed below are a few of the many books on archaeology that are available for children and adults at area libraries. Please be sure to ask your librarian to show you any new acquisitions to their collection.

Local Archaeology• *Books for Children*

Barnes, Cheryl Shaw. *Alexander the Old Town Mouse*. Alexandria, VA: Vacation Spot Publishing, 1994.

Explores Old Town Alexandria, Virginia, by visiting various historic sites with Alexander, the Old Town mouse. Illustrations.

Boyce-Ballweber, Hettie. *The First People of Maryland*. Lanham, MD: Maryland Historic Press, 1987.

Covers the history of Maryland's Native Americans from Paleolithic times to European contact. Activities.

Miller, T. Michael and William Francis Smith. *A Seaport Saga: Portrait of Old Alexandria, Virginia*. Norfolk, VA: The Dunning Co., Publishers, 1989.

Examines the history of Old Town. Historic photos.

Ruskin, Thelma G. *Indians of the Tidewater Country of Maryland, Virginia, North Carolina and Delaware*. Lanham, MD: Maryland Historical Press.

Discusses local Native Americans.

Schaum, George and Virginia. *Everyday Life in Colonial Maryland, Delaware, Pennsylvania and Virginia*. Lanham, MD: Maryland Historical Press, 1996.

Describes Colonial lifeways. Maps and illustrations.

• *Books for Adults*

Egloff, Keith and Deborah Woodward. *First People, The Early Indians of Virginia*. Richmond, VA: Virginia Department of Historic Resources, 1992.

Covers Virginia's first people, from early hunters or paleoindians through the time of European contact and today. Photos, drawings, glossary and resource list.

Gardner, William M. *Lost Arrowheads and Broken Pottery*. Woodstock, VA: Thunderbird Museum, 1986.
Explores the arrival of the first people through the time of European contact. Illustrations and line drawings.

Hahn, Thomas Swiftwater and Emory L. Kemp. *The Alexandria Canal: Its History and Preservation*. West Virginia University Press. 1992.

Hranicky, Jack and Ben McCary. *Clovis Technology in Virginia*. Richmond, VA: ASV Press Publications, 1991.
Discusses the clovis tool technology of paleoindians in Virginia.

Hume, Ivor Noel. *Martin's Hundred*. New York: Alfred A. Knopf, 1982.
The archaeology of a 17th century Virginia plantation and early colonial life.

Humphrey, Robert L. and Mary Elizabeth Chambers. *Ancient Washington: American Indian Cultures of the Potomac Valley*. Washington DC: George Washington University, 1985.
Reviews the prehistory of the metropolitan region from paleoindian to Contact.

Kauffman, Lynn E., James C. O'Neill and Patricia A. Jehle, eds. *Bibliography of the Virginia Indians*. Richmond, VA: ASV Press Publications, 1976.

Potter, Stephen R. *Commoners, Tribute and Chiefs: The Development of Algonquian Culture in the Potomac Valley*. Charlottesville, VA: Univ. Press of Virginia, 1993.
Archaeology and ethnohistory of the Potomac Valley Algonquian chiefdoms.

Reinhart, Theodore and Mary Ellen Hodges. *Early and Middle Archaic Research in Virginia: A Synthesis ; Late Archaic and Early Woodland Research in Virginia: A Synthesis ; Middle and Late Woodland Research in Virginia: A Synthesis*. Richmond, VA: ASV Press Publications, 1991.
Covers Virginia prehistory.

Wittofski, J. Mark and Theodore Reinhart. *Paleoindian Research in Virginia: A Synthesis*. Richmond, VA: ASV Press Publications, 1991.
An overview of paleoindian research in Virginia.

American Archaeology

•Books for Children

Anderson, Joan. *From Map to Museum*. New York: Morrow Junior Books, 1988.
Follows an archaeological dig off the coast of Georgia at a Spanish mission for Guale Indians. Describes the methods used to uncover artifacts.

Marcus, Rebecca B. *The First Book of The Cliff Dwellers*. New York: Franklin Watts, Inc., 1968.
Describes cliff dwellers based on archaeological discoveries. Includes the technique of tree-ring dating. Illustrations.

Pryor, Bonnie. *The House on Maple Street*. New York: W. Morrow, 1987.
Follows two little girls who have found a “treasure” in their back yard and search, with their imaginations, for its original owner.

Smith, Howard E., Jr. *All About Arrowheads and Spearpoints*. New York: H. Holt, 1989.
Explores the lifeways of early Native Americans by looking at their stone tool kits. Illustrations.

• *Books for Adults*

Coe, Michael D., Dean Snow, and Elizabeth Beason. *Atlas of Ancient America*. New York: Facts on File, 1986.
Summarizes major sites and time periods for all areas of the Americas. Large-format atlas by experienced archaeologists.

Deetz, James. *In Small Things Forgotten: The Archaeology of Early American Life*. Garden City, NY: Anchor Press, Doubleday, 1977.
Examines the influence of African and Anglo material culture on early American life. Excellent resource for anyone interested in history and archaeology.

Ehrenberg, Margaret. *Women in Prehistory*. Norman, OK: University of Oklahoma Press, 1989.
Oklahoma Series in Classical Culture 4.

Elting, Mary, and Franklin Folsom. *America's Ancient Treasures*. Albuquerque, NM: University of New Mexico Press, 1983.

_____. *The Story of Archaeology in the Americas*. New York: Harvey House Publishers, 1960.
Describes ancient archaeological finds in North and South America. Discusses the need for preservation and the “dos and don’ts” for amateur archaeologists. Illustrations.

Ernst, Kathryn F. *Indians: The First Americans*. New York: Wells, 1978.
Presents the history of North American Indians from 30,000 years ago to present. An Easy-read Fact Book. Illustrations.

Folsom, Franklin, and Mary Elting Folsom. *America's Ancient Treasures*. Albuquerque, NM: University of New Mexico Press, 1983.

Lyttle, Richard B. *People of the Dawn*. New York: Atheneum, 1980.
Explores early man in America by looking at a range of archaeological sites and the archaeological techniques used to study them.

Schobinger, Juan. *The First Americans*. Grand Rapids, MI: Eerdmans, 1994.

Sheele, William E. *The Earliest Americans*. Cleveland, OH: World Press, 1963.
Covers prehistoric archaeology in the western United States along with the meaning of finds, including human and animal bones. Line drawings.

Silverberg, Robert. *Men Against Time, Salvage Archaeology in the United States*. New York: MacMillan and Company, 1967.

Discusses rescue archaeology at sites around the country. Photographs.

Wiley, Gordon R. and Jeremy A. Sabloff. *A History of American Archaeology*, 3rd ed.. New York: W.H. Freeman, 1993.

Williams, Stephen. *Fantastic Archaeology: The Wild Side of North American Prehistory*. Philadelphia: University of Pennsylvania Press, 1991.

General Topics in Archaeology

• Books for Children

Alexander, Lisa. *A Visit to the Museum*. New York: Random House/Children's Television Workshop, 1987.

Sesame Street's Bert and Ernie discover exciting museum exhibits.

Anderson, Joan. *From Map to Museum*. New York: Morrow Junior Books, 1988. Describes a dig sponsored by the American Museum of Natural History, on an island off the coast of Georgia. Includes the methods used to uncover artifacts and what was learned about the Spanish mission for the Guale Indians.

Avi-Yonah, Michael and Richard L. Currier. *Search For the Past*. Minneapolis, MN: Lerner Publishing Co., 1973.

Discusses the history, methods, and goals of archaeology including key excavations in the Mediterranean area. Illustrations.

Aylesworth, Thomas G., ed. *Mysteries From the Past*. New York: Doubleday & Co., 1971.

Explores scientific puzzles and their explanations gleaned through archaeology. Topics include "The Earliest Indians of the Northwest Coast." Photos and maps, black and white.

Bray, W. and D. Trump. *The Penguin Dictionary of Archaeology*. Baltimore: Penguin Books, 1973.

Celoria, Francis. *Archaeology — A Grosset All-Color Guide*. New York: Grosset & Dunlap, 1973.

Provides an overview of archaeology with an emphasis on ancient archaeological sites. Discusses equipment, record-keeping and dating remains. Illustrations.

Ceram C.W. (Kurt W. Marek). *Gods, Graves, and Scholars: The Story of Archaeology*. 2nd ed., New York: Vintage Books, 1986.

Accounts of the work and finds of famous archaeologists.

Cook, Barbara, and Reid Straun. *Archaeology* (Usborne Picture History Series). Tulsa, OK: EDC Publishing, 1984.

Explanations of concepts in a clear, visual style.

Daugherty, Charles M. *The Great Archaeologists*. Binghamton, NY: Vail-Ballou Press, 1962.

Provides nontechnical explanations. Designed for students in grades 5 through 8. Features famous archaeologists.

Davis, Simon J.M. *The Archaeology of Animals*. New Haven: Yale University Press, 1987.

An introduction to zooarchaeology.

Deetz, James. *Invitation to Archaeology*. New Jersey: Natural History Press, 1967.

Fagan, Brian M. *The Adventure in Archaeology*. Washington, D.C.: National Geographic Society, 1989.

_____. *Snapshots of the Past*. California: Altamira Press, 1995.

_____. *Time Detectives: How Archaeologists Use Technology to Recapture the Past*. New York: Simon & Schuster, 1995.

Falk, Lisa. *Historical Archaeology in Global Perspective*. Washington, D.C.: Smithsonian Institution Press, 1991.

Available from Smithsonian Institution Press, Washington, D.C. 20560.

Fraden, Dennis B. *Archaeology*. Chicago: Children's Press, 1983.

Available from Children's Press, 5440 N. Cumberland Ave., Chicago, IL 60656.

Gibson, Michael. *A New Look at Treasures of Archaeology*. New York: Arco Press, 1980.

Describes famous archaeological finds and includes lesson plans to reenact what they tell us about people in the past and directions for reconstructing artifacts

Greene, Kevin G. *Archaeology: An Introduction, The History, Principles and Methods of Modern Archaeology*. 3rd ed. Philadelphia: Univ. of Pennsylvania Press, 1995.

Hackwell, W. John. *Digging to the Past*. New York: Macmillan Publishing Co., 1986.

Describes the daily routine of archaeological field work as participants search for information about the past. Based on the discoveries made at the site, the archaeologists speculate about life in the Middle East long ago.

_____. *Diving to the Past*. New York: Charles Scribner's Sons, 1988.

Describes marine archaeology in terms of site location, exploration, excavation and preservation of ancient shipwrecks and the dangers involved. Includes the historical and cultural significance of the sites.

James, Carolyn. *Digging Up the Past; The Story of an Archaeological Adventure*. New York: Franklin Watts, 1990.

Discover archaeological remains with two boys from the 1800s and learn about archaeology.

Jessup, Ronald. *The Wonderful World of Archaeology*. New York: Doubleday & Company, 1968.

Discusses discoveries at ancient sites throughout the world and their relationship to history. Also includes the work of individual archaeologists. Grades 5 through 8. Illustrations.

Kindersley, Barnabas and Annabel. *Children Just Like Me*. New York: DK Publishing Inc., 1995.

Interviews with children from 31 countries. Photographs.

Lampton, Christopher. *Undersea Archaeology*. New York: Franklin Watts, 1988. Describes the technologies used to expose shipwrecks and retrieve artifacts from the ocean floor. Underwater excavations described include the Vasa, the Mary Rose, the Titanic and the Challenger space craft.

Lynch, Valerie. *Exploring the Past*. Athens, OH: John H. Day Publishing Co., 1969. Introduces archaeology, describing how archaeologists work and what is revealed by their findings. Illustrations, glossary.

Magnusson, Magnus. *Introducing Archaeology (The Walck Archaeologies)*. New York: Henry Z. Walck, Inc., 1972.

Follows the development of archaeology as a science. Illustrations.

McIntosh, Jane. *The Practical Archaeologist: How We Know What We Know About the Past*. New York and Oxford: Facts on File, 1986.

Provides an introduction to archaeology. A reference book and practical guide to present-day archaeological techniques. Illustrations, photographs, bibliography, and index.

Moscatti, Sabatino. *Archaeology*. New York: Franklin Watts, Inc., New York; Norwich, England: Jarold & Sons, LTD, 1976.

Asks the question "What is archaeology?" Includes chapters on training, discovery, excavation, conservation and publication. Illustrations.

Patterson, Thomas C. *The Theory and Practice of Archaeology: A Workbook*. New Jersey: Prentice Hall, 1994.

Pickering, Robert B. *I Can Be an Archaeologist*. Chicago: Children's Press, 1987. Describes archaeology and how archaeologists learn about the past with photographs and illustrations. Glossary.

Porell, Bruce. *Digging The Past: Archaeology in Your Own Backyard*. Reading, MA: Addison-Wesley, 1979.

Offers information and class projects suitable for Grade 6 and older.

Rice, Chris and Melanie. *How Children Lived*. New York: DK Publishing, Inc. 1995. Child historians describe the ancient cultures in which they lived.

Sattler, Helen Roney. *The Earliest Americans*. New York: Clarion Books, 1993. Describes the evidence and theories on when modern man first arrived in the Americas. Illustrations.

Scharre, Chris. *Smithsonian TimeLines of the Ancient World*. New York: DK Publishing Inc. 1993.

Timeline of life through 1500AD which includes artifact illustrations.

Schmandt-Besserat, Denise. *Archaeology*. Austin, TX: Steck-Vaughn, 1974. Explanations of archaeological method and terms with examples and pictures from Near Eastern sites. Photographs, diagrams and maps.

Sharer, Robert J. and Wendy Ashmore. *Archaeology: Discovering Our Past*. 2nd ed. Mayfield, CA, 1993.

Smith, George S., and John E. Ehrendard, eds. *Protecting the Past*. Boca Raton: CRC Press, 1991.
Available from CRC Press, 2000 Corporate Blvd., Boca Raton, FL 33431.

Stuart, Gene S. *Secrets From the Past*. Washington, D.C.: National Geographic Society, 1979.

Describes the work of archaeologists, some significant finds, and what has been revealed about man's progress through time. Includes a detailed reading list and supplemental paperback with games, riddles, and puzzles about the past. Elementary age children and classroom teaching. Photographs.

Watts, Edith Whitney. *Archaeology, Exploring the Past*. Greenwich, CT: New York Graphic Society, 1965.
Explores archaeology in a question and answer format.

Webster, David L., Susan T. Evans and William T. Sander. *Out of the Past: An Introduction to Archaeology*. Mayfield, CA, 1993.

Williams, Barbara. *Breakthrough: Women in Archaeology*. New York: N.W. Walker, New York, 1981.
Features six successful women archaeologists. Includes information on making archaeology a career. Illustrations.

Wood, Michael. *The World Atlas of Archaeology*. Boston, MA, 1985.
Covers the development of archaeology geographically and chronologically. Maps, reconstructions and photographs.

• Books for Adults

Baldwin, Gordon Cortis. *Calendars to the Past*. New York: Norton, 1967.
Describes the scientific methods used to date archaeological sites.

Bray, Warwick. *The Penguin Dictionary of Archaeology*. Harmondsworth, UK: Penguin, 1972.

Day, Alan E. *Archaeology: A Reference Handbook*. London: C. Bingley, 1978.

Johnstone, Paul. *The Archaeology of Ships*. New York: Henry Z. Walck, 1974.
Explores important finds in marine archaeology, including revelations about ships and people who built and sailed them. Illustrations, photographs and maps.

Mignon, Molly Raymond. *Dictionary of Concepts in Archaeology*. Westport, CT: Greenwood Press, 1993.

Morrison, Velma Ford. *Going On A Dig*. New York: Dodd, Mead and Company, 1981.

Summarizes the "new" archaeology with a North American focus. Discusses how ancient sites became buried, techniques of excavation, and the information archaeology has revealed about Native Americans. Includes a list of where junior high school students can "go on a dig." Photographs.

Woodhead, Peter. *Key Guide to Information Sources in Archaeology*. New York: Mansell Publishing, 1984.

Classical Archaeology

- *Books for Children*

Ballard, Robert. *The Lost Wreck of the Isis*. Time Quest Book. Toronto: Scholastic/Machson Press, 1990.

Describes the search for and discovery of the Roman ship *Isis*, the deepest ancient wreck ever found. In 1989 Dr. Ballard explored the wreck with the underwater robot JASON. The story flashes back to 4th century A.D. Carthage and a young boy about to embark on a voyage. Upper elementary and junior high students. Illustrations and photographs.

Bisel, Sara C. *The Secrets of Vesuvius*. Time Quest Book. Toronto: Scholastic/Machson Press, 1990.

Describes life in ancient Herculaneum and what might have happened when the volcano erupted. Dr. Bisel, an archaeologist and physical anthropologist, is one of the leading specialists in ancient bones. She began work at Herculaneum in 1982, excavating and studying the skeletons of those who died when Vesuvius erupted in August 79 A.D. Photographs, illustrations and diagrams. List of museums that have collections from the ancient Roman empire. Upper elementary and junior high students.

Brackman, Arnold C. *Luck of Nineveh: Archaeology's Great Adventure*. New York: McGraw Hill, 1978.

Recounts Austen Henry Layard's remarkable discovery of Nineveh, capital of the Assyrian Empire, which had been buried for 2500 years.

Cohen, Daniel. *Secrets From Ancient Graves*. New York: Dodd, Mead and Company, 1968.

Brings historic figures to life through knowledge gained from archaeological research.

Deiss, Joseph Jay. *The Town of Hercules*. Boston: Houghton Mifflin Company, 1974.

Explores the town of Herculaneum at the foot of Mount Vesuvius in southern Italy. The town was buried by a volcanic eruption in 79 A.D. The author visits the now excavated site and retells the story of life 2,000 years ago.

Freeman, Mae Blacker. *Finding Out About the Past*. New York: Random House, 1967.

Covers the archaeology of ancient sites. Grades 3 through 6. Illustrations.

Gallant, Roy A. *Lost Cities*. New York: Franklin Watts, 1985.

Describes several lost cities, including how they were destroyed or abandoned and then rediscovered.

Gibson, Michael. *A New Look at the Mysteries of Archaeology*. New York: Arco Publishing, 1980.

Explores archaeological mysteries and the interpretation of clues needed to solve them. Includes a project or game for each mystery. Grades 3 through 6. Illustrations and glossary.

_____. *A New Look at the Treasures of Archaeology*. New York: Arco Publishing, 1980.

Studies archaeological sites of the ancient world. Includes several classroom projects. Grades 3 through 6.

Glubok, Shirley. *Art and Archaeology*. New York: Harper and Row Inc., 1966. Reviews excavations and finds at sites of the ancient world and what archaeologists have found at each one. Photographs.

Gottlieb, Gerald, and Yigael Yadin. *The Story of Masada*. New York: Random House, 1966.

Describes archaeological work, detailing the story of Masada. Photographs.

Millard, Anne. *Atlas of Ancient Worlds*. New York: DK Publishing, Inc. 1994. Pictorial atlas of ancient civilizations including Egypt, Babylon and the Inca.

Millard, Anne. *Egypt, The Young Archaeologist Books*. New York: Putnam Brothers, 1971.

Describes work on an Egyptian site and discoveries detailing the lives of Ancient Egyptians. Photographs and drawings.

Millard, Anne. *The First Civilization (The Children's Picture World History)*. London: Usborne Publishing, Ltd., 1977.

Illustrates archaeological excavation through detailed description of the excavation of a mound.

Shippen, Katherine B. *Portals to the Past*. New York: Viking Press, 1964.

Discusses knowledge of ancient civilizations gained through archaeology and the development of archaeology into a modern science.

• *Books for Adults*

Allsebrook, Mary. *Born to Rebel*. Indiana: David Brown Publishers, 1992.

Looks at the life of Harriet Boyd Hawes as written by her daughter. Boyd-Dawes was the first female archaeologist to lead an excavation in the Aegean.

Eisenberg, Azriel and Don Peretz Elkins. *Treasures From the Dust*

New York: Abelard-Shuman Ltd., 1972.

Reveals discoveries on several excavations in the Middle East through description of archaeological techniques. Illustrations.

Hay, John. *Ancient China (The Walck Archaeologies)*. New York: Henry Z. Walck, Inc., 1974.

Discusses the development of archaeology as a discipline in China, along with remarkable facts revealed about ancient Chinese civilizations. Includes historical background of each site with artifact descriptions. Photographs, maps, and drawings.

James, Thomas Garnet Henry. *The Archaeology of Ancient Egypt (The Walck Archaeologies)*. New York: Henry Z. Walck, Inc., 1972.

Discusses archaeological discoveries in Egypt and their importance to the study of ancient Egyptian history. Photographs, maps, and drawings.

Ventura, Piero. *In Search of Troy*. New Jersey: Silver Burdett, 1985.

Traces Heinrich Schliemann's search for and discovery of ancient Troy. Addresses mythology and possible historical facts as well as the "unscientific" methods used by Schliemann.

Woolley, Sir Leonard (Shirley Glubok, ed.). *Discovering the Royal Tombs at Ur*. New York: Macmillan, 1969.

Traces the planning and execution of the 1922 expedition to Ur in Iraq and the discovery of the tombs and the ancient city.

—APPENDIX V—

Electronic Resources

The advent of the Internet and access to the World Wide Web have opened up a whole new realm of resources for teachers to use in the classroom. Whether you have a computer with Internet access in your classroom or not, there are many ways to integrate electronic media into your lessons. Even if your school does not have access, chances are good that some of your students will. “Surfing the Net” is a great way to stay current and see what's going on in the worlds of history and archaeology. You may find that research and projects in these areas will allow you to integrate archaeology into diverse curricular areas such as science, math, literature, geography, foreign language studies and more. Listed below are a few of the Web sites we have visited, and ways to access even more information via computer networks.

Web Sites

Alexandria Archaeology

The home page for Alexandria Archaeology's public programs and museum information. (Please note, a new Alexandria Archaeology site is forthcoming).

http://ci.alexandria.va.us/Alexandria/libraries_museums/libraries_museums.html

Alexandria Libraries

A guide to resources in the City of Alexandria, VA's library system, including an on-line catalog.

<http://alexandria.lib.va.us>

Alexandria: The Shining Pearl of the Mediterranean

Archaeology as well as ancient and modern history.

<http://pharos.bu.edu/egypt/alexandria/>

Ancient Mathematics

Virtual exhibit covering the history of mathematics and astronomy.

<http://www.ncsa.uiuc.edu/SDG/Experimental/vatican.exhibit/exhibit/d-mathematics/Mathematics.html>

Ancient World Web

Index of many home pages and web sites concerned with history and archaeology.

<http://atlantic.evsc.virginia.edu/julia/AW/meta.html>

Archaeological Consultants Home Page

http://ourworld.compuserve.com/homepages/Adkins_archaeology

Archaeology On Film

An electronic database of archaeology film reviews, includes a directory of films by subject and availability information.

<http://www.sscf.ucsb.edu/anth/videos/video.html>

ArchNet's Educational Resources for Anthropology and Archaeology

Internet resources on history and preservation, plus data on C-14 dating, camps, museums and volunteer programs.

<http://spirit.lib.uconn.edu/ArchNet/Topical/Educat/educat.html>

ArchNet's Historical Archaeology

Site files and tours of historic places, Internet resources, a bibliography and topical information on subjects such as archeometry, ceramic analysis, mapping, stone tool analysis, faunal analysis and more.

<http://spirit.lib.uconn.edu/ArchNet/Topical/Historic/Historic.html>

Chaco Canyon

History of this southwest area along with photographs, a bibliography and National Park Service information.

<http://www.chaco.com/park/>

Colonial Williamsburg

Research information and a virtual tour of Colonial Williamsburg.

<http://www.history.org/>

A Color Tour of Egypt

Images with descriptions from the Institute of Egyptian Art and Archaeology.

<http://www.memst.edu/egypt/egypt.html>

Council for British Archaeology

<http://britac3.britac.ac.uk/cba/cba/cba.html>

Discovery of a Paleolithic Painted Cave at Vallon (France)

An account of the cave's discovery and its history.

<http://www.culture.fr/culture/gvpda-en.html>

Egypt News

News, announcements, resources, word lists and a bibliography.

<http://www.newton.cam.ac.uk/egypt/news.html>

Exploring World Cultures

Index of ancient world cultures' web sites.

<http://www.evansville.edu/~wcweb/wc101>

Flints and Stones

Tour of the world of prehistoric hunter-gatherers with a “shaman” and an archaeologist.

<http://www.ncl.ac.uk/~nantiq/menu.html>

George Washington's Mount Vernon Estate and Gardens

Visitors guide, library and collections, educational resources with sample lessons, information on archaeological research and membership data.

<http://www.mountvernon.org>

Guide to Museums and Cultural Resources on the Web

<http://www.lam.mus.ca.us/webmuseums>

Jamestown Rediscovery Archaeology Project

Jamestown history, excavation results and plans for future projects.

<http://www.widomaker.com/~apva/>

Library of Congress on the World Wide Web

Lists of exhibits, events, publications, digital collections, on-line systems and more.

<http://www.loc.gov/>

Maya Astronomy Home Page

Mayan mathematics, calendar, writing and astronomy.

<http://www.astro.uva.nl/michieltb/maya/astro.html>

MayaQuest Learning Project

Describes a bicycle tour through Mexico and Central America.

<http://www.mecc.com/mayaquest.html>

Mayflower Hill Archaeology Project

History and archaeology of the site of a New England colony.

<http://colby.edu/rel/Mayflower.html>

Museum On-line Resource Review (MORR)

Locates museums on-line.

<http://www.okc.com/morr/>

Myths, Legends and Folklore

Norse to North American sites are covered.

<http://pubpages.unh.edu/~cbsiren/myth.html>

National Council for History Education

A tremendous resource for teachers including additional history links and Internet resources for social studies educators.

<http://www.history.org/nche/>

National Park Service - Links to the Past

Describes historic places, "where you live," preservation programs, archaeology and many other topics.

<http://www.cr.nps.gov/>

Native American Literature

Various genre including stories, music, poetry and quotes.

<http://www.indians.org/>

Scrolls From the Dead Sea

Lists resources available for study of the scrolls.

<http://sunsite.unc.edu/expo/deadsea.scrolls.exhibit/intro.html>

Shroud of Turin

History, research and information of the study of the shroud.

<http://www.cais.com/npacheco/shroud/turin.html>

Smithsonian Institution

Many useful links, including museums, research centers and information for teachers and students alike.

<http://www.si.edu/organiza>

Society for American Archaeology

The SAA's resource center includes education pages.

<http://www.saa.org>

Tour of Plimoth Plantation

Walking tour of Plimoth Plantation with history and images.

<http://spirit.lib.uconn.edu/ArchNet/Topical/Historic/Plimoth/Plimoth.html>

Treasures of the Czars

Tour of the Romanov artifacts exhibited at the Florida International Museum.

<http://www.times.st-pete.fl.us/treasures/tc.lobby.html>

University of Memphis Institute of Egyptian Art and Archaeology

Many exhibit images and information about the institute.

<http://www.memphis.edu/egypt/main.html>

University of Pennsylvania Museum

<http://www.upenn.edu/museum/>

World Wide Web Virtual Library

<http://www.w3.org/vl/>

WWW*World of UK Archaeology*

<http://www.ccc.nottingham.ac.uk/~aczkdc/ukarch/ukindex.html>

Yahoo

Lists of books, events, journals, institutes and museums pertaining to anthropology and archaeology.

<http://www.yahoo.com>

Gopher Servers***National Center for Preservation Technology and Training***

U.S. Department of the Interior - National Park Service

gopher.ncptt.nps.gov

Peabody Museum of Natural History

(Yale University) collections data

gopher.peabody.yale.edu

—APPENDIX VI—

ARCHAEOLOGY AND THE LAW

Archaeologists, like doctors, lawyers, and other professionals, have standards that define expectations for practice and conduct. Professional and amateur archaeologists in Virginia follow a code established by organizations such as the Society for American Archaeology (SAA), Society of Professional Archaeologists (SOPA), Council of Virginia Archaeologists (COVA) and the Archaeological Society of Virginia (ASV). Many organizations and government sponsored archaeology projects, such as Alexandria Archaeology, train volunteers to assist in excavation, laboratory work and archival research. Alexandria Archaeology requires that all volunteers abide by standards that have been adapted from the SOPA code of ethics.

Those who collect individual artifacts without following scientific techniques vandalize the site and destroy its significance. Some government lands (Federal, state, and City of Alexandria) are protected, and the removal of artifacts is a felony punishable by fine or imprisonment. Bringing a metal detector onto park lands (Federal, state and City of Alexandria) is also prohibited.

Private property, including construction sites, is protected from trespassing as well. Artifacts legally belong to the property owner rather than the archaeologist or collector. Artifacts in the Alexandria Archaeology collection that were retrieved from private property are loaned or donated to the Museum by the property owner.

Removing artifacts from a site renders them valueless in terms of historic reconstruction. Only artifacts with carefully maintained provenience allow us to interpret and reconstruct history. Taking an artifact from the ground is like tearing a page out of a book. Once the page is gone, we lose the meaning of the story.

ARCHAEOLOGICAL LEGISLATION

Legislation affecting historic preservation provides government support for programs, defines program functions and establishes procedure. Some of the laws pertinent to preservation in Alexandria, Virginia, have been enacted at Federal, state and local levels. These include:

Antiquities Act of 1906 - First Federal acknowledgment of the need to protect antiquities on Federal lands. Gave the President authority to establish national monuments and historic sites to protect them. Required permits to conduct archaeological excavations on public lands.

Historic Act of 1935 - Empowered the Secretary of the Interior to evaluate, acquire and preserve historic sites across the country.

National Historic Preservation Act (NHPA) of 1966 - Established the National Register, a list of sites, structures and objects significant in American history, architecture, archaeology and culture. Stipulated that under Section 106, federal projects and projects involving Federal funds and licensing, require an assessment and mitigation of impacts on historic and archaeological resources.

Alexandria City Council Resolution Nos. 371, 1279 and Ordinance 3773 - Established and outlined the functions of the Alexandria Archaeological Commission, a permanent citizen commission charged with stewardship of Alexandria archaeological resources.

Archaeological Resources Protection Act of 1979 - Stealing and vandalizing antiquities on Federal lands is a criminal offense punishable with fines up to \$100,000 and five years in prison. Rewards of up to \$500 are given for information leading to the arrest and conviction of violators.

Abandoned Shipwreck Act of 1987 - Provides for the protection and cultural management of abandoned shipwrecks in areas owned by Native Americans, states and the Federal government. The law provides guidelines for protection and utilization of shipwrecks for cultural and recreational programs, historic preservation and environmental protection.

Native American Graves Protection and Repatriation Act of 1990 - Requires that Federal agencies and museums receiving Federal funds to consult with Indian tribes regarding the proper care and disposition of Native American human remains, funerary objects, sacred objects and objects of cultural patrimony.

Ordinance No. 3355: Metal Detecting and Digging on City Property, City of Alexandria, VA, 1/14/89 - Prohibits the possession and use of metal detectors on City property. Also prohibits digging, excavating, and removing objects from City property. A copy of this document is included in this appendix.

Alexandria Archaeological Protection Code, City of Alexandria, VA, 6/24/96 - This section of the Zoning Ordinance establishes a system of identification, evaluation, preservation and protection of significant archaeological resources within the City. A copy of this document follows.

Virginia Antiquities Act - Charged the Virginia Historic Landmarks Commission with the responsibility of identifying, evaluating, protecting and preserving historic or archaeological sites, particularly on state-controlled land.

Many other laws enforcing historic Preservation and the conservation of cultural resources have been enacted. On the following pages you will see copies of some local Alexandria, Virginia ordinances which protect our heritage. Additionally, a more

extensive list of legislation is included in the article "Organization of the federal Archaeology Program," reproduced from *CRM* Vol. 17 no. 6, 1994. Also appended is "High Points in Historic Preservation," reproduced from *Archaeology and Public Education* Vol. 5 no. 4, 1995.

ORDINANCE NO. 3355

AN ORDINANCE to add a new Section 13-1-40 (METAL DETECTING AND DIGGING ON CITY PROPERTY) to Chapter 1 (GENERAL OFFENSES), Title 13 (MISCELLANEOUS OFFENSES) of The Code of the City of Alexandria, Virginia, 1981, as amended.

THE CITY COUNCIL OF ALEXANDRIA HEREBY ORDAINS:

Section 1. That Chapter 1, Title 13 of The Code of the City of Alexandria, Virginia, 1981, as amended, be and the same hereby is amended by adding a new section 13-1-40 to read as follows:

Sec. 13-1-40 Metal detecting and digging on city property.

(a) Except as provided in subsections (b), © and (d), it shall be unlawful for any person, while located on city property, to:

(1) posses or use a mineral or metal detector or any other device or probe to search for objects in, on or below the surface of the soil;

(2) dig, excavate or in any other way disturb the surface of the soil;

(3) remove any object found in, on or below the surface of the soil.

(b) Notwithstanding the prohibitions in subsections (a) (1) and (a) (3), permission may be obtained from the director of the department of recreation, parks and cultural activities, or his designee, to use a metal detector on city property to locate and recover a specific item of personal property which has been lost by the person requesting such permission.

(c) Notwithstanding the prohibition in subsection (a) (2), permission to dig on or excavate specific city property may be granted by the city manager, after review of an favorable recommendation on the request by the city archaeologist. Any objects found as a result of such permitted digging or excavation shall remain the property of the city. Any person receiving permission under this subsection shall, at the completion of the work, restore the city property to its previous condition.

(d) This section shall not apply to activities conducted by city employees during the course of their duties.

(e) Any person violating this section shall, upon conviction, be guilty of a class three misdemeanor. Each day that a violation continues or occurs shall constitute a separate offense.

Section 2. That this ordinance shall become effective upon the date and at the time of its final passage.

Final Passage: January 14, 1989

James P. Moran, JR.
Mayor

THE ZONING ORDINANCE
OF THE
CITY OF ALEXANDRIA, VIRGINIA

--- Selected sections pertaining ---
to archaeological protection.

Published by Order of the City Council

Adopted June 24, 1992
Effective June 24, 1992



MUNICIPAL CODE CORPORATION

Tallahassee, Florida

1992

ALEXANDRIA ZONING ORDINANCE

- 2-147 *Fraternal or private clubs.* An establishment of a private not-for-profit organization, including fraternal organizations, which provides social, physical, recreational, educational or benevolent services. Such establishment shall not be operated for the purpose of carrying on a trade or business, and no part of the net earnings shall inure to the benefit of any member of such organization or any other individuals, although regular employees may be paid reasonable compensation for services rendered.
- 2-148 *Freight distribution center.* Land and buildings used as a relay station for the transfer of a load from one vehicle to another or one party to another. The facility may include storage areas for trucks, buildings or areas for the repair of trucks associated with the terminal and areas for the temporary storage of loads in the process of being transferred.
- 2-149 *Garage, private.* A building designed for the storage of not more than three motor-driven vehicles.
- 2-150 *Garage, public.* Any building or premises designed, used or intended to be used for housing more than three motor driven vehicles.
- X 2-151 *Ground disturbing activity.* Any movement of earth or substrate, manually or mechanically, including but not limited to any modification of existing grade by dredging, demolition, excavation or fill, grading, scraping, vegetation removal, landscaping, coring, well drilling, pile driving, undergrounding utility lines, trenching, bulldozing, sheeting, shoring and excavation for laying or removing foundations, pilings or other purposes, for which any permit or approval is required under the provisions of the city code.
- 2-152 *Guest house.* Living quarters within a detached accessory building located on the same premises with the main building for use by temporary guests or the occupants of the premises. Such quarters shall not have kitchen facilities and shall not be rented or otherwise used as a separate dwelling.
- 2-153 *Guest room.* A room which is designed or intended for occupancy by one or more guests, but in which no provision is made for cooking, and not including dormitories for sleeping purposes.
- 2-154 *Height of building.* The vertical distance measured from the average finished grade at ground level, or in the case of a building with ten feet or less between the building setback line and the right-of-way line, either the vertical distance measured from the average finished grade or the curb grade, whichever is less, to the highest point of the building; except, that in the case of gable, hip or gambrel roofs, the height on the gable, hip or gambrel end shall be measured to the midpoint between the eaves and the ridge; and provided, that in the case of a flat roof with parapet wall the highest point of the building shall be the roof line unless the parapet wall is more than

ARTICLE I. GENERAL REGULATIONS

- Sec. 1-100 Title, purpose and intent of ordinance.
- Sec. 1-200 General application of ordinance.
- Sec. 1-300 Official zoning map and district boundaries.
- Sec. 1-400 Interpretation of ordinance.
- Sec. 1-500 Application to prior approvals and pending applications.
- Sec. 1-600 Determination of vested rights.
- Sec. 1-700 Establishment of zones.

Sec. 1-100 Title, purpose and intent of ordinance.

1-101 *Title.* This ordinance and the official zoning map made a part hereof shall be known and may be cited and referred to as the City of Alexandria Zoning Ordinance.

1-102 *Purpose and intent.* This ordinance is enacted in order to promote the health, safety and welfare of the residents of the City of Alexandria and to implement the consolidated master plan of the city. To these ends, the ordinance is designed to:

- (A) Guide and regulate the orderly growth, development and redevelopment of the City of Alexandria in accordance with a well-considered plan and with long-term objectives, principles and standards deemed beneficial to the interest and welfare of the people.
- (B) Protect the established character of existing residential neighborhoods and commercial and business areas and the social and economic well-being of the residents.
- (C) Promote, in the public interest, the utilization of land for the purposes for which it is best adapted in harmony with the established character of the city.
- (D) To reduce or prevent congestion in the public streets.
- (E) To facilitate the creation of a convenient, attractive and harmonious community.
- (F) To expedite the provision of adequate police and fire protection, disaster evacuation, civil defense, transportation, water, sewerage, flood protection, schools, parks, forests, playgrounds, recreational facilities and other public requirements.
- * (G) To protect against destruction of, or encroachment upon, historic areas and archeological sites.
- (H) To preserve existing and facilitate the provision of new housing that is affordable to all segments of the community.
- (I) To protect against one or more of the following: overcrowding of land, undue density of population in relation to the community

official master plan of the city require that the city provide newspaper notice of the hearing.

- (D) *Master plan amendment.* Public hearings on the adoption of a new or substantially revised official master plan for the city as a whole or for the territory included within a small area plan adopted as part of the official master plan of the city require that the city provide newspaper notice of the hearing.

11-303

Additional notice required.

- (A) *Deferral.* If an item is deferred at the time of the public hearing for a period which exceeds 30 days, then all notices required by this section 11-300 shall be given prior to any subsequent public hearing as if it were a new item.
- (B) *Referral.* If a zoning amendment is referred by the city council back to the planning commission, all notices required by this section 11-300 shall be given prior to any subsequent public hearing as if the referred item were a new item.
- (C) *Rescheduled hearing.* If the date for a public hearing is changed after notice has been given of the original date and prior to the hearing, all notices required by this section 11-300 shall be given for the rescheduled hearing as if it were a new item.

11-304

Subscription notice to interested persons. Notice of the docket of the public hearings pending before the planning commission, city council, board of zoning appeals and board of architectural review will be mailed to any person who obtains a subscription for same by paying the established annual fee.

DIVISION B. DEVELOPMENT APPROVALS

Sec. 11-400

Site plan.

11-401

Purpose. The purpose of this section 11-400 is to ensure that the use and development of land as authorized in the zoning ordinance is undertaken in an orderly and proper manner that furthers the public health, safety and welfare and makes adequate provision for assuring the availability of appropriate public and private services and amenities and for minimizing the adverse effects of such development.

11-402

Administration. Unless otherwise specifically provided herein, the director of transportation and environmental services has the duty and responsibility to administer and enforce the provisions of this section 11-400 and the authority to establish rules and regulations to do so. To the extent delegated herein, other department directors shall have the duties and responsibilities

provided and the authority to establish rules and regulations to administer such responsibilities. The director of transportation and environmental services or the head of any other department referred to in this section 11-400 may delegate in writing to an employee under his supervision any of the functions hereunder for which the director or such department head is responsible. These provisions of section 11-400 are included here for administrative convenience; they derive from section 9.33 of the charter and are technically not part of the zoning ordinance for purposes of section 9.12 of the charter.

11-403 *Approved site plan required.* No permit shall be issued to erect or alter any building or structure or alter the grade of any land that is subject to this section 11-400 until a site plan has been submitted and approved.

- (A) *Construction of buildings.* Unless exempted pursuant to section 11-404, it shall be unlawful for any person to construct or erect any building or structure on any land within the city until a site plan has been submitted and approved.
- (B) *Enlargement of buildings.* Unless exempted pursuant to section 11-404, it shall be unlawful for any person to alter any building or structure on any land within the city in such manner as to increase the floor area or change the land area covered by the building or structure until a site plan has been submitted and approved.
- (C) *Alteration of grade, etc.* Unless exempted pursuant to section 11-404, it shall be unlawful for any person to alter the grade of any land in such a manner as to change existing contours in excess of two feet within ten feet of adjacent land, or in excess of three feet elsewhere, construct any streets, alleys, sidewalks, curbs or gutters, build any retaining walls, construct any off-street parking facility, construct any drain or sewer or change or divert the flow of storm water or natural watercourses until a site plan has been submitted and approved.
- (D) *Land within archeological resource areas.* It shall be unlawful for any person to conduct or permit any ground disturbing activity on land subject to the provisions of section 11-411 until a site plan has been submitted and approved.
- (E) *Compliance with site plans.* It shall be unlawful for any person to construct, erect or alter any building or structure or develop, change or improve land for which an approved site plan is required, except in accordance with the approved final site plan.

11-404 *Development exempt from site plan requirement.* The prohibitions of section 11-403(A), (B) and (C) shall not apply to:

- (A) The contemporaneous development of fewer than three dwelling units. It is the intent of this section 11-404(A) that these site plan regulations not apply to individual single-family, two-family or townhouse units developed or improved independently notwithstanding the terms of the other exemptions or the fact that such units were originally subject to a site plan. It is the further intent of this section 11-404(A) that this exemption not be undermined by purposeful piecemeal development; the term "contemporaneous development" includes development under common ownership or control or the subject of a common, concerted or coordinated plan or schedule of development irrespective of ownership or control.
- (B) Additions to buildings where the total gross floor area of the proposed addition does not exceed one-third of the total gross floor area of the existing building or 3,000 square feet, whichever is smaller, or, where additions are proposed to two or more buildings located on the same lot, the aggregate proposed additions do not exceed one-third of the total gross floor areas of the existing buildings or 3,000 square feet, whichever is smaller. In calculating the size of any addition, replacement floor area shall be included.
- (C) New buildings where the total gross floor area does not exceed 3,000 square feet; provided no part of any building is closer than 66 feet to other land that is used or zoned residential, there is no excess alteration of the grade as set forth in section 11-403(C), the site is not in a floodplain, and the site is not in excess of 10,000 square feet. In calculating the size of any new building, replacement floor area shall be included.
- (D) Improvements for off-street parking purposes when appurtenant only to existing buildings, where access will be provided by existing driveways, and where the improvements do not provide more than five parking spaces. The total number of additional parking spaces provided under this exemption shall not exceed five, all of which shall comply with applicable provisions of Article VIII.
- (E) Grading of open areas, either by excavation or fill, for the sole purpose of bringing the land to a grade compatible with the surrounding area, provided that the director of transportation and environmental services finds, on an inspection of the site, that the

grading will have no adverse affect on the land of adjoining owners, will not encroach on or impair existing drainage channels or flood-plains and will not cause problems of erosion, ponding or silting on adjoining properties.

- (F) Improvements of the city including but not limited to streets, bridges, alleys, sidewalks, curbs, gutters, retaining walls or sewer improvements, but not including buildings, structures or parking lots.

11-405 *Site plan classification.* Site plans shall be classified as preliminary site plans and final site plans. Preliminary site plans and final site plans may be combined and treated as a final site plan in either of the following instances, provided all the information required by this section 11-400 for both classes of plans is included and the procedure for processing preliminary site plans is followed:

- (A) When a preliminary site plan has been approved and a change in part of the project is desired; or
- (B) When a project embraces no more than three separate buildings or structures, no dedication or reservation of public streets through or within the project is required, the project does not embrace more than two acres of land, and the project does not include land in more than one zone classification.

11-406 *Contents of preliminary site plan application.*

- (A) An application for preliminary site plan approval shall be submitted by the owner, contract purchaser, lessee or other party having a legal interest in the subject property on such forms as the director of transportation and environmental services may prescribe. It shall include a clear and concise statement identifying the applicant and, if different, the owner of the property, including the name and address of each person or entity owning an interest in the applicant or owner and the extent of such ownership interest unless any of such entities is a corporation or a partnership, in which case only those persons owning an interest in excess of ten percent in such corporation or partnership need be identified by name, address and extent of interest. For purposes of this section 11-406(A), the term ownership interest shall include any legal or equitable interest held at the time of the application in the real property which is the subject of the application.
- (B) The preliminary site plan shall be prepared under the responsible charge of a professional engineer or land surveyor duly authorized by the Commonwealth of Virginia, or, if required by the

director, by both. No fewer than 20 prints of the preliminary site plan at a scale of not less than 100 feet to the inch shall be submitted with the application. Print size shall not generally exceed 24 by 36 inches.

(C) An application for preliminary site plan approval shall include the following information and material:

- (1) The name and address of the developers.
- (2) The name, address, signature and registration number of the professionals responsible for preparing the plan.
- (3) The present zoning of the site and abutting property.
- (4) General alignment and lengths of all streets and all property lines.
- (5) Date, scale and north point with reference to source of meridian.
- (6) All building restriction lines, highway setback lines, easements, covenants, reservations and rights-of-way.
- (7) The total land area.
- (8) The topography of existing ground and paved areas, and elevations of streets, alleys, utilities, sanitary and storm sewers, buildings and structures. Topography is to be shown by dashed lines illustrating two foot standard contour intervals except where in the opinion of the director of transportation and environmental services five foot intervals would be satisfactory, and by spot elevations where necessary to indicate flat areas, all based on U.S. Coast and Geodetic Survey datum, or city datum where the former are not available.
- (9) A five by seven inch space for the signed approval of the planning commission and the director of transportation and environmental services.
- (10) A location map locating the site in relation to the nearest intersection of two or more streets at a scale that can be easily traced.
- (11) A complete narrative description of the proposed development.
- (12) Archaeological evaluation reports and resource management plans as may be required by section 11-411.

- (8) Where trees are to be planted within the public right-of-way, they shall be planted in appropriate tree wells and provided protection as determined to be necessary and appropriate by the director of recreation, parks and cultural activities.

11-411 *Archaeological protection.*

- (A) *Archaeological resource areas.* A preliminary site plan which includes land designated as a potential resource area on the City of Alexandria Archaeological Resource Map, shall include reasonable archaeological evaluation reports and resource management plans when required under this section 11-411. The archaeological resource map, which is on file in the office of the director of historic Alexandria and the office of the city archaeologist is hereby made a part of this ordinance.
- (B) *Application.* This section 11-411 shall apply to all applications for preliminary or combined site plan or other development approval, otherwise subject to its provisions, which are filed subsequent to September 16, 1989.
- (C) *Administration.* This section 11-411 shall be administered by the director of the office of historic Alexandria who may adopt reasonable procedures for its administration, consistent with applicable law.
- (D) *Preliminary archeological assessment.* Prior to filing an application for approval of a preliminary site plan to which this section 11-411 applies, the applicant shall confer with the director of the office of historic Alexandria in order for the director to conduct a preliminary assessment of the potential archaeological significance of any site plan area designated on the map, and of the impact of any proposed ground disturbing activities on such area. The applicant shall provide full and accurate information as to all ground disturbing activities proposed to be conducted on the site.
- (E) *Criteria for preliminary assessment.* Such preliminary archaeological assessment shall be based upon the following criteria, and shall be conducted consistent with professionally recognized standards for archaeological site evaluation:
- (1) *Research value.* The extent to which the archaeological data that might be contained on the property would contribute to the expansion of knowledge.
 - (2) *Rarity.* The degree of uniqueness the property's resources possess and their potential for providing archaeological in-

formation about a person, structure, event or historical process, for which there are very few examples in Alexandria.

- (3) *Public value.* The level of importance the property has to the community as a location associated with a significant person, structure, event or historical process.
- (4) *Site integrity.* The extent to which soil stratigraphy and original placement and condition of archaeological resources on the property have not been disturbed or altered in a manner which appreciably reduces their research or public value.
- (5) *Presence of materials.* The extent to which archaeological resources or evidence of historic structures are present on the property.
- (6) *Impact on resources.* The extent to which any proposed ground disturbing activities will alter or destroy resources which the director has determined to have substantial archaeological significance under sections 11-411(E)(1) through (5) above.

(F) *Finding of archeological significance.*

- (1) If, at the conclusion of the preliminary archaeological assessment, the director of the office of historic Alexandria determines either that the site plan area has no substantial archaeological significance, or that the proposed construction or development will not have a substantial adverse impact on any known or potential archaeological resources, the director of the office of historic Alexandria shall so certify to the planning commission, and no further review under this section 11-411 shall be required.
- (2) If, at the conclusion of the preliminary archaeological assessment, the director of the office of the historic Alexandria determines that the site plan area has potential archaeological significance, and that the proposed development will have a substantial adverse impact on any known or potential archaeological resources, the applicant shall submit an archaeological evaluation report and a resource management plan as part of the preliminary site plan application.
- (3) The director of the office of historic Alexandria shall render a determination in writing, within seven working days after

receiving the information, unless written consent to extend such period is given by the applicant.

(G) *Archeological evaluation report and resource management plan.*

- (1) When required under the provisions of this section 11-411, the applicant shall submit as part of the preliminary site plan application an archaeological evaluation report and a resource management plan, prepared by a qualified archaeologist or historian in conformity with professionally recognized standards for cultural resource management. The applicant or the authorized agent thereof shall confer with the director of the office of historic Alexandria prior to preparing any submission to define and agree upon guidelines for such report and plan.
- (2) Such archaeological evaluation report shall include detailed evaluation of the archaeological significance of the site plan area, including but not limited to reasonable measures for historic research, archaeological surveys and test excavations.
- (3) Such resource management plan shall include reasonable measures for the study and preservation of archaeological resources found within the site plan area, including but not limited to test and full-scale excavations, site construction monitoring, field recording, photography, laboratory analysis, conservation of organic and metal artifacts, curation of the collection (e.g., artifacts, notes, photographs) and preparation of reports.
- (4) Such resource management plan may, and if required by the planning commission or city council shall, also provide reasonable measures for further archaeological study, restoration, reconstruction, disposition of recovered artifacts to an appropriate public or private collection or museum, and *in situ* preservation of archaeological resources found within the site plan area.

(H) *Review of archeological evaluation report and resource management plan.*

- (1) The archaeological evaluation report and resource management plan shall be reviewed and approved, disapproved or approved with modifications or conditions or both as part of the site plan review process.

ALEXANDRIA ZONING ORDINANCE

- (2) In the event a site plan application and review is required exclusively on account of ground disturbing activities not otherwise subject to such application and review, then and in such an event, notwithstanding any other provisions of this ordinance, the required site plan application and review shall be limited to the purposes and requirements of this section 11-411, and the application fee shall be as prescribed pursuant to section 11-104.

11-412 *Required improvements.*

- (A) *Private improvements required.* As part of site plan approval, a development may be required to include improvements such as pedestrian walkways, vehicular travel lanes or driveways, parking areas, fences, walls, curbs and gutters, signs, lighting, screening, landscaping or such other improvements, facilities and services as the planning commission finds are reasonable and appropriate to service the site or for the accommodation of persons visiting, living or working thereon.
- (B) *Maintenance of private improvements.* The owner of any building, structure or land for which a site plan is approved shall maintain those improvements in such condition as to assure public safety and the general welfare. It is the purpose of this section 11-412(B) to assure that those improvements, facilities and services which are intended for public or quasi-public use or for the protection of neighboring properties, and which are not dedicated or otherwise transferred to and accepted by the city, are maintained in a condition as will permit their intended purposes to continue to be fully served.
- (1) Whenever any of those site improvements, facilities or services set out in the site plan fall into disrepair, the director of transportation and environmental services shall give the owner or his agent written notice thereof; the notice shall require remedial action within 30 days from the receipt of the notice and shall state that if no such action is taken, the city will take action itself, bill the owner for the costs and collect the costs like taxes in the event of nonpayment by the owner. Mailing to the last known post office address shall constitute sufficient notice to owners who cannot be found after a reasonably diligent search or who are nonresidents of the city.
- (2) Whenever the owner refuses, neglects or fails to take the required remedial action after being notified in the manner

Organization of the Federal Archeology Program

The Federal archeology program is based on laws and executive orders enacted by Congress and the president and regulations, guidelines, and standards to carry them out. Compliance with these directives is effected through Federal agency cultural resource and archeological experts in coordination with the historic preservation officer in each state and the Advisory Council on Historic Preservation. The 1974 amendments to the Reservoir Salvage Act and the Archaeological Resources Protection Act of 1979 assigned the Secretary of the Interior a special role in providing guidance, coordination, and oversight for the Federal archeology program, a role that has evolved over the last century.

Archeology became a government concern in the late 1800s. In 1879, Congress authorized the Bureau of Ethnology, later the Bureau of American Ethnology, within the Smithsonian Institution. Archeology was one of the Bureau's areas of focus.

Over the next 25 years, warnings from individuals and professional organizations such as the American Association for the Advancement of Science, the Anthropological Society of Washington, and the Archaeological Institute of America increased public awareness of the destruction of archeological ruins, especially in the Southwest, leading to the passage of the Antiquities Act in 1906. The law authorized the president to protect significant resources on Federal lands, an authority several chief executives used to establish national monuments.

That legislation, along with the 1935 Historic Sites Act, fostered the growth of Federal archeology to serve the public works projects of the 1930s. Following World War II, the program grew along with the country itself, as a massive program of dam and reservoir construction was planned and carried out. The National Park Service and the Smithsonian, along with professional and scholarly groups, assisted the U.S. Army Corps of Engineers and the Bureau of Reclamation—sponsors of the construction—to mitigate damage to archeological sites through the River Basin Archeological Salvage program.

The Federal program evolved further with the National Historic Preservation Act of 1966, which brought together archeologists and those concerned with preserving historic structures in a broader-based national historic preservation program. Additional important laws were passed during the 1970s, including the Archeological and Historic Preservation Act and the Archaeological Resources Protection Act. Today, with the 1990 Native American Graves Protection and Repatriation Act establishing a new relationship between the Federal government and Native Americans, the program is poised once again to meet the demands of a changing nation.

Role of the Secretary of the Interior and the National Park Service

The laws mentioned above give the Secretary of the Interior broad responsibilities and duties relating to archeology and historic preservation conducted by the Federal government. These laws encompass responsibilities for administering and/or promulgating regulations for a variety of archeological and historic preservation activities. They include maintaining the National Register of Historic Places, managing grants-in-aid programs for state and tribal historic preservation, developing standards for state historic preservation programs and archeological permitting and collections management, and providing technical advice, to name a few.

The secretary, in turn, has delegated general responsibilities for Federal archeology to the director of the

National Park Service. The associate director for cultural resources administers the program through the departmental consulting archeologist, who is also chief of the archeological assistance division—the DCA's staff for carrying out these functions. The DCA fulfills the secretary's responsibilities for providing technical guidance, leadership, coordination, and oversight of the Federal archeology program.

Role of Departments and Agencies

Each department and agency is responsible for ensuring that its actions, or those it permits, licenses, or funds, do not destroy significant archeological properties without mitigation of the adverse impacts. The specific means various agencies employ to meet this responsibility are detailed in the section on the role of Federal agencies.

Role of the Advisory Council on Historic Preservation

The National Historic Preservation Act of 1966 directed the Advisory Council on Historic Preservation to provide advice to the president and Congress on historic preservation matters, and to review Federal and Federally assisted activities that affect historic properties. Section 106 of the Act requires that Federal agencies take into account the effect of their projects on properties that may be eligible for the National Register of Historic Places and to allow the Council to comment on those activities. Section 110 of the Act requires that Federal agencies identify, evaluate, and nominate to the National Register all significant archeological resources under agency control or jurisdiction. The Council's regulations (36 CFR 800) outline the process for Federal agencies to comply with Section 106.

Role of Federal, Tribal, and State Historic Preservation Officers

Each Federal agency, state, territory, and freely associated government has an official designated as the historic preservation officer in compliance with the National Historic Preservation Act. Similarly, tribes that choose to manage the NHPA-authorized program on their land have preservation officers. As part of administering historic preservation programs, these officers perform archeological management. The officer plays a key role in consultation between the Advisory Council and Federal agencies and assists in determining National Register eligibility and the effects of agency actions on eligible properties.

Role of the Council on Environmental Quality

The National Environmental Protection Act of 1969 calls for improved Federal planning to discourage environmental damage and to "assure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings." The interdisciplinary Council on Environmental Quality recommends policies to the president for improving the environment, which—under regulations implementing the Act—includes archeological resources. The president, through the Council, reports annually to Congress on the environmental state of the nation.

The Act's impact assessment process supplements other legislation designed to protect archeological resources, chiefly the National Historic

Preservation Act, and supports archaeological management in the broader context of biological, earthen, atmospheric, and social resource conservation.

Role of Federal Research Organizations

A few Federal agencies have primary research missions that directly or indirectly include archeology but have minimal land management responsibilities. The National Science Foundation, Smithsonian Institution, and the National Endowment for the Humanities directly fund archeological research throughout the United States and overseas.

Staff at the U. S. Geological Survey, National Aeronautics and Space Administration, and Smithsonian Institution also do research with archeological materials and sites. The National Oceanic and Atmospheric Administration supports research on submerged archeological resources in addition to managing marine sanctuaries. Agencies that support archeological research, but which are less well known for it, include the U. S. Public Health Service, National Institutes of Health, and National Institute of Standards and Technology.

Role of Private Archeological and Preservation Organizations

Private archeological and historic preservation organizations offer Federal agencies an opportunity to expand programs, provide public education, and activate large numbers of citizens. These private groups make their memberships available as active constituents in areas such as public participation, lobbying efforts, resource conservation, and professional communications.

American Anthropological Association

The AAA is a professional organization of anthropologists, educators, students, and others interested in the discipline of anthropology. AAA has an external affairs department that includes government affairs, education, minority affairs, a congressional fellowship program, and outreach. The department of information services administers the placement service, newsletter, speakers bureau, surveys, and other programs. The association, which includes physical anthropology and archeology divisions, organizes scholarly meetings and conferences, publishes journals and other publications, and administers grants.

American Society for Conservation Archaeology

ASCA is a group of professional archeologists committed to advancing the conservation ethic and ensuring proper treatment of archeological sites and collections. The society also serves as a forum to keep members informed about legislative and regulatory developments or issues.

Archaeological Conservancy

The conservancy is an organization of citizens concerned with the preservation of prehistoric and historic sites for interpretive or research purposes. The conservancy, through donation or purchase, acquires sites throughout the country for permanent preservation. The organization has a quarterly newsletter and sponsors tours of archeological sites.

Archaeological Institute of America

The AIA, consisting of 85 societies throughout the United States and Canada, promotes a general interest in archeology. Local societies sponsor the AIA lecture program, which brings professional archeologists to the community to lecture on recent discoveries and research.

National Association of State Archaeologists

NASA was established to facilitate communication among state archeologists and thereby contribute to the conservation of cultural resources and the solution of professional archeological problems. NASA develops consensus views on archeological issues and communicates these to government agencies and other organizations involved in the management of cultural resources.

National Trust

The National Trust for Historic Preservation is a private, non-profit organization chartered by Congress. It has a wide range of responsibilities including encouraging public participation in the preservation of sites, buildings, and culturally and historically significant objects as well as advocating preservation policies in legislative, judicial, administrative, and private forums. The trust owns a number of historical properties throughout the United States.

Preservation Action

Preservation Action is a national grassroots organization of state and local preservation organizations and individuals. The group lobbies for a range of historic preservation issues, from obtaining appropriations for the historic preservation fund to developing tax policies that promote preservation of his-

toric properties. The annual meeting in Washington, DC, is in the spring.

Society for American Archaeology

The SAA is an international scholarly and professional association of both professional and avocational archeologists concerned about the discovery, interpretation, and protection of the archeological heritage of America. The SAA office of government relations represents the society in public affairs, focusing on congressional and Federal agency issues. The "Save the Past for the Future" project shows the SAA's commitment to public education and participation.

Society for Archaeological Sciences

The SAS is an organization of archeologists and physical scientists concerned about applications of natural science techniques in archeology to both prehistoric and historic resources. The SAS publishes a quarterly bulletin and holds annual meetings, usually in conjunction with the SAA annual meeting.

Society for Historical Archaeology

The SHA was established to bring archeologists, anthropologists, ethnohistorians, historians, and other interested institutions and individuals together in order to study the period beginning with European contact of non-European areas and the Western Hemisphere in general. The society offers a broad range of publications to its members and the public.

Society for Industrial Archaeology

The SIA is dedicated to creating an awareness of the need to preserve industrial heritage including the study, preservation, and adaptive re-use of industrial sites. Quarterly newsletters, a semi-annual journal, occasional publications, and a yearly conference enable members to pursue this interest.

Society of Professional Archaeologists

SOPA is an organization of professional archeologists whose goal is to build and define professionalism among archeologists; provide a measure against which to evaluate archeological actions and research; establish certification standards; and demonstrate to other archeologists and the public the nature of professional archeology.

The International Role

The Federal government participates in worldwide archeology efforts as a member of the United Nations Educational, Scientific, and Cultural Organization. UNESCO was a chief

sponsor of the 1970 World Heritage Convention, which called for greater international support of significant sites and structures. Following the conference, the National Historic Preservation Act of 1966 was amended to add nominating properties for the World Heritage List to the Secretary of Interior's responsibilities, and to make available training opportunities and information concerning professional conservation methods.

Carrying out the Secretary's responsibilities, the National Park Service, in conjunction with the Advisory Council on Historic Preservation, nominates sites of international importance to the World Heritage List. Examples include Mesa Verde in Arizona and the remains of the 12th-16th century fortress and associated city of Nan Madol, located on the island of Pohnpei, part of the Freely Associated States of Micronesia.

Since 1971, the United States has actively participated as a member of the International Centre for the Study of Preservation and Restoration of Cultural Property; it also encourages professional training in cultural resources management through the International Center for Conservation in Rome. The National Park Service office of international affairs fields over 200 requests annually from foreign countries for assistance in planning, interpretation, training, historic preservation, tourism, and natural and cultural resource management.

The Park Service has also conducted an archeological survey of sites in India. Since 1989, planning teams have prepared development concept plans for the Taj Mahal, Agra Fort, and Fatehpur Sikri as well as for four significant religious sites. Other recent projects have included conservation assistance for former republics of the Soviet Union.

In response to the depletion of artifacts by the lucrative international art market, UNESCO called for adoption of the International Institute for the Unification of Private Law at its 1970 Convention on the Protection of Cultural Property, banning the export or import of stolen archeological goods, and mandating the return of items to the country of origin. Approved by President Nixon in 1970, Congress adopted a watered-down version of the stipulations in 1983. Since then, the law has been utilized in at least six situations with varied success. Cooperation with the FBI and customs officials has led to the return of stolen goods, contributing to the reduction of the value of artifacts as a commodity in the international art market.

Departments and Agencies

The complex workings of the Federal government are reflected in the diversity of departments and agencies and their multitude of individual missions, from managing natural resources to defense. Dozens of departments and agencies carry out their jobs with various types of organizations, funding, and personnel levels.

Archeology is one of the few Federal activities that truly cuts across departmental boundaries and agency missions. Legislation and regulations apply equally. Yet each department and agency meets these mandates in a manner adapted to its own mission. The examples presented here illustrate the diversity and commonality of programs.

Air Force

A. L. Clark

As part of its worldwide historic preservation program, the Air Force currently has surveys in progress at several installations to discover and inventory archeological sites and other historic properties. The Air Force has seven national historic landmarks, two landmark nominations being considered by the Secretary of the Interior, and 17 other National Register properties.

The Air Force gives full consideration to the effects of its activities on historic properties in accordance with the National Historic Preservation Act and the Advisory Council on Historic Preservation's implementing regulations. Archaeological Resources Protection Act permits are issued by headquarters in accordance with the Act's requirements. The Secretary of the Interior's standards for the treatment of historic properties and the advice of State Historic Preservation Officers and the Advisory Council are also frequently used in protecting Air Force historic properties.

Each base and each major command has a designated historic preservation officer. An aggressive training program—including an annual week-long historic preservation workshop, an accredited two-week summer course in historic preservation at Northern Arizona University, a two-week archeological law enforcement course, and the Advisory Council's two-day course on historic preservation law—is provided for these personnel.

Army

Constance Werner Ramirez

Nearly the entire spectrum of cultural history can be found on the 12 million acres occupied by U.S. Army installations. And since many bases are in isolated areas, archeological sites are often well preserved.

To take advantage of these conditions, the Army has developed an archeological management program to preserve and interpret the cultural history of the sites. In the short term, archeological

activities are dictated by the intensity of the Army's impact on sites and the need for site data to evaluate and interpret the archeological record being impacted.

On each installation, the archeological program must ensure that historic places are protected to the extent possible without jeopardizing military missions. In cases involving either historic buildings or archeological sites, the proper preservation treatment must reflect prudent use of public funds and be feasible within the constraints of the military.

The Army's program has been evolving since the early 1970s to achieve several goals including preservation of places associated with the history of the Army and the United States and integration of plans for historic and archeological resources with long-term management. To make good management decisions, Army installations have had to undertake extensive archeological research programs and impact studies. The research has included overviews of roughly seven million acres, field surveys of approximately three million acres, and extensive analytical work, including the use of geographical information systems combined with multivariate statistical analysis programs on more than 10,000 sites.

The Army tries to limit excavation to those sites with a high probability of finding important data and/or data that will increase the knowledge of other sites. The Army encourages installations to provide information to the public in leaflets, exhibits, and technical reports.

As a consequence of the Army's program, the history and prehistory of large parts of several states have been rewritten, making an important contribution to the preservation plans for each state.

Army Corps of Engineers

Larry Banks

Less than 20 years ago, the Corps of Engineers had an archeological staff of one. The formal archeological program began in 1970 as an outgrowth of the National Environmental Policy Act of 1969. As a direct result of the 1974

amendment to the Reservoir Salvage Act of 1960, the real growth of archeological staffing in the corps began.

Since then, the Corps has grown to approximately 70 positions. Major archeological investigations are primarily conducted through contract administration, while small projects (local flood protection and regulatory permit actions) are often performed by in-house staff.

In addition to project-specific activities, the Corps is conducting an overview that may become a model Corps-wide. One of the current research efforts concerns impacts to archeological sites and attempts to preserve them in place.

Bureau of Indian Affairs

Donald Sutherland

The Bureau of Indian Affairs is the principal agent carrying out the government-to-government relationship with federally recognized Indian tribes. The Bureau also carries out responsibilities for property it holds in trust for federally recognized tribes and individual Indians. In doing so, the Bureau seeks to utilize the skills and capabilities of Indian and Alaskan Native people in the direction and management of programs for their benefit.

The Bureau's trust responsibilities encompass 488 federally recognized tribes and some 53 million acres of land. Actions are carried out through a network of 12 area offices and 84 agencies that, as a whole, handle up to 70,000 Federal undertakings per year. A substantial number have the potential to affect archeological resources.

In response, the Bureau maintains full-time professional archeologists and temporary or seasonal assistants at most of its area offices. Day to day archeological resources management is handled at the area level through a combination of in-house staff, competitive contracts and, unique to trust lands, contracts under the Indian Self-Determination and Education Assistant Acts. These are non-competitive contracts under which tribes may assume responsibility for services, such as archeological surveys, otherwise Federally provided. General policymaking and conflict resolution are handled by a professional archeologist at BIA headquarters in Washington, DC.

Consistent with overall Bureau policy, the future role of archeologists within the BIA is more likely to be that of assisting Indians and Alaskan Native people to become directly involved in the management of trust lands.

Bureau of Land Management

Richard Brook

The Bureau of Land Management is responsible for the Federal government's largest and most varied population of cultural resources. Although the Bureau has inventoried only about 4 percent of its lands in the dozen years or so since launching a cultural resource management program, about 150,000 archeological and historic properties have been recorded. Estimates would put probable totals well into the millions.

The Bureau's policy for managing these fragile and non-renewable cultural resources is based on the Federal Land Policy and Management Act of 1976 and numerous other Federal laws and executive orders. Under these directives, the policy is to: 1) ensure that cultural resources are given full consideration in all land-use planning and management decisions; 2) manage cultural resources so that scientific and sociocultural values are maintained and enhanced; 3) avoid inadvertent damage to cultural resources; and 4) protect and preserve representative samples for the sake of scientific use and sociocultural benefits of present and future generations.

The Bureau is also responsible for the management of public lands in the interest of the American people. Management is based upon the principles of multiple use and sustained yield, a combination of uses that takes into account the needs of future generations for renewable and non-renewable resources. These resources include recreation, range, timber, minerals, watershed, fish and wildlife, wilderness and natural, scenic, scientific and cultural resources.

Bureau of Reclamation

Ed Friedman

The Bureau of Reclamation is responsible for developing and conserving the nation's water resources in the western United States. The Bureau's original purpose, "to provide for the reclamation of arid and semiarid lands in the West," today covers a wide range of interrelated functions. These include providing municipal and industrial water supplies, hydroelectric power generation, agricultural irrigation, water quality improvement, flood control, outdoor recreation, and research on water-related design, construction, materials, atmospheric management, and wind and solar power.

The Bureau's programs most frequently result from close cooperation with Congress, Federal agencies, states,

local governments, academic institutions, water user organizations, and other concerned groups. Because most of the mission is accomplished through construction, many of the archeological properties that the Bureau is responsible for managing are located and evaluated during building and land-altering projects.

To the extent possible, the policy is to preserve these properties and avoid affecting them. Yet, when it is determined that a project's public benefit overrides the policy, the Bureau will carry out measures to mitigate the effects to the properties through excavation and other means. Through careful planning and a sensitivity to regional research, these efforts lead to positive contributions to archeological knowledge rather than mere data collection.

Interestingly, many features of early Bureau projects have themselves become significant cultural properties in the history of water development technology. When these properties are altered or modified for current technological reasons, historical archeological methods are often employed to document them.

The Bureau maintains a small permanent staff to carry out its archeological/cultural resource management responsibilities. Reclamation's senior archeologist/preservation officer is located at the Engineering and Research Center in Denver and provides overall policy and guidance for the program. Responsibility for carrying out the program is delegated to six regional archeologists. As Reclamation's staff numbers only 20, most work—inventory and excavation as well as curation of recovered artifacts—is accomplished through contracts with universities, museums, and private consultants as well as through agreements with other agencies.

Department of Energy

Lois Thompson

With roughly 2.5 million acres of land to manage, the Department of Energy has its hands full protecting cultural resources on its properties.

A comprehensive program is being developed to integrate cultural resources into the department's nationwide environmental and land management responsibilities. The program's goals are to assure compliance with statutory and regulatory requirements related to cultural resources management, including archeology; meet stewardship responsibilities; enhance managers' awareness and appreciation of cultural resource

preservation and effectiveness of their decision making; promote outreach with Native American tribes and other traditional peoples with interests in the local natural and cultural resources; and endorse the Federal program.

Working towards those goals, the Department has recently issued a departmental American Indian policy, nominated several properties to the National Register of Historic Places, held archeology programs for the public at DOE facilities, and issued guidance memoranda and briefs to personnel to increase awareness of cultural resource issues.

A key provision of the department's program is the development of cultural resource preparation guidelines for management plans for each DOE facility or program. Utilizing a range of outside input, the cultural resource management plan will document strategies designed to identify, evaluate, and manage cultural resources. Plans will identify short- and long-term resource management goals and the procedures to achieve them.

Department of Energy, Western Area Power Administration *Sue Froeschle*

Western Area Power Administration was established as a power marketing agency within the Department of Energy in 1977. Western is responsible for the Federal electric power marketing and transmission function in 15 central and western states encompassing a 1.3 million-square-mile geographic area. Power is sold to more than 550 customers consisting of cooperatives, municipalities, public utility districts, private utilities, Federal and state agencies, irrigation districts, and project use customers. The wholesale power customers, in turn, provide service to millions of retail customers. Responsibilities include the operation and maintenance of over 16,000 miles of transmission lines, more than 225 substations, and related power facilities. Western also plans for construction, operation, and maintenance of additional Federal transmission facilities that may be authorized in the future.

In carrying out its responsibilities, Western considers the effect its efforts have on cultural resources as directed by the National Historic Preservation Act of 1966, as amended, and as implemented by the Advisory Council on Historic Preservation regulations, 36 CFR 800. Undertakings range from minor enlargements of a substation area to major interstate transmission line construction.

Typically, Western's five area offices initiate consultation with the State Historic Preservation Officer when an archeological site is identified. A letter is sent to the officer as soon as planning for a proposed project is far enough along to provide adequate information concerning action. All areas affected by undertakings and all Western owned or acquired lands, or lands in which Western acquires an interest, are evaluated.

Cultural resource responsibilities are considered fully in planning, construction, operation, and maintenance. It is Western's policy to avoid cultural resources, where feasible. In assessing future energy needs, proposed or existing transmission lines have been re-routed to avoid cultural resources. In addition, wooden transmission poles in areas identified as eligible for the National Register have been removed or topped.

When alternatives are not possible a mitigation plan is developed to address the project's impact. Western's historic preservation officer initiates consultation with the SHPO and the Advisory Council on Historic Preservation. Compliance activities outlined in the plan are then carried out and reported to the SHPO and the Council.

Department of Veterans Affairs *Karen Ronne Tupek*

As part of its responsibilities for managing facilities, the Department of Veterans Affairs conducts archeological surveys, with further investigations as necessary, to identify and assess potential resources in the early planning phases of proposed construction and land development. Projects are planned or sited to avoid known resources.

The VA conducts surveys in one of two ways: as part of the environmental impact statement/consultant contract before land acquisition for new national cemeteries, such as recently done near Saratoga Battlefield in Albany; or as part of architect or engineer contracts for comprehensive, individual historic preservation plans for medical centers.

Environmental Protection Agency *John Gerba*

The Environmental Protection Agency incorporates responsibilities for archeological cultural resource management issues under the Archeological and Historic Preservation Act and Executive Order 11593, "Protection and Enhancement of the Cultural Environment," as codified in Subpart C, 40 CFR Part 6,

"Procedures for Implementing the Requirements of the Council on Environmental Quality on the National Environmental Protection Act."

Generally, compliance with these authorities, as well as with 12 other environmentally related statutes, is accomplished as a normal activity in complying with NEPA. The vehicle used is the Section 106 consultation process with appropriate State Historic Preservation Offices and the Advisory Council on Historic Preservation under the National Historic Preservation Act.

Currently, the agency is studying its obligations under the Native American Graves Protection and Repatriation Act. The agency has established a "National Indian Workgroup" to consult and coordinate EPA's programmatic and statutory obligations with these tribes.

Federal Bureau of Prisons *John Sprinkle, Louis Berger & Associates*

As part of its nationwide program to identify sites for development of new Federal correctional institutions, the Federal Bureau of Prisons has undertaken 23 surveys in over 20 states during the last four years.

Consideration of archeological resources is integrated in the Bureau's site selection process as is consultation with the appropriate State Historic Preservation Office. During reconnaissance, the Bureau often examines project areas that are larger than needed for development so that cultural resources can influence the project area's design constraints. Intensive surveys are then conducted in areas where cultural resources sensitivity and potential impacts overlap. After further design review, testing, and data recovery, excavations are conducted on significant archeological resources.

During a survey of a proposed facility in Allenwood, Pennsylvania, for example, twenty-three sites were identified; all but six were avoided through redesign. Subsequent investigations at a related facility resulted in data recovery excavations at a stratified, multi-component prehistoric site along the floodplain of the Susquehanna River.

Federal Energy Regulatory Commission *Richard Hoffman*

The Federal Energy Regulatory Commission is an independent, five-member commission within the Department of Energy, responsible for

setting rates and charges of power sources including hydroelectric power.

Applicants applying for a FERC certificate to construct natural gas facilities combine state-of-the-art technology with traditional archeological methods and techniques to analyze past cultures. Opportunities exist for landowners and the public to participate. FERC encourages avoiding archeological resources by realigning or constricting pipeline rights-of-way and by boring or directional drilling beneath sites.

Federal Highway Administration *Bruce Eberle*

The Department of Transportation's Federal Highway Administration is concerned with the total operation and environment of highway systems, giving full consideration to the impact of highway development and travel on historic architectural and archeological resources.

Working closely with state departments of transportation, the administration ensures that resources are identified and evaluated for each project alternative through the Environmental Impact Review and Section 106 processes. Some state departments maintain sufficient staff to perform the necessary investigations and field work to locate and evaluate resources that are, or may be, eligible for the National Register of Historic Places. Contractors also perform this work.

The majority of important archeological resources are avoided through project redesign or relocation. FHWA and the state departments seek to develop treatment plans that interpret resources so the public can gain a greater appreciation for national history and prehistory. When archeological resources cannot be avoided, they are mitigated through planned excavation and publication.

Fish & Wildlife Service *Kevin Kilcullen*

The nearly 90 million acres managed by the Fish & Wildlife Service are geographically diverse, ranging from the north slope of Alaska to the islands of the Caribbean. The Service is the nation's primary agency for managing wildlife and their habitat. It administers the extensive holdings of the National Wildlife Refuge System, conducts wildlife research, and provides technical and scientific assistance to other Federal agencies, state governments, and private organizations.

Consistent with overall objectives, the Service's cultural resource program

identifies and protects many outstanding examples of our history, prehistory, and architecture. This spectrum is represented by sites associated with maritime history, such as lighthouses and shipwrecks, as well as prehistoric evidence of what may be some of the New World's earliest inhabitants in Alaska.

Efforts to identify and protect cultural resources are primarily coordinated by the regional offices. Because of the widespread distribution of a large number of refuges and other facilities, a regional historic preservation officer is generally responsible for seeing that agency activities meet historic preservation requirements and standards. The officer also provides technical advice. Overall program coordination is monitored by the agency's Federal preservation officer and Service archeologist in Washington, DC.

Forest Service *Evan DeBloois*

The Forest Service was established by Congress in 1905 to manage forests on public lands throughout the United States. Its job is to manage the National Forest System, conduct research, and assist the management of state and private forest land for today's consumers as well as future generations.

In the Forest Service, cultural resource management, including management of archeological resources, began in the early 1970s. It has two major concerns: 1) cultural resource management in support of other resource actions, and 2) cultural resource management to identify, evaluate, protect, and enhance the resource in the public interest.

In the first instance, a number of activities are carried out to identify and protect cultural properties from various development activities proposed by the agency or its permittees. These follow the basic procedures outlined in 36 CFR 800. The second group of activities involves identifying important cultural properties and implementing plans to conserve, interpret, stabilize, and provide public access to the resources and/or the information they contain.

The Forest Service is a "line-staff" organization with four levels of administrative authority and responsibility. Cultural resource specialists are located at each level with the majority at the forest supervisor's office.

General Services Administration *Thomas F. King*

Recent construction of new Federal facilities around the country has involved the General Service

Administration in archeology more than ever before. Discoveries like a colonial-era African burial ground at Foley Square in Manhattan and a 19th century Chinese-American neighborhood in Portland have made it necessary to retain a senior professional archeologist at headquarters to help ensure that archeological resources are properly addressed in planning.

GSA is primarily responsible for constructing and managing Federal facilities around the country. The Administration addresses archeology through compliance with Section 106 of the National Historic Preservation Act. Archeological resources are identified during Section 106 identification, and preservation in place or data recovery is carried out pursuant to Section 106 memoranda of agreements.

Minerals Management Service *Melanie Stright*

The Minerals Management Service was established in 1982 as the Bureau within the Department of Interior responsible for managing resources of the outer continental shelf. As a result of legislation, the Service is charged with balancing the expeditious and orderly leasing, exploration, and development of Federal offshore lands with protecting human, marine, and coastal environments while ensuring the public fair and equitable return on these resources.

The primary tool of the archeology program is the regional predictive model, or baseline study, aimed at identifying areas of the shelf that are expected to contain significant archeological resources. The basic premise for a baseline study is that submerged archeological sites are not randomly distributed on the sea bottom. Prehistoric sites are expected to occur in a manner related to the shelf's paleogeography while shipwrecks are expected to occur in relation to present and past seaports, sea routes, and hazards to navigation.

For a lease sale, the Service does an in-house update of the appropriate baseline study. These updates, for both prehistoric and historic resources, are part of the environmental review process and are used to determine whether to require archeological resource reports of the lease tract.

The archeological survey, if necessary, is conducted in conjunction with a geohazards survey, required for all oil and gas exploration. The lease tract is surveyed by remote sensing techniques using high resolution geophysical sys-

tems. The data generated by these surveys are interpreted by a geophysicist and an archeologist and then reviewed. As part of the review process mitigation is developed by the Service in consultation with the appropriate State Historic Preservation Officer, to provide protection for the resources.

National Oceanic and Atmospheric Administration

Bruce G. Terrell

The mission of NOAA, formed in 1970, is to explore and chart the oceans and manage and conserve their resources. The Administration conducts an integrated program of management, research, and services related to the protection and use of marine resources and their habitats, natural and cultural resources, and the nation's coastal zone.

NOAA's national marine sanctuary program includes active cultural resource management committed to stewardship responsibilities for the sanctuaries' prehistoric and historic shipwrecks. The marine archeology and maritime history unit is inventorying the submerged archeological resources on the seabed of the 13 national marine sanctuaries. To that end, the Administration is developing an interactive computerized database and GIS system to record and locate documented prehistoric and shipwreck archeological sites.

An historical context study of the sanctuaries is nearing completion as well. NOAA is also developing guidelines and standards to regulate archeological research permits for research within the sanctuaries in accordance with the Federal archeological program as recommended by the National Park Service.

National Park Service (The National Park System Archeological Program)

Craig W. Davis and Douglas H. Scovill

The National Park Service was established by Congress on August 25, 1916, to conserve the scenery, natural and historic objects, and wildlife within parks, monuments, and reservations and provide for the public enjoyment of these resources so as to leave them unimpaired for future generations.

Today, the National Park System includes over 340 areas, totaling approximately 80 million acres. About 60 percent of the units in the system were established in whole, or in part, for their cultural resources. Surveys have

revealed that these areas contain numerous significant prehistoric and historic resources.

The National Park System is renowned for its archeological areas: Alaska's Cape Krusenstern National Monument, Colorado's Mesa Verde National Park (a World Heritage Site), Iowa's Effigy Mounds National Monument, Hawaii's Pu'uhonua o Honaunau National Historical Park on the island of Kona, Georgia's Ocmulgee National Monument, and numerous others. The preservation, protection, and public interpretation of these nationally significant archeological resources form a cornerstone of the park program and contribute to the public's perception of the need to conserve the nation's archeological patrimony.

The majority of archeologists supporting park programs are located in the service's ten regional offices and four archeological centers. Approximately ten parks have resident archeologists. These specialists provide park archeological and historical resources identification, evaluation, treatment, and interpretation services, and support park and regional protection efforts. They carry out activities to provide compliance with the provisions of environmental and historic preservation laws and regulations.

Staff in the archeological centers conduct special studies, apply state-of-the-art technologies servicewide, and provide special facilities for analysis, conservation, and curation of archeological materials and records. The Santa Fe center hosts the submerged cultural resources unit, which supports all regions in the identification, evaluation, protection, and interpretation of submerged resources such as prehistoric sites and shipwrecks. Archeologists also work out of the Denver service center, which supports, under regional oversight, park construction projects.

The anthropology division develops servicewide archeological program policies, guidelines, and standards applying to the units of the park system, and monitors program execution by field offices and parks. The archeology program is closely coordinated with parallel programs in history, historic architecture, and curation of collections, and with the new ethnography program currently under development.

The archeological function is concerned with preservation, protection, and visitor use activities related to the archeological aspects of the cultural resources in the National Park System.

Activities of the National Park Service's departmental consulting archeologist and archeological assistance division are discussed in another section.

Navy/Marine Corps

John Bernard Murphy

The Navy and Marine Corps are not only charged with protecting the nation, but also the nation's heritage. This mission began in the 1870s when the War Department was given responsibility for protecting Yellowstone, the nation's first national park. Now all Federal agencies, including the Navy and the Marine Corps, are required by law and executive order to take measures to identify, preserve, and protect historic and prehistoric properties.

An extensive Hawaii burial ground, located beneath Kaneoche Marine Corps Air Station in Oahu, is composed of sand dunes in which Hawaiians buried their dead. Over 1,000 burials have been documented at the site since its discovery in 1921. The Navy and Marine Corps considers it important to preserve the subsurface integrity of the site.

Another unique historic property maintained by the Navy is the battleship USS *Missouri*, which fought during World War II and Korea. This ship—built in the Brooklyn Naval Shipyard and commissioned on June 11, 1944—was the scene of the signing of the formal instruments of Japan's surrender in Tokyo Bay on September 2, 1945. It was retrofitted and reactivated in 1986.

Office of Surface Mining, Reclamation, and Enforcement

Susan Hudak

The Office of Surface Mining, Reclamation, and Enforcement is responsible for implementing the Surface Mining Control and Reclamation Act of 1977. This law establishes a program to protect society and the environment, including archeological resources, from the adverse effects of surface coal mining while assuring the coal supply essential to the nation. The law further specifies that, to the extent feasible, these programs should be carried out by the states, under state laws and programs reviewed annually by the Office.

Because the Office is a regulatory authority that carries out most of its activities through state programs, the basis of its historic resource responsibilities and activities differ from situation to situation. In some cases, the Office functions as the regulatory authority in the permitting of surface coal mining opera-

tions. This occurs in states that have not developed their own regulatory programs, on Federal lands in states with their own programs but which have not been granted authority to regulate Federal lands, and on Indian lands. In these situations, permits issued by the Office are direct Federal actions or undertakings subject to the requirements of Section 106.

Rural Electrification Administration

Jennifer Corwin

Established in 1935, the Rural Electrification Administration is a credit agency of the Department of Agriculture that assists rural electric and telephone utilities in obtaining financing.

When it is determined that proposed construction will affect an archeological site, the Administration consults with the State Historic Preservation Officer and other interested parties to assess levels of impact and examine alternative plans and mitigation measures. Often a proposed project, such as an overhead utility line, can avoid an archeological site by spanning it. However, if avoidance is not possible, the Administration will ensure that a qualified archeological consultant is hired to perform surveys, conduct excavations, and monitor project construction as needed.

Soil Conservation Service

Michael Kaczor

The Soil Conservation Service, an agency in the Department of Agriculture, provides technical, and in some cases financial, assistance to protect the nation's soil, water, and related resources. It assists the public through nearly 3,000 locally organized and run conservation districts, which generally follow county boundaries.

The Service's cultural resources program has three objectives: 1) to help protect archeological sites from erosion; 2) to ensure that significant cultural resources are not inadvertently destroyed by conservation activities carried out with Service assistance; and 3) to help scientists obtain valuable environmental information from sites.

To protect sites from erosion, the Service usually works with other Federal agencies, State Historic Preservation Officers, and local governments. Recently, the Service provided erosion control assistance to the Grand Village of Natchez, a national historic landmark in Mitchell, South Dakota, and to a number of prehistoric and historic archeological

sites in St. Mary's City, a national historic landmark in southern Maryland.

To ensure that significant cultural resources are not inadvertently destroyed by its assistance activities, the Service conducts review, survey, and, if necessary, mitigation activities. A recent highlight was the completion of data recovery on the Pilcher Creek archeological site in eastern Oregon. The site, located in a Service watershed project area, was excavated under contract by Oregon State University. It is the first upland Windust site (ca. 8-10,000 years ago) in the Pacific Northwest and has three meters of stratified deposits.

In conducting cultural resource studies, the Service tries to obtain information important to other scientific disciplines. For example, soil information was obtained as part of the archeological data recovery of the Effigy Rabbit site in Tennessee.

Tennessee Valley Authority

J. Bennett Graham

The Tennessee Valley Authority was established as an independent corporate Federal agency by Congress in 1933 to provide flood control, improve navigation, produce electric power, and provide planning for the Tennessee Valley—an area long devastated by flooding, soil erosion, and widespread poverty. Along with its role as one of the nation's largest

electric power producers, TVA continues to be a regional development and resource managing agency.

Through a cultural resources program operating out of the office of natural resources and economic development, TVA seeks to identify and protect significant cultural resources on its lands. It considers effects of TVA projects and seeks comments from state agencies and the Advisory Council on Historic Preservation on appropriate strategies to avoid or mitigate potential damage.

The office carries out cultural resource inventories of TVA property and determines when resources should be nominated to the National Register of Historic Places. It also prepares management, development, and protection plans in cooperation with the TVA office having custody of the property and is responsible for issuing permits for archeological research on TVA lands. Finally, the office recommends provisions for protection of significant cultural resources for inclusion in deeds or other documents conveying TVA lands or land rights.

A series of monographs resulting from archeological surveys of its major projects over the past 60 years outlines the archeological commitment of the TVA. Surveys continue today as a part of the comprehensive archeological inventory of TVA properties across the region.

Government, the Public, and the Law

Reflecting the interests and concerns of the American public, the Federal government's support of archeology has led to an array of laws, regulations, and executive orders designed to protect archeological sites and resources. Although Federal agencies take different approaches to their legal responsibilities regarding archeological resources to meet their individual directives, the Federal government has developed a national program based on legislation to manage and protect historic and prehistoric sites on lands administered by the Federal government or associated with Federally assisted or licensed projects.

The Antiquities Act of 1906 (P.L. 59-209, 16 U.S.C. 431-433) was the first general law providing protection for archeological resources. It protects all historic and prehistoric sites on Federal lands and prohibits excavation or destruction of such antiquities without the permission (antiquities permit) of the secretary of the department having jurisdiction. It also authorizes the president to declare areas of public lands as national monu-

ments and to reserve or accept private lands for that purpose. Applicable regulation: 43 CFR 3, Antiquities Act of 1906.

The National Park Service Organic Act of 1916 (P.L. 64-235) states that the parks are "...to conserve the scenery and the natural and historic objects, and the wildlife and to provide for the enjoyment of the same in such a manner and by such means as will leave them unim-

paired for the enjoyment of future generations."

The Historic Sites Act of 1935 (P.L. 74-292) (P.L. 74-292, 16 U.S.C. 461-467) declares as national policy the preservation for public use of historic sites, buildings, objects, and properties of national significance. It gives the Secretary of the Interior authority to make historic surveys, to secure and preserve data on historic sites, and to acquire and preserve archeological and historic sites. Subsequently, this authority allowed the establishment of the River Basin Survey, which surveyed and excavated hundreds of sites in advance of large water development projects in the major river basins of the Midwest.

This Act also establishes the National Historic Landmarks program for designating properties having exceptional value in commemorating or illustrating the history of the United States. It gives the Secretary of Interior broad powers to protect nationally significant historic properties, including the Secretary's authority to establish and acquire nationally significant historic sites. Applicable regulations: 36 CFR 65, National Historic Landmarks and 36 CFR 68, DOI Standards for Historic Preservation.

The Federal-Aid Highway Act of 1956 (P.L. 91-605), because of public concern about the destruction of archeological sites as a result of highway construction, included a provision prohibiting the use of historic lands unless there was no feasible alternative. This is the first act to recognize that archeological sites are important for their data content, and to provide a source of funding for collecting archeological data.

The Department of Transportation Act of 1966 (P.L. 89-670, 79 U.S.C. 1651-59) directs the Secretary of Transportation not to approve any program or project that requires the use of land from a historic site of national, state, or local significance unless there is no feasible and prudent alternative to use such lands and such program includes all possible planning to minimize harm to such historic properties. Section 7f of the Act requires as national policy to make a special effort to enhance natural beauty and historic sites along transportation routes. This applies to the Federal Highway Administration, Federal Aviation Administration, the Urban Mass Transportation Administration, and the U.S. Coast Guard.

The National Historic Preservation Act of 1966 as amended (P.L. 95-515)

(P.L. 102-575, 16 U.S.C. 470-470t) establishes as Federal policy the protection of historic sites and values in cooperation with other nations, states, and local governments. It establishes a program of grants-in-aid to states for historic preservation activities. Subsequent amendments designated the State Historic Preservation Officer as the individual responsible for administering programs in the states.

The Act also created the President's Advisory Council on Historic Preservation. Federal agencies are required to consider the effects of their undertakings on historic resources, and to give the Advisory Council a reasonable opportunity to comment on those undertakings. Applicable regulations: 36 CFR 60, National Register of Historic Places; 36 CFR 65, National Historic Landmarks; 36 CFR 800, "Protection of Historic Properties" (Advisory Council on Historic Preservation); 36 CFR 801, "Urban Development Action Grant Program - Historic Preservation Requirements"; 36 CFR 61, Procedures for Approved State and Local Government Programs; and the Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation.

In 1980, amendments were passed to codify portions of Executive Order 11593, requiring an inventory of Federal resources and Federal agency programs to protect historic resources; clarify Federal agency inventory considerations and evaluation of resources to be excluded from the 1% fund limit under the 1974 act (only actual data recovery activities must be included within the 1%); and authorize Federal agencies to charge reasonable costs for protection activities to Federal permittees and licenses. This last provision resolved a controversy about whether private interests could be required to pay costs of protecting archeological and historic resources that would otherwise be destroyed by those activities.

The amendments also established policies and authorities for national historic preservation programs. Among these are the National Register of Historic Places; the Advisory Council on Historic Preservation including, under section 106, the Council's powers to review Federal undertakings that affect historic properties; and a partnership with State Historic Preservation Offices and, subsequently, certified local governments. It also created the Historic Preservation Fund with matching grants

to SHPOs and the National Trust for Historic Preservation.

Amendments passed in 1992, commonly known as the Fowler Bill, broadened historic preservation issues to include Native American and other indigenous American people, as well as to bring about greater cooperation with state governments and non-profit organizations.

The National Environmental Policy Act of 1969 (P.L. 91-190, 40 U.S. 1500-17.7, 42 U.S.C. 4321-61) requires Federal agencies to prepare an environmental impact statement for every major Federal action that affects the quality of the human environment, including both natural and cultural resources. The act offered procedural protection from Federal action for natural and cultural resources of the human environment. It can be used to apply for cultural resources not found to be eligible for listing on the National Register for Historic Places (and therefore under the purview of NHPA). Finally, it also created the Council on Environmental Quality.

The Reservoir Salvage Act (P.L. 86-523) requires Federal agencies to provide notice to the Secretary of the Interior of any dam constructions and, if archeological resources are found, for recovery or salvage of them. The law was amended in 1974 to become the Archeological and Historic Preservation Act (P.L. 93-291, 16 U.S.C. 469-469c), commonly known as the "Moss-Bennett Act." The amended law applies to any agency whenever it received information that a direct or federally assisted activity could cause irreparable harm to prehistorical, historical, or archeological data; up to 1% of project funds could be used to pay for salvage work. The NHPA authorizes additional funding for this purpose.

The Act extended the provisions to all Federal construction activities and all Federally licensed or assisted activities that will cause loss of scientific, prehistoric, or archeological data. It requires the Secretary of the Interior to coordinate this effort, and to report annually to Congress on the program. It permits agencies either to undertake necessary protection activities on their own or to transfer to the secretary up to 1% of the total authorized for expenditure on a Federal or Federally assisted or licensed project to enable the secretary to undertake the necessary protection activities.

The American Indian Religious Freedom Act of 1978 (P.L. 95-341) makes it a policy of the government to protect and preserve for American Indians,

Eskimos, Aleuts, and Native Hawaiians their inherent right of freedom to believe, express, and exercise their traditional religions. It allows them access to sites, use and possession of sacred objects, and the freedom of worship through ceremonial and traditional rights. It further directs various Federal departments, agencies, and other instrumentalities responsible for administering relevant laws to evaluate their policies and procedures in consultation with Native traditional religious leaders to determine changes necessary to protect and preserve Native American cultural and religious practices. Applicable regulation: 43 CFR 7, ARPA Permitting.

The Archaeological Resources Protection Act of 1979 (P.L. 96-95, 16 U.S.C. 470aa-470ll) supplements the provisions of the 1906 Antiquities Act. The law makes it illegal to excavate or remove from Federal or Indian lands any archeological resources without a permit from the land manager. Permits may be issued only to educational or scientific institutions, and only if the resulting activities will increase knowledge about archeological resources. Major penalties for violating the law, both fines and imprisonment, are included. The Act authorizes the Secretary of the Interior to promulgate regulations for the ultimate disposition of materials recovered as a result of permitted activities. Permits for archeological work on tribal lands cannot be issued without the consent of the tribe. The Act also regulates the taking of archeological resources on Federal lands, contains a permit system for excavating or remov-

ing archeological resources, and places prohibitions on the sale, purchase, transport or entry into interstate commerce of items taken in violation of the Act. (P.L. 100-555; 100-588)

Two amendments have been made to ARPA since it was enacted. P.L. 100-555 requires Federal agencies to develop plans for surveying lands not scheduled for projects and develop and implement a uniform system for reporting and recording archeological violations. P.L. 100-588 lowers the felony threshold to \$500, adding attempts to loot or vandalize as a crime and requiring Federal land managers to develop public awareness programs.

The Abandoned Shipwreck Act of 1987 (P.L. 100-298), signed into law April 28, 1988, transfers to states title to abandoned shipwrecks that are on or eligible for the National Register of Historic Places or in protected coral formations (except wrecks on Federal or Indian lands). It also clarifies the definition of "embedded," requires the Secretary of Interior to prepare guidelines to help states and Federal agencies, and encourages states to create underwater parks.

The Native American Graves Protection and Repatriation Act (P.L. 101-601; 104 Stat. 3048, 25 USC 3001 note.), signed into law on November 16, 1990, requires Federal agencies and museums to inventory human remains and associated funerary objects and to provide culturally affiliated tribes with the inventory of collections. The Act requires repatriation, on request, to the culturally affiliated tribes and establishes a grant program within the

Department of the Interior to assist tribes and Native Hawaiian organizations in repatriation and to assist museums in preparing the inventories and collections summaries. It also makes the sale or purchase of Native American human remains, whether or not they derive from Federal or Indian lands, illegal.

The Legacy Resource Management Program was established by Congress through the Department of Defense Appropriations Act, Section 8120 of 1991, to help the Department of Defense enhance its cultural and natural resource stewardship of more than 25 million acres of land under its jurisdiction. Legacy activities integrate the management of these resources with the DOD mission and the public interest. Archeological resource preservation, conservation, and management are important elements in this program.



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Efforts to preserve human products can be traced at least to Classical times, when Ptolemy I established the first state-sponsored mouseion for the study of cultural and natural objects in Alexandria in 290 B.C. In the Middle Ages, churches were the repositories of precious remnants of human history. With the onset of the Renaissance, and a florescence of interest in humanism, scientific theory, and the works of Greeks and Romans, the Old World stage was set for the rise of museums, art galleries, botanical gardens, private collections, and public sites and efforts aimed at saving national patrimony.

In the New World, the long and elegant continuity of Native American customs, crafts, and lore represented the first efforts to preserve cultural heritage. Steps toward historic preservation from a Eurocentric perspective had to await the emergence of consolidated national identities with a sense of the past among the inhabitants. This began to take shape in the present United States in the late 18th and early 19th centuries. The following timeline summarizes the major events in U.S. history that have helped to craft cultural resource protection today.

- 1784

Thomas Jefferson conducts the nation's first systematic archaeological excavation on mounds at Monticello, posing research questions and publishing his results.
- 1816

The City of Philadelphia purchases the Pennsylvania State House (later called Independence Hall) including surrounding land and the Liberty Bell to preserve these monuments.
- 1846

Residents in Deerfield, Mass., launch a drive to save "Old Indian House," the last structural survivor of a 1704 Indian massacre.
- 1859

The Mount Vernon Ladies' Association raises an amazing \$200,000 to purchase and preserve George Washington's Potomac River estate, inspiring women elsewhere to initiate similar projects.
- 1863

Attempts to save John Hancock's home fail, serving as a rallying point for historic preservation for almost a decade.
- 1879

The Bureau of Ethnology (later called the Bureau of American Ethnology) is established within the Smithsonian Institution, initiating national programs in anthropology and archaeology. A report by the Archaeological Institute of America brings the looting of prehistoric ruins in the Southwest to the public's attention. The Anthropological Society of Washington (later called the American Anthropological Association) begins to publish *American Anthropologist*.
- 1892

Congress designates Casa Grande in Arizona as the first national archaeological reservation.
- 1906

The Antiquities Act (Public Law 59-209) becomes the first federal legislation providing protection for cultural properties on government lands, specifying punishments for violations; and it also authorizes the President to declare areas of public lands as National Monuments.
- 1916

Congress passes the National Park Service Organic Act (P.L. 64-235) to ensure the conservation of scenery, wildlife, and natural and cultural objects for the enjoyment of future generations.
- 1926

Plans to restore Williamsburg, Va., represent the first effort to recreate an entire community, changing the professional orientation of preservation in the country and leading to other house museum and historic district projects.
- 1930s

Numerous Public Works Administration projects aimed at national economic relief undertake the recording and investigation of cultural properties.
- 1931

Charleston passes the nation's first comprehensive municipal preservation ordinance.

1906	1956	1966	1971	1978	1987
Antiquities Act	Federal Highway Act	Nat'l Historic Preservation Act; Dept. of Transportation Act	EO 11593	American Indian Religious Freedom Act	Abandoned Shipwreck Act
Historic Sites Act	Reservoir Salvage Act	National Environmental Policy Act	Archeological and Historic Preservation Act	Archaeological Resources Protection Act	Native American Graves Protection and Repatriation Act
1935	1960	1969	1974	1979	1990

HIGH POINTS IN Historic Preservation

Compiled and Written by KC Smith

- 1934

The Society for American Archaeology (SAA) is established.
- 1935

The Historic Sites Act (P.L. 74-292) establishes as national policy the preservation of important sites, buildings, and objects, giving the Secretary of the Interior authority to conduct surveys, collect and preserve data, and acquire historic and archaeological sites; and it also establishes the National Historic Landmarks program.
- 1949

Congress charts the National Trust for Historic Preservation, a private, nonprofit organization dedicated to the protection and continued use of America's architectural, cultural, and maritime heritage.
- 1956

The Federal Aid Highway Act (P.L. 91-605), prohibiting use of historic lands and sites for highways unless no alternatives are possible, represents the first protection of cultural properties from effects of federally sponsored projects.
- 1960

The Reservoir Salvage Act (P.L. 86-523), the first legislation to recognize archaeological sites as important data sources and the first to authorize funding for data collection, makes the government accountable for cultural information impacted by reservoir projects it conducts or permits.
- 1966

The National Conference of Mayors publishes "With Heritage So Rich," a report issuing a clarion call about the imperilment of the nation's cultural properties.

- The same year, Congress passes the National Historic Preservation Act (P.L. 89-665), the nation's cornerstone preservation legislation, which establishes as federal policy the protection of historic sites and properties in cooperation with other nations and state and local governments (see sidebar).

Also in 1966, the Department of Transportation Act (P.L. 89-670) restricts the initiation of transportation programs and projects requiring the use of land from historic sites of national, state, or local significance unless no alternatives exist.
- 1969

The National Environmental Policy Act (P.L. 91-190) requires federal agencies to prepare impact statements for projects that may affect the quality of the human environment, including natural and cultural resources.
- 1971

President Richard Nixon signs Executive Order 11593 (16 USC 470), requiring federal agencies to inventory their lands for cultural sites and to nominate sites to the National Register of Historic Places.
- 1974

The Archeological and Historic Preservation Act (P.L. 93-291) extends the protections established by the Reservoir Salvage Act to all federal construction projects where scientific, historical, or archaeological data might be imperiled.
- 1976

The Tax Reform Act (P.L. 94-455) establishes a tax credit for the rehabilitation of historic buildings that will be used for income-generating purposes.

- 1978

The American Indian Religious Freedom Act (P.L. 95-341) establishes as federal policy the protection and preservation of traditional beliefs and expressions of indigenous populations, allowing them access to sites and possession of sacred objects; and it directs federal agencies to consult with native peoples regarding relevant laws and projects.

In the same year, in the case of the Penn Central Railroad vs. the New York City Landmarks Commission, the U.S. Supreme Court finds in favor of the city, stating that historic preservation groups may establish policies that regulate private property.
- 1979

The Archaeological Resources Protection Act (P.L. 96-95) and its 1988 amendments (P.L. 100-555 and P.L. 100-588) supplement provisions of the Antiquities Act by further defining the parameters for scientific research on public and tribal lands, clarifying the nature of illegal actions, strengthening penalties for violations of the law, and directing federal agencies to establish public education programs.
- 1987

The Abandoned Shipwreck Act (P.L. 100-298) transfers ownership of certain historic shipwrecks from the federal government to states, and directs states to develop management and protection programs encompassing the needs of all user groups.
- 1989

SAA sponsors the Save the Past for the Future conference in Taos, N.M., leading to anti-looting and public education initiatives, including a permanent SAA Public Education Committee established in 1990.

- 1990

The Native American Graves Protection and Repatriation Act (P.L. 101-601) provides for the inventory and repatriation of human remains and cultural objects held by federal agencies or institutions that receive federal funds; and it provides for tribal involvement in decision making about archaeological resources on federal or tribal lands significant to Native Americans.
- 1994

SAA sponsors the second Save the Past for the Future conference in Breckenridge, Colo., to evaluate its five-year anti-looting and public education initiatives, and to map a course for the next five years.

The Cornerstone Law

The National Historic Preservation Act and its 1980 amendments (P.L. 96-515), established 1) the National Register of Historic Places; 2) the office and duties of state historic preservation officers (SHPO); 3) a program of matching grants-in-aid to enable SHPOs to carry out their work; 4) the Certified Local Government program to identify communities that meet certain preservation standards; 5) federal agency responsibilities concerning historic preservation activities, including the appointment of preservation officers and consideration of impacts on historic properties by federally conducted or sponsored projects, as outlined in Section 106 of the NHPA; and 6) the Advisory Council on Historic Preservation to advise the President and Congress on historic preservation matters and oversee federal adherence to Section 106 policies.

—APPENDIX VII—

SELECTED ARTICLES

Alexandria Archaeology Abstracts

1. *1991 Excavations at Fort Ward*. Francine W. Bromberg. 1991.
2. *Bibliography of African American Archaeology in Alexandria*. 1992.
3. *Landmarks: Thirty Years of Archaeology in Alexandria*. Pamela J. Cressey. 1992.
4. *Historical Archaeology Investigations at 900 King Street, Alexandria, Virginia*.
Excerpted by Kaarn Christopherson from a contract report by Alan Westover,
Tellus Consultants. 1992.
5. *Sugar House*. 1992. Francine W. Bromberg. 1992.
6. *Maritime Archaeology at Keith's Wharf and Battery Cove, Ford's Landing, Alexandria, Virginia*. Excerpted by Kaarn Christopherson from a contract report by
Dennis Knepper and Marilyn Harper, Tellus Consultants. 1992.
7. *Sugar House Update*. Francine W. Bromberg. 1992.
8. *Archaeological Investigations at the Protestant Episcopal Theological Seminary in Virginia*. Francine W. Bromberg. 1993.

Cressey, Pamela. "Community Archaeology in Alexandria, Virginia." *Conserve Neighborhoods*. No. 69, July 1987.

Cressey, Pamela and Keith L. Barr. "The Right Way to Dig at Home." *Preservation News*. June, 1989.

CRM. "Organization of the Federal Archaeology Program." Vol 17 no. 6, 1994.

Goodwin, Derek V. "The Green Mole: History's Final Assassin has Come Calling on Washington." *Regardies*, June 1985.

Haas, Daniel. "Education and Public Outreach in Federal Programs." CRM. Vol. 18, no. 3, 1995.

Lankenau, Stephen. "Apothecary Site was Home to More than Nostrums." *Alexandria Gazette*.

Magid, Barbara and Carole E. Snow. "Buried in Storage: The Alexandria Archaeology Collections Management Project." AASLH Technical Leaflet #178, *History News*, Vol. 46, No. 5, September/October 1991.

Onderdonk, Richard. "Piaget and Archaeology." *Archaeology*. Vol. 39, no. 6, Nov/Dec. 1986.

Patrick, John J. "Prominent Places for Historic Places: K-12 Social Studies Curriculum." *CRM*. Vol 16, no. 2, 1993.

Rogers, Jerry L. and Francis P. McManamon. "The Federal Archaeology Program." *CRM*. Vol 17, no. 6, 1994

Rogge, A.E. and Patti Bell. "Archaeology in the Classroom: A Case Study from Arizona." *Archaeological Assistance Program Technical Brief*. No. 4, May, 1989.

Whoriskey, Peter. "Alexandria Exhibit to Feature Excavations at Apothecary." *The Washington Post*.

1991 EXCAVATIONS AT FORT WARD

by

Francine W. Bromberg, Alexandria Archaeology

Abstract Number 1

October 1991

After almost two months of work by volunteers, students and staff, Alexandria Archaeology's 1991 summer excavation season at Fort Ward Historic Park culminated in Family Archaeology Day on the sixth of July. Archaeology in Alexandria began in 1961 with the excavation of the fortifications at Fort Ward to insure an accurate reconstruction of the fort's northwest bastion. The goal of the 1991 investigation, a return to the site to celebrate thirty years of archaeology in the City, included understanding the history of the Fort Ward property not only during the Civil War, but also during the periods before and after the war. To achieve this goal, extensive archival research supplemented the data gathered during the excavation.

To date, the documentary evidence has revealed that the Fort Ward property was part of a 1261-acre parcel of land granted to Francis Awbrey on 19 February 1729 (Northern Neck Grant C:30). In Beginning at a White Oak, Beth Mitchell notes that Awbrey served as a tobacco inspector at Pohick warehouse in 1732 and later as Sheriff of Prince William County. Subsequent eighteenth century owners of this property include William Ramsay, a Scottish merchant who helped to found Alexandria and served as mayor of the town, and Robert Allison, who proceeded to divide and sell the acreage (Fairfax Deed Books C:17; Z:313,318). In 1843, the parcel which was to become Fort Ward became the property of Phillip Hooff, who owned it until after the Civil War (Fairfax Deed Book H3:173). The Hooff family, prominent in Alexandria since the late eighteenth century, has lent its name to Hooff's Run, which flows southward through the City into Cameron Run.

The Federal Army hastily began construction of Fort Ward on Hooff's property about September 1, 1861, in response to the panic in Washington after the Union defeat at the First Battle of Bull Run (Manassas). As pointed out by Benjamin Cooling and Walton Owen in their book, Mr. Lincoln's Forts, the hasty construction resulted in a number of defects, and one ravine to the northwest, where enemy forces could mass for attack, was left unprotected. In addition, the magazines and bombproofs were not designed to withstand the heavier artillery developed during the Civil War. Modifications were planned, and the final fort, completed in 1865, incorporated the many technological improvements learned during the war. The resultant structure was a model of military engineering for its time, one of 161 forts and batteries constructed to serve as a shield around Washington during the Civil War. As was the case at most of the forts ringing the capital, the soldiers garrisoned at Fort Ward, up to four hundred at a time, saw no action. Despite some attempts to maintain the fort as a military installation after the Civil War, it was deactivated shortly after its completion. Wooden structures were dismantled, and the timber, a precious commodity at the time, was sold at public auction for \$988.

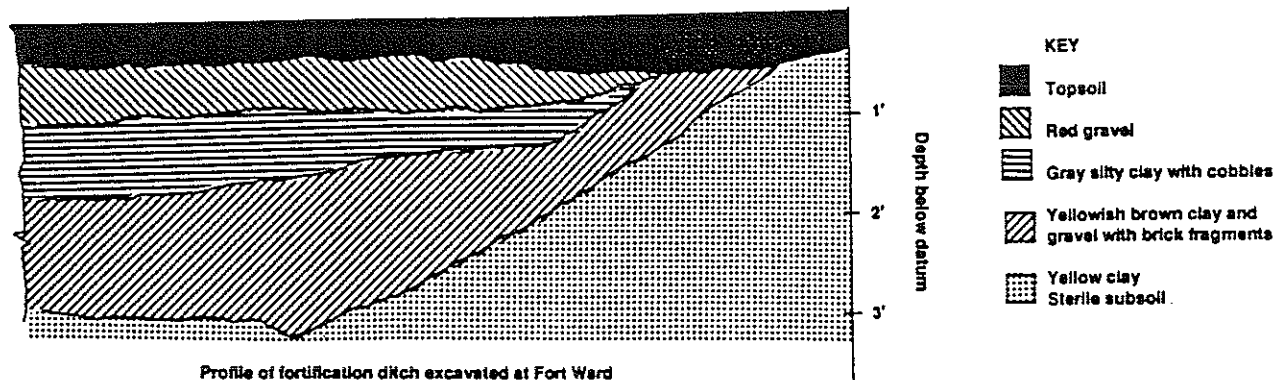
The archaeological excavation has provided insight into the occupation and construction activity at Fort Ward during the Civil War. Several minie balls, uniform buttons, backpack hooks and mid-nineteenth century pipestems datable to the period were recovered during this year's investigation. The excavation focused on the Civil War barracks area, as determined by correlating the current setting with an 1863 Quartermaster's drawing. Three large post holes filled with cobbles were identified about one foot below the current surface. Lying in a straight line about four feet apart, the post holes probably once held timbers which supported the Civil War barracks. Quartermaster's plans for barracks at other forts called for construction on wooden posts, and a notation on one of the Fort Ward drawings documents that the Fort Ward barracks were to be similarly built. In addition, one of the few surviving historical photographs of Fort Ward illustrates that the barracks rested on wooden piers or footings. The archaeological post hole evidence is consistent with this method of construction. Topsoil had apparently been stripped from the area, probably used in the construction of the fort's embankments, and the barracks were built on posts dug into the newly exposed surface. A brick feature, also uncovered during the excavation, may have served as support for a wood-burning stove inside the barracks.

One puzzling aspect of Fort Ward's Civil War history revolved around the lack of evidence for a ditch on the eastern side of the embankment. Given the fort's mid-nineteenth century status as a "model of military engineering," historians speculated that the ditch, an integral part of the defensive system, should have encircled the entire structure. This season's excavation verified that the ditch had indeed existed in the area which currently appears flat.

The post-Civil War history of the site is intricately intertwined with the history of a group of African American families who purchased the property in the 1880s and 1890s, after a Chancery Court case in Alexandria authorized the sale of Hooff's land. Beginning in 1884, Burr and then Harriett Shorts became owners of the eastern part of what is now Fort Ward Park (Fairfax Deed Books E5:578-79 N8:404-08); James F. Jackson bought the westernmost section (Fairfax Deed Book Q5:466). Late nineteenth and early twentieth century owners of other parcels include: John A. Miller, Jacob Ball, John Terrell, Samuel Javins, Brook Johnson and Clara Adams (Fairfax Deed Books E5:579-82; R5:413; B6:512). The 1991 excavation focused on the parcel purchased by Miller in 1886 and subdivided shortly thereafter (Fairfax Deed Book D6:267).

Many of these individuals were instrumental in the formation of the Oakland Baptist Church, now situated at 3410 King Street. The church history documents that the Oak Hill Baptist Mission, as it was first called, began in 1888 in "a little schoolhouse on Oak Hill." The congregation was organized and recognized as the Oakland Baptist Church on September 15, 1891. Given the connection between the church founders and the Fort Ward landowners, it is tempting to speculate about the location of "Oak Hill" on or near the Fort Ward property. Foundations of a structure are present in the Oakland Baptist Cemetery, now surrounded on three sides by Fort Ward Historic Park. Several additional graves remain nearby, outside of the official cemetery boundaries. A school appears on late nineteenth and early twentieth century plats of the area south of the cemetery (Fairfax Deed Book N8:404-408). A later African American school may also have been located closer to Braddock Road on what is now park property.

Some of the artifacts from this year's excavation provide insight into this post-Civil War occupation of Fort Ward. A scatter of numerous late nineteenth through twentieth century domestic artifacts across the site may relate to the post-Civil War African American settlement. In addition, the artifacts excavated from the fill dirt of the ditch surrounding the fortification date from 1885 to 1915. Therefore, the level surface around the fort in this area was probably created in the late nineteenth or early twentieth century, most likely by the post-Civil War, African American landowners. Ferreting out additional details of the history of land use on this important Alexandria landmark will require further detective work, delving into more documents at the National Archives and the Fairfax County Courthouse as well as interviewing members of the Oakland Baptist Church and descendants of its original founders.



Bibliography of African American Archaeology in Alexandria

Abstract Number 2

February, 1992

Artemel, Janice, Elizabeth Crowell, and Jeff Parker. The Alexandria Slave Pen: The Archaeology of Urban Captivity. Engineering-Science, Inc., Washington, D.C. 1987.

Barr, Keith L. *The Moore/McLean Sugar House (44-AX-96)*. Alexandria Archaeology Publications, [A.A.P.] Number 6. City of Alexandria. 1989.

Blomberg, Belinda. *The Foundation of Free Black Communities in Nineteenth Century Alexandria, Virginia*. A.A.P., Number 2. City of Alexandria. 1989.

Free Black Adaptive Responses to the Antebellum Urban Environment: Neighborhood Formation and Socio-economic Stratification in Alexandria, Virginia, 1790-1850. Ph.D. Dissertation, Department of Anthropology, American University. University Microfilms Intl., Ann Arbor. 1988.

Bromberg, Francine W. and Steven J. Shephard. *African American Heritage Park: Archaeological Investigations and Preservation Strategy*. A.A.P., Number 39. City of Alexandria. 1992.

Cressey, Pamela J. *Free Spaces - Free People*. In "I, Too am America": Studies in African American Archaeology, Theresa J. Singleton, editor. University of Virginia Press: in preparation.

The Nineteenth Century Transformation and Spatial Development of Alexandria, Virginia. A.A.P., Number 1. City of Alexandria. 1989.

The Alexandria, Virginia City-Site: Archaeology in an Afro-American Neighborhood, 1830 - 1910. Ph.D. Dissertation, Department of Anthropology, University of Iowa. University Microfilms Intl., Ann Arbor. 1985.

A Preliminary Historical Report, The Baptist Cemetery Association of Alexandria, Virginia. Located Near Holland Lane. A.A.P., Number 20. City of Alexandria. 1985.

The Archaeology of Free Blacks in Alexandria, Virginia. A.A.P., Number 19. City of Alexandria. 1985.

An Enduring Afro-American Neighborhood: An Archaeological Perspective from Alexandria, Virginia. Black Heritage Volume 20, Number 1:1-10. September-October, 1980.

Cressey, Pamela J., Barbara H. Magid and Steven J. Shephard. Urban Development in North America: Status, Distance, and Material Differences in Alexandria, Virginia. Report to the National Endowment for the Humanities. City of Alexandria. 1984.

Cressey, Pamela J., Barbara H. Magid, Steven J. Shephard, and John F. Stephens. *The Core-Periphery Relationship and the Archaeological Record in Alexandria, Virginia*. In Archaeology of Urban America: The Search for Pattern and Process, edited by R.S. Dickens, Jr., pp. 143-173. Academic Press, New York. 1982.

Cressey, Pamela J. and Steven J. Shephard. *Geographical Versus Social Scale in Alexandria: A Growing Archaeological Perspective*. A.A.P., Number 23. City of Alexandria. 1987.

Cressey, Pamela J., and John F. Stephens. *The City-Site Approach to Urban Archaeology in Alexandria, Virginia*. In Archaeology of Urban America: The Search for Pattern and Process, edited by R.S. Dickens, Jr., pp. 41-59. Academic Press, New York. 1982.

DeBats, Donald A. *Spatial Analysis and Social Attributes, Alexandria, Virginia in 1859*. A.A.P., Number 3. City of Alexandria. 1989.

Henley, Laura, Ann Palkovich and Jonathan Haas. *The Other Side of Alexandria: Archaeology in an Enduring Black Neighborhood*. In Approaches to Preserving a City's Past. City of Alexandria, 1983.

Knapper, Virginia. *Alexandria Reflection: Life Around the Canal*. Pamphlet. City of Alexandria. n.d.

Jenkins, Virginia, Edward Stabler, *A Kind Friend and Counselor: A Quaker and Abolitionist in Alexandria, D.C. 1790-1830*. Student paper, George Washington University. 1986.

A Preliminary History of the Stabler-Leadbeater Apothecary Shop. Student paper, G.W.U. 1986.

Magid, Barbara H. *Old Town North: A Survey of the Area North of Pendleton Street and East of Washington Street*. City of Alexandria. n.d.

Martin, Christopher T. *Urban Vernacular Housing in Alexandria's Nineteenth Century Black Neighborhoods*. Report prepared for Alexandria Archaeology. City of Alexandria. 1983.

McCord, T.B. Jr. Across the Fence But a World Apart: The Coleman Site 1796-1907. An historical analysis of the socio-economic changes on the 400 block between South Royal and South Fairfax Streets. S.J. Shephard and P.J. Cressey, editors. City of Alexandria. 1985.

Newell, Kent. Del Ray and St. Elmo: In Search of Their Past. Student paper, G.W.U. 1981.

Revis, Sarah. Historical Case Studies of Alexandria's Archaeological Sites. A series of papers.

Hannah Jackson: An African American Woman and Freedom. *Archival Data Pertaining to 406-408 South Royal Street*. A.A.P., Number 33. City of Alexandria. 1991.

217 North Royal Street (44AX66): 1790-1910. A.A.P., Number 34. City of Alexandria. 1991.

Contrast in Development: The Merchant's Mansion and a Free African American Neighborhood. *Archival Profile of 113-119 South West Street and the Damell Family*. A.A.P., Number 36. City of Alexandria. 1991.

Porter, Robin, and Joseph Brazierol. *An Analysis of 19th Century Ceramics from the Gibbon Street Barrel Well, A Free Black Site in Alexandria, Virginia*. Student paper, G.W.U. 1980.

Prosky, Ida. *Udolfo Wolfe's Aromatic Schiedam Schnapps*. Student paper, G.W.U. 1984.

Reeves, Matthew. *The Alleys of Alexandria, Virginia: A Preliminary Study*. Student paper, George Mason University. 1988.

Shephard, Steven J. An Archaeological Study of Socioeconomic Stratification: Status Change in 19th Century Alexandria, Virginia. Ph.D. Dissertation, Department of Anthropology, Southern Illinois University, Carbondale. University Microfilms Intl., Ann Arbor. 1985.

Status Variation in Antebellum Alexandria: An Archaeological Study of Ceramic Tableware. In Socio-economic Status and Consumer Choices: Perspectives in Historical Archaeology, edited by Suzanne Spencer-Wood, pp. 163-198. Plenum Publishing Co., N.Y. 1986.

Swain, Perry D. *Robert Hartshome Miller, 1798-1874: A Quaker Presence in Alexandria*. Master's Thesis, George Washington University. 1988.

LANDMARKS

30 Years of Archaeology in Alexandria

Abstract Number 3

December, 1991

- 1961 The City of Alexandria purchases Fort Ward and restores the northwest bastion. As part of this work, the City conducts its first archaeological investigation.
- 1965 Citizens arrange for the Smithsonian Institution to undertake rescue excavations in the urban renewal areas of the 300, 400, and 500 blocks of King Street. An archaeological laboratory is established in the old Torpedo Factory building.
- 1971 The "Committee of 100" forms to provide private funds and continue rescue archaeology after the Smithsonian ends its involvement.
- 1973 City Council establishes a city archaeologist staff position, the second such position in the United States.
- 1975 The Alexandria Archaeological Commission is established by City Council Resolution No. 371. Alexandria is the first American city to create such a group.
- 1977-78 Alexandria Archaeology excavated the final urban renewal block, 500 King Street, the Courthouse Site. Artifacts from the Wilkes Street Pottery, Alexandria's major ceramic manufacturing site, are rescued.
- 1979-81 First City-wide archaeological survey to locate sites in Old Town and Greater Alexandria.
- 1979 First Alexandria Archaeology Museum opens in the Torpedo Factory Art Center.
- 1979 Alexandria Archaeology publishes its first newsletter for volunteers.
- 1979 The Alexandria Waterfront Project begins with the relocation of the Alexandria Canal Tide Lock, and its nomination to the National Register of Historic Places.
- 1979 The Alexandria African American Project begins with excavation of the nineteenth century neighborhood to the south of the Alfred Street Baptist Church, called "The Bottoms."
- 1981-84 The Historic City Survey locates neighborhoods (c. 1790-1910), describes their development and identifies their differences in material culture.
- 1982 The City of Alexandria sponsors a comprehensive renovation of the Torpedo Factory Art Center. Alexandria Archaeology staff work with the architects to design the new facilities for the Museum.
- 1982 The first volume of Volunteer News is produced. The archaeology volunteer newsletter is produced monthly from this date.
- 1984 The new Alexandria Archaeology Museum opens in the renovated Torpedo Factory Art Center.
- 1984 The City of Alexandria and the National Park Service produce the Jones Point Master Plan, including a management strategy for protecting and interpreting archaeological sites.
- 1984 City Council requests Alexandria Archaeological Commission to draft an archaeological preservation ordinance.

- 1985 10 year anniversary of Alexandria Archaeological Commission.
- 1985 Potomac River Underwater Archaeological Survey documents maritime history and potential for submerged resources.
- 1985 Historic Cemetery Project begins with the archaeological discovery of unmarked graves and burials at Christ Church yard.
- 1985 Tombstone found in abandoned Holland Lane Black Baptist cemetery leads to a report on earliest documented African American cemetery in Alexandria.
- 1986 The Friends of Alexandria Archaeology are incorporated "to develop a common movement for the appreciation and conservation of Alexandria Archaeology and its place in the continuity of the human experience."
- 1987 Alexandria Archaeological Commission updates its 1975 resolution, to include members from the Alexandria Society for the Preservation of Black Heritage and the Friends of Alexandria Archaeology.
- 1987 Alexandria Canal Tide Lock is reconstructed as part of the TransPotomac Canal Center development.
- 1988 Alexandria Archaeology Atlas and Street Directory Project begins to map locations of historic sites and compile the data by current address.
- 1989 Collections Storage Project starts by conducting conservation survey and inventorying collection.
- 1989 City Council adopts metal detection ordinance prohibiting the search and removal of historic materials from City land.
- 1989 Second City-wide survey conducted to locate archaeological resources for Historic Preservation chapter of Alexandria Master Plan.
- 1989 Abandoned Cemetery Survey conducted in response to Virginia Department of Historic Resources: cemeteries identified within Alexandria.
- 1989 Alexandria City Council adopts Archaeological Protection Ordinance to insure that significant archaeological resources are preserved in large-scale commercial sites. Eleven archaeological resource areas are designated across the City.
- 1990 Alexandria Archaeological Commission celebrates its 15th anniversary.
- 1990 The Friends of Alexandria Archaeology establishes a Rescue Fund to save endangered sites and artifacts.
- 1990 The Friends of Alexandria Archaeology establishes the John S. Glaser Award for contributions to the appreciation and conservation of Alexandria Archaeology.
- 1990 Payne Street Storage Facility opens, and work begins to repack 2,000,000 artifacts, and conserve endangered artifacts.
- 1991 The first Alexandria Archaeology Commission Neighborhood Meeting on preservation chapter takes place.
- 1991 30-year Anniversary of Archaeology in Alexandria begins with reinvestigation of Fort Ward to discover barracks and an African American community.



HISTORICAL ARCHAEOLOGICAL INVESTIGATIONS AT
900 KING STREET
ALEXANDRIA, VIRGINIA

Abstract Number 4

March, 1992

Excerpted by Kaarn Christopherson from A Preliminary Report of Historical Archaeological Investigations at 900 King Street, Alexandria, Virginia by Allan R. Westover, Tellus Consultants, Inc.

Tellus Consultants, Inc. under the auspices of Alexandria Archaeology, conducted historical archaeological investigations at 900 King Street in Alexandria, Virginia in October of 1989. Work at this site (44AX113) was suggested by the property owner, Wellington Goddin, after hundreds of earthenware syrup jar sherds were discovered during excavations under the rear wall of the building, for the purpose of pouring concrete to reinforce the foundations. Alexandria Archaeology determined that the artifacts would have applicability to previous research conducted at the Moore/McLean Sugar House located one-half block north.

The structures on the lot at 900 King Street have played an ongoing role in the events of Alexandria's past. Document research shows activity at the site since at least September of 1795, when the property first was listed as a sale. The Mutual Assurance records for 1803 show a two-story grocery store, a wooden coach house, and a single-story dwelling on the site. The 1864 map of Alexandria shows a single-story structure at the rear of the property. Today, remains of the grocery store, dwelling and a small segment of the eastern wall of the coach house lie beneath the property at 900 King Street.

William S. Moore, owner and operator of the Sugar House one block north of the site, also owned the 900 King Street property from January 1814 to June 1825. In March 1815, Moore sold the Sugar House. Investigators speculate that Moore may have used the cellar of 900 King Street for discarding damaged sugar production vessels during the fourteen-month period when he owned both properties. It is also possible that the discarded sherds may have been moved and redeposited in their present location during the excavation of a cellar for a large Victorian dwelling constructed in the 1880s over the Moore/McLean Sugar House site.

Partial excavation of the site located what may have been a brick-lined cellar filled with syrup jars used in sugar manufacture. Three test units were excavated inside the building, their location determined by spaces opened during the floor removal. Union 1, containing Feature 1, was a continuation of the test hole excavated in the spring of 1989 after the first section of flooring was removed. Unit 2, containing Feature 2, was placed in the cleared area next to the north wall of the building. Unit

Portions of a building slip, a marine railway, and the bulkhead of the wharf were encountered. Data recovery investigations focused on the wharf bulkhead, the building slip, and several barge and boat fragments located at the edge of the cove.

The wharf consisted of a simple bulkhead of large yellow pine timbers, scarfed and pinned with iron drifts and reinforced with tie-back braces anchored in fill behind the structure. The fill was clean earth, reportedly graded from the bluffs along Lee Street immediately west and northwest of the site. Few artifacts were contained in the fill. Those recovered generally were incidental inclusions of late eighteenth century domestic debris; late eighteenth and nineteenth century domestic debris assumed to represent a maintenance episode at the turn of that century; and prehistoric artifacts derived from an apparently extensive base camp on the bluffs to the west. The wharf bulkhead had deteriorated and nowhere rose to its original height. Analysis indicated that it originally stood approximately three feet above the contemporary high waterline, which was at least 18 inches below the current high water level.

Shipyard features consisted of a building slip over 350 feet long, composed of pine timbers serving as spread footers laid directly on the wharf's earthen fill. The slip could accommodate a vessel of moderate beam (24 feet). Evidence suggests that the slip had not been used. The remains of the marine railway consisted of the brick and wood base of the capstan head in the engine room, and sections of the masonry foundation for the rails leading out to the ship channel. The ways were big enough to handle some of the largest vessels on the river at the time. The railway extended 200 feet along the wharf surface. Harbor bottom contours shown on contemporary maps suggest that the rails extended an additional 250 feet beyond the waterline to reach the channel providing adequate draft.

The most appropriate means of preservation of the larger features at the site consisted of reburial. Some features will be disturbed by excavating a canal through the center of the property, but these resources have been mitigated through the investigation's documentation process. The northern portions of the site will remain undisturbed by current development beneath the Ford Plant building.

SUGAR HOUSE 1992

Abstract Number 5

May, 1992

In mid-March, the City of Alexandria began the process of archaeological preservation in the parking lot at the corner of Cameron and North Columbus Streets prior to construction of a parking garage and townhouses. During the first six weeks of excavation, volunteers clocked in over 750 hours of excavation time under the direction of site supervisors, Steven Shephard and Fran Bromberg.



Volunteer Skip Sigmon excavating the cistern.

Alexandria Archaeology identified this area as an important site through archival and archaeological work conducted in 1987, 1988 and 1989. An extensive search of documentary sources indicated that, in addition to nineteenth century to early twentieth century residences, the lot contained a late eighteenth/early nineteenth century home with spacious gardens, and an early nineteenth century sugar refinery owned first by William Moore and then by Daniel McLean. The lot reflected the "mixed" land use patterns typical of the eighteenth and early nineteenth centuries, when homes and businesses often

occupied the same block; it was not until the later nineteenth century that the separation between residential and industrial neighborhoods became commonplace. The limited 1987-89 excavations yielded remains of both the Moore/McLean Sugar Refinery and their residences, along with thousands of pottery sherds from ceramic vessels used in the sugar refining process.

The current excavations have begun to provide more complete information on the workings of the sugar refinery, and on the use of the lot for both industrial and residential purposes. Excavations in March, 1992 revealed a nineteenth century brick drain underlying an oyster shell path, which ran for at least 70 feet toward Columbus Street. These landscape features probably relate to a garden which surrounded the Daniel and Lucretia McLean residence in the early nineteenth century. As described in historical records, the garden extended from the house (near the corner of Cameron and North Alfred Streets) eastward across the lot; a path led to a turnstile, which provided access to the grounds of Christ Church on the other side of Columbus Street. The length and unique construction of the drain would have involved an intensive work effort and considerable expense, which suggests that this garden area was of great importance to the McLeans.

In April, numerous other archaeological features emerged as the asphalt and overlying soil were removed from additional sections of the parking lot. Several well shafts, brick wall foundations, a long brick pathway, and a circular brick cistern--ten feet in diameter, were uncovered. Used as a water reservoir, the cistern may relate to the sugar refining process, but was later filled with ash and cinders.

Documentary records provide little information about certain aspects of late eighteenth/early nineteenth century urban life. Excavation of the Moore/McLean Sugar House lot illustrates the ability of historical archaeology to fill in these gaps in our understanding of the past. Information on the structure and workings of the refinery contributes to our understanding of Alexandria's history as well as to the field of historical archaeology, in general; for to our knowledge, this is the first urban refinery site that been excavated in North America. The drain, which cuts across the Sugar House lot, is the longest found in any of the City's archaeological sites to date and provides us with insight into nineteenth century gardening and drainage practices. Similarly, the cistern is of particular interest because few others have been excavated in the City. Information about this feature adds to our knowledge about nineteenth century solutions to the problem of water supply.



MARITIME ARCHAEOLOGY AT KEITH'S WHARF
AND BATTERY COVE
FORD'S LANDING
ALEXANDRIA VIRGINIA

Abstract Number 6

July, 1992

Excerpted by Kaarn Christopherson from Maritime Archaeology at Keith's Wharf and Battery Cove (44AX119): Fords Landing, Alexandria, Virginia, by Dennis Knepper and Marilyn Harper, Engineering Science, Inc., Washington, D.C. 1991.

In the late summer and fall of 1989, Phase II and III archaeological investigations were conducted at the Ford's Landing development site, also known as the Old Ford Plant (44AX119), on the southern end of the waterfront in Alexandria, Virginia. The goal of the Phase II testing was to evaluate the significance of archaeological resources on the property, assess their integrity, and consider the effect of proposed development plans. The Phase III study was conducted to mitigate adverse effects on significant archaeological resources on the site.

Archival research indicated that the property consisted entirely of made land, including a wharf constructed in 1785 by James Keith. The wharf lay at the northern end of a long, shallow bay, later known as Battery Cove. Keith's Wharf saw little extensive commercial use until the marine railway was established in 1849. That enterprise disappeared before the Civil War, but the wharf was appropriated by the Union Army's Military Construction Corps. A shipyard again was in operation in the 1870s, with several marine railways and building slips where a variety of vessels were constructed and repaired. Large ship construction ended by the mid-1880s, but repair of ships and boats continued at the wharf until the 1920s. The marine railway also operated under various owners throughout that period.

In 1910 and 1911, the U.S. Army Corps of Engineers dredged the main channel of the Potomac at Alexandria, depositing the resulting spoil behind a low stone wall erected to span the distance from Keith's Wharf to Jones Point, filling in Battery Cove and creating the southern third of the study area. With the quickening pace of later twentieth century development in Alexandria, the Ford's Landing site represented the best and possibly last opportunity to investigate remains from periods ranging from the formation of the waterfront through early industrial development to the twentieth century.

Approximately 40 percent of the site was inaccessible to current investigations due to development plans calling for preserving a large brick structure built in the 1930s by the Ford Motor Company on the north half of the site. Archaeological testing consisted of excavating a series of backhoe trenches, oriented both perpendicularly and diagonally across the wharf, to test the area for structural remains. Additional, shorter trenches were scattered through the cove section of the property to test for the presence of derelict vessels beyond the edge of the wharf.

Portions of a building slip, a marine railway, and the bulkhead of the wharf were encountered. Data recovery investigations focused on the wharf bulkhead, the building slip, and several barge and boat fragments located at the edge of the cove.

The wharf consisted of a simple bulkhead of large yellow pine timbers, scarfed and pinned with iron drifts and reinforced with tie-back braces anchored in fill behind the structure. The fill was clean earth, reportedly graded from the bluffs along Lee Street immediately west and northwest of the site. Few artifacts were contained in the fill. Those recovered generally were incidental inclusions of late eighteenth century domestic debris; late eighteenth and nineteenth century domestic debris assumed to represent a maintenance episode at the turn of that century; and prehistoric artifacts derived from an apparently extensive base camp on the bluffs to the west. The wharf bulkhead had deteriorated and nowhere rose to its original height. Analysis indicated that it originally stood approximately three feet above the contemporary high waterline, which was at least 18 inches below the current high water level.

Shipyard features consisted of a building slip over 350 feet long, composed of pine timbers serving as spread footers laid directly on the wharf's earthen fill. The slip could accommodate a vessel of moderate beam (24 feet). Evidence suggests that the slip had not been used. The remains of the marine railway consisted of the brick and wood base of the capstan head in the engine room, and sections of the masonry foundation for the rails leading out to the ship channel. The ways were big enough to handle some of the largest vessels on the river at the time. The railway extended 200 feet along the wharf surface. Harbor bottom contours shown on contemporary maps suggest that the rails extended an additional 250 feet beyond the waterline to reach the channel providing adequate draft.

The most appropriate means of preservation of the larger features at the site consisted of reburial. Some features will be disturbed by excavating a canal through the center of the property, but these resources have been mitigated through the investigation's documentation process. The northern portions of the site will remain undisturbed by current development beneath the Ford Plant building.

SUGAR HOUSE UPDATE

Abstract Number 7, July, 1992



Undaunted by the summer heat and humidity descending upon the City, Alexandria Archaeology staff and volunteers continue to excavate the site of the Moore-McLean Sugar Refinery in the parking lot at the corner of Cameron and North Columbus Streets. Despite the heavy spring rains, which often left the site looking like a huge mudflat and made the archaeological trenches into small ponds, volunteers clocked in almost 950 hours of excavation time during May and June.

Over the past three months, we concentrated our efforts on two areas of the site: one in the center of the street face which borders Cameron Street and the other in the interior southern section of the parking lot. Excavations in the Cameron Street area focused on gathering information about two large archaeological features which emerged when the asphalt was removed. The first, a large brick cistern -- ten feet in diameter and lined with mortar, was originally used as a water reservoir, but later filled with trash. We excavated one quadrant of this feature and found a mortar-lined brick floor at a depth of eleven feet below the surface. The large size of the cistern suggests that it was originally constructed for use in the sugar refining process; it is unlikely that a private residence would require such excessive quantities of water.



Volunteer Ruth Reeder excavates a quadrant of the cistern.

The cistern had apparently fallen into disuse by the middle of the nineteenth century, for the lower levels of fill contained a variety of artifacts which dated to that period. The noteworthy finds include: a large fragment of a locally produced salt-glazed stoneware vessel; portions of shoes and perhaps a hat; fragments of a leather belt and what appears to be a braided leather whip; and a brass and lead belt buckle commonly issued to Union soldiers during the Civil War. Bearing the insignia "U.S.", this buckle is the only Civil War artifact found to date on the site. By the late nineteenth or early twentieth century, the cistern was completely filled with coal, cinders and trash. Nevertheless, it has maintained its ability to capture and hold water; after each of this spring's frequent storms, we spent the morning pumping out the previously excavated portions of the cistern so that the investigation could continue.

The other notable feature in the Cameron Street area first appeared as a large circular stain of black soil surrounded by tan clay. Initial excavations of the northern half of the feature revealed that it was a large cylindrical pit cut into the clay and then filled with steeply sloping layers of soil, cinders, coal and ash. All the soil levels contained artifacts dating to the late nineteenth and early twentieth centuries. For months, the purpose of the feature remained an enigma; its cylindrical shape was certainly atypical, and the artifacts included in the fill did not resemble the type of assemblage usually found in a trash pit. Dubbed the "mystery pit" because of the constantly changing interpretations of its function, this feature was finally understood in late June when we monitored the excavation of a backhoe trench across the southern half. At a depth of about five feet, we discovered an intact portion of a brick shaft, originally about six feet in diameter. Apparently, the upper bricks and those in the northern half had been removed for some reason, and the shaft was then filled.

We also discovered another brick shaft, capped by a brick dome, in this area of the site. However, unlike the "mystery pit," it was intact and contained no artifacts or fill. This shaft measured six feet in diameter, and 1.5 feet in depth. Drainage pipes, probably dating to the twentieth century, carried water into both this shaft and the "mystery pit." By following the pipelines, we determined that overflow from the cistern drained into the domed well and that overflow from the domed well was in turn carried into the "mystery pit's" shaft. This extensive system of pipeline and shaft connections suggests that drainage around the cistern was a severe problem on the lot, at least during the twentieth century. The original functions of the shafts remain puzzling. They may have served as storm sewers to aid in draining the surrounding land. It is noteworthy, however, that the walls of the shafts appear to have been broken to allow for the placement of the drainage pipes. Thus, the existing pipes were not part of the original shaft construction. It is therefore possible that some of the shafts were first dug as wells and later adapted for drainage purposes.

In early July, we restored parking to the Cameron Street side of the site. The cistern and all of the shafts were filled and covered over with milled asphalt. Further investigation of the cistern and shafts is planned during grading of the lot prior to construction of the townhouses and below grade parking garage.

Work continues on the interior southern section of the parking lot. This area would have been in close proximity to the refinery building and has yielded large quantities of pottery sherds from the ceramic vessels used in the sugar refining process. Our work in this area has focused on understanding some of the activities which must have been carried on in the yard area surrounding the refinery. A large rectangular lens of concrete covers what may be yet another brick shaft. In addition, we have exposed a number of wooden planks in place in the ground; and these may represent the remains of yard features used in the refining process. The associated artifacts indicate that they date to the refinery period. Further excavation is necessary to ascertain the dimensions and possible functions of these wooden features. Excavation of the remainder of the lot is expected to continue into the fall.



ARCHAEOLOGICAL INVESTIGATIONS AT THE PROTESTANT EPISCOPAL THEOLOGICAL SEMINARY IN VIRGINIA

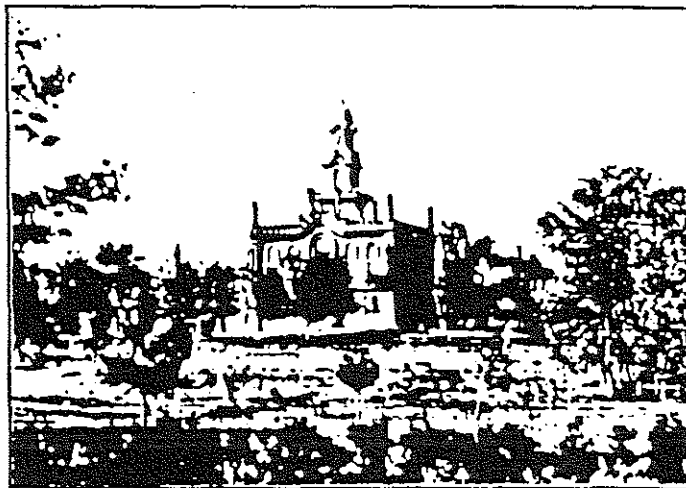
by Francine W. Bromberg



Abstract Number 8, June 1993

Alexandria Archaeology, a division of the City's Office of Historic Alexandria, has begun a project to increase our understanding of the development of the western part of the City through an investigation which focuses on the Protestant Episcopal Theological Seminary in Virginia. To date, our research has provided us with insight into the highly significant nature of the Seminary property not only as an important religious institution but also as the focal point of community life in the area since the mid-nineteenth century. In addition, investigations on Seminary property have the potential to add to our knowledge on plantation life at the outskirts of the city during the late eighteenth and early nineteenth centuries, on Alexandria's role in the Civil War and on the activities at a Civil War hospital. It is even possible that archaeological remains relating to prehistoric Native American occupation may lie buried on the Seminary property.

The grounds of the Theological Seminary have been minimally disturbed through the centuries, when compared with the surrounding suburban development. This fact underscores the uniqueness of the property, where highly significant archaeological resources could lie preserved in the park-like setting of the campus.



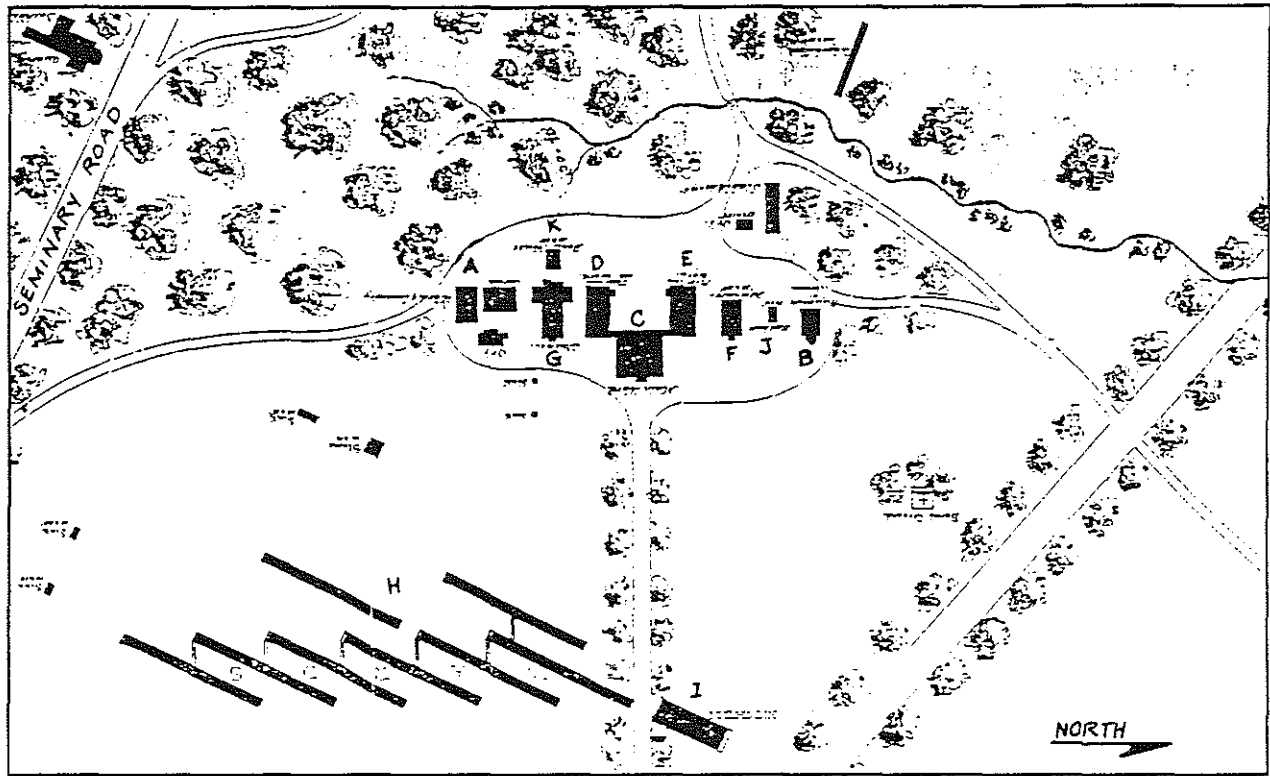
Aspinwall Hall, National Archives, Brady Collection circa 1864

Historical Background: The land which was to become the current Seminary property was part of two large tracts patented in the late 17th and early 18th centuries. Throughout the colonial period, tobacco was probably cultivated as a cash crop on portions of this land, and 18th and 19th century deeds for properties in the area often refer to "Ramsay's old fields," presumably indicating the agricultural land owned by William Ramsay, who had purchased one of the large tracts in 1749. By 1803, the large land holdings had been divided, and

Quaker Lane, then known as "old Leesburg Road," was already present. The 59.25 acres which were to become the original core area of the Seminary were owned by Jonah Thompson, a prominent Alexandria merchant.

In 1827, Thompson and his wife sold their property to the Seminary trustees for \$5,000. By this time, there were several structures on the land, as indicated by an 1820 tax assessment, which assigned a value of \$2,565 to the buildings on Thompson's property. The two faculty residences now known as "Oakwood" and "Maywood" may have been among those present at the time of the sale to the Seminary trustees. These structures may have been dwellings on the old farmstead, and their original dates of construction are not yet known.

Continued on reverse



Detail of 1865 map of the Protestant Episcopal Theological Seminary, *National Archives*.

Legend: A & B - "Oakwood" and "Maywood", pre-1827. C - Aspinwall Hall, built in 1858. D - Meade Hall, built in 1859. E - Bohlen Hall, built in 1860. F - Francis Scott Key Hall (Seminary library), built in 1855. G - Immanuel Chapel, built in 1840 and remodeled in 1855.

Civil War installments: H - Hospital Ward. I - Kitchen. J - Meat House. K - Dead House.

Continued from front

The first academic building on the property was constructed in 1827, shortly after the purchase by the Seminary. The line of structures currently standing between "Oakwood" and "Maywood" on the crest of Seminary Hill dates to a building campaign of the mid-nineteenth century. The most prominent building, Aspinwall Hall, was constructed in 1858. It is flanked by Meade and Bohlen Halls, built in 1859 and 1860, respectively. Completing the row of structures are Francis Scott Key Hall, built as the Seminary library in 1855, and Immanuel Chapel, originally built in 1840 and remodeled in 1855.

During the Civil War, the Union Army occupied the Seminary property for use as a hospital. The accompanying map shows the locations of structures on the property at the time. Note that a kitchen and rows of hospital wards flanked the road leading from Aspinwall Hall to Quaker Lane.

After the war, the Seminary regained the land and received some compensation for the military's use.

The Archaeology: The current project of Alexandria Archaeology will attempt to elucidate the prehistory and early history of the Seminary property, including its use as a plantation or farmstead, as an early institution for theological education, and as a Civil War hospital. One of the first steps in conducting this investigation will involve the excavation of a series of shovel tests across the hospital ward/kitchen area to provide preliminary information about its archaeological potential. We will then expand our investigation in the most promising locations and open a series of square excavation units, usually measuring three or five feet on a side, to recover artifacts from the significant time periods and hopefully to uncover features in the ground, such as foundations, wells, privies or trash pits, which will provide us with information about life in the past.



CONSERVE NEIGHBORHOODS

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Community Archaeology in Alexandria, Virginia

by Pamela J. Cressey, Ph.D.
City Archaeologist

Pamela J. Cressey has been the City Archaeologist of Alexandria, Va. since 1977. Ms. Cressey also holds a joint appointment in the departments of Anthropology and American Studies as Adjunct Associate Professor at George Washington University, Washington, D.C. She received her Ph.D. from the University of Iowa.

Alexandrians have been engaged in the preservation, study and public interpretation of archaeological sites since 1961. In fact, Alexandria is unique in the nation for its continuous and comprehensive commitment to archaeology. Alexandria Archaeology, part of the Office of Historic Alexandria within the city government, was created to study and preserve the rich heritage that lies beneath the town's yards, streets and parking lots. Alexandria Archaeology has pioneered a new field -- community archaeology -- which combines artifactual, documentary, photographic and oral historical sources for the study and preservation of the community's archaeological heritage.

Active citizens first articulated the values of archaeological preservation and encouraged rescue work by the Smithsonian Institution during the days of urban renewal in the 1960s. Later in the seventies, citizens developed both public and professional groups for ongoing research and education.

An effective partnership has evolved between members of the community and trained archaeologists. The Alexandria Archaeological Commission is appointed by the city council and sets policies and goals. The professional staff of Alexandria Archaeology work with community volunteers to carry out this public mandate by conducting research; providing preservation recommendations on development projects and endangered sites; studying and curating the Alexandria Archaeology Collection and interpreting community history in the Alexandria Archaeology Museum and throughout the city.

Alexandria Archaeology has conducted numerous research projects aimed at describing and understanding the nature of historic urban life. The projects range from studies of the town's main street and waterfront to investigations about the Quakers' role as community leaders and the development of free black neighborhoods. Ten years of systematic study have produced an array of information on many diverse topics such as burial practices and infant mortality, sugar trade and refinement, canal and wharf construction, pottery manufacture and public works. This information has been generated from projects which build on one another to produce an integrated view of the city.

Preserving Alexandria's Underground Heritage

America's towns and cities are experiencing a major building boom which endangers archaeological sites and artifacts. Massive office and commercial developments can quickly destroy archaeological information that has been safe for thousands of years.

It is also possible to restore a property accurately by architectural standards, while dislodging and destroying rich archaeological evidence. If archaeological expertise is brought to a site in sufficient time, however, development activity can benefit a community's appreciation of its past.

In Alexandria we have created a method for staying in front of the bulldozers -- the Preservation Tracking System (PTS). The city archaeologists have identified areas that are the most sensitive to archaeological loss. It may seem incongruous for archaeologists to conduct painstaking scientific investigations on some sites while bulldozers destroy artifacts only blocks away. Yet, once the information obtained from these projects is integrated into a wider view of community history, we have the ability to distinguish which sites merit preservation efforts. Determination of site significance is based on several criteria: research value in answering important questions about Alexandria's and America's past; public value for use and interpretation; uniqueness; physical integrity; and the impact of the proposed development.

By examining development dockets for both the planning commission and the board of architectural review, it is possible to assess the need for archaeological preservation action on land which may soon undergo changes. Recommendations are then made to property owners and city officials for the appropriate level of archaeological activity. This level of activity correlates with the importance of the site -- the more significant the site, the more time and precision are needed to excavate it. The Alexandria Archaeological Commission has developed a draft ordinance to formalize this procedure. It will be presented for city council approval in the near future.

By alerting site owners to the archaeological value of their properties and by monitoring construction sites, the city archaeologists have discovered sites that were unknown from previous studies. A kiln of potter Tildon Easton was found four feet underground when part of it was sighted protruding from a construction sidewall on a neighboring property. Scheduling of the kiln investigation prior to development of the site created sufficient time for scientific investigation and averted a crisis.

Volunteer Ken Ward catalogs artifacts in the Alexandria Archaeology Museum.





Alexandria Archaeology volunteers excavating Tilden Easton Kiln site

A free black neighborhood called Hayti was studied through documentary and oral history sources by expanding a study of one site slated for construction into a three-year project. Abundant knowledge was produced on the architecture, lifestyles, diet and social history of newly freed blacks living in a slave city.

A recent construction project provided the unusual opportunity to investigate Alexandria's historic Christ Church cemetery. Correlation of graves and burial records with gravestone texts documented that even in this protected cemetery, little evidence remained aboveground of the historic landscape and markers. Extremely careful archaeological excavations provided the only tangible evidence of the hundreds of individuals buried in the churchyard 200 years ago.

King Street Merchants

The urban renewal projects of the sixties and seventies provided the opportunity to investigate the city's commercial hub. Alexandria was a major port in the 18th century and through the second decade of the 19th century. King Street was laid out at a right angle to the Potomac River and continued into the western hinterland. King Street was one of several street names in the 1749 town plan symbolizing loyalty to the Crown. The streets and blocks were designed to fit the natural

topography of the crescent-shaped bay which provided a safe harbor.

The street names were assigned in a symmetrical manner -- the male royal titles radiating south of the central axis and the female ones going to the north. The royal street names descend in rank (e.g., King, Prince, Duke) as you move away from the center of town. The only variation in this pattern is the use of a folk name, Oronocco, where symmetry would require a Duchess street. Oronocco is a generic term for the type of tobacco grown in colonial Northern Virginia. Oronocco Street, beginning at the site of the earliest tobacco trading warehouses and wharf, indicates the importance of this commodity to Alexandria's existence. Street names assigned as the city grew reflect the changing loyalties of Alexandrians. By the 1790s, most new streets received names of American patriots such as Patrick Henry and Benjamin Franklin.

King Street became the central axis of Alexandria's bustling port. Unlike contemporary cities, which have specialized activity areas for commerce, industry and residence, historic King Street contained a variety of land uses. Wealthy merchants lived side by side with breweries, warehouses and wharves, slave quarters, taverns and dry goods stores. After 12 years of archaeological excavations on the King Street urban renewal blocks, we are able to describe the types of shops, goods and people which were seen over a 200-year period. We are also able to understand some of the personal dynamics



Illustration of Hayti, free black neighborhood, ca. 1850 by Karen Murley

that came into play as Alexandria developed from a colonial tobacco warehouse to its modern role as a suburb of Washington, D.C.

The saga of Quaker businessman Robert H. Miller's financial dealings and partnerships combined with archaeological information from his home provide a view of 19th-century Alexandria's quest for both economic and physical health. Over a 50-year period, Miller owned an import and dry goods business on the 300th block of King Street. He also entered into several partnerships to encourage the economic and cultural development of the stagnating city. He assisted in establishing the Alexandria Canal Company, the Lyceum, a railroad, a bank, a female orphan asylum, the largest industry in town -- a cotton factory -- and the water company.

We began by tracing Miller's involvement with water when an unusual structure was found beneath a parking lot on King Street. This underground circular structure was a brick and plaster-lined cistern that once had been located at the rear of the Miller residence. A two-part filtration box purified water by percolating it through layers of gradually smaller materials (from gravel to sand to charcoal). The structure is a tangible statement of Miller's technological

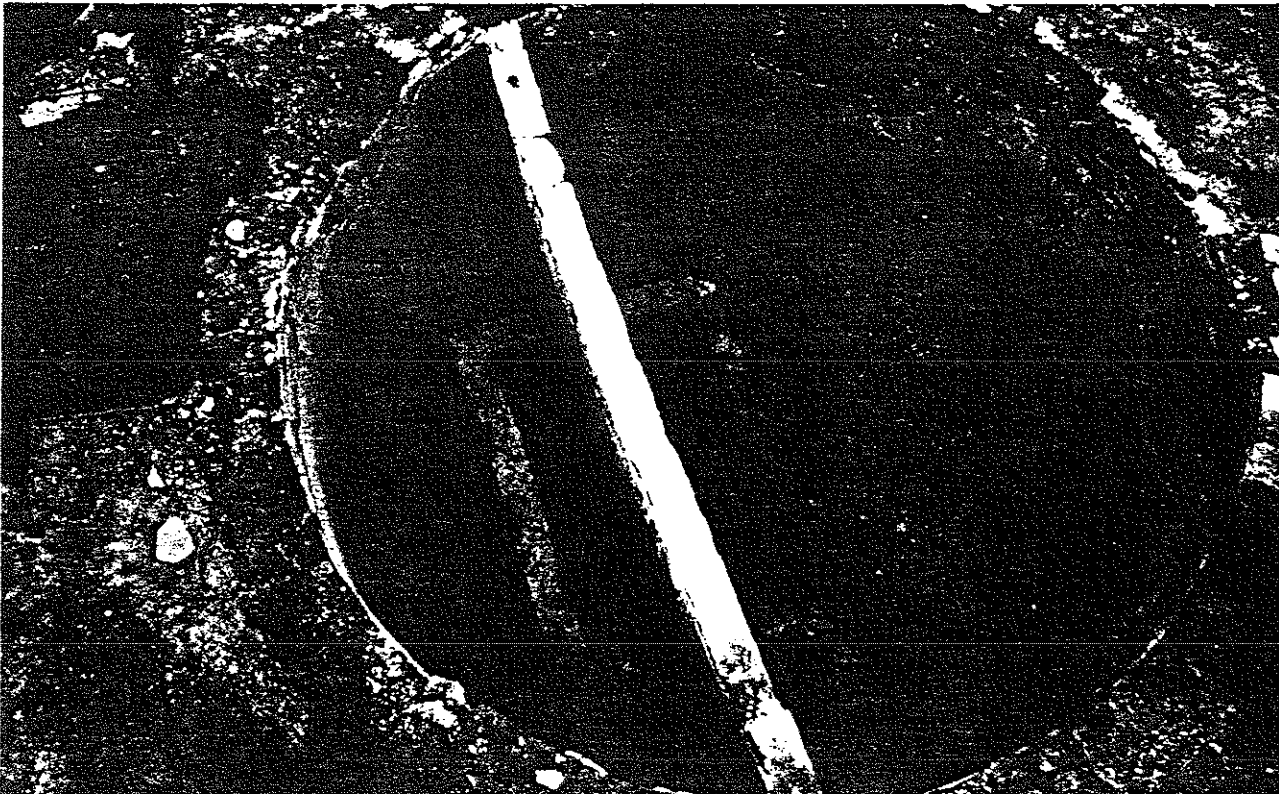
inventiveness and quest for a healthier environment. At a time of continual epidemics of yellow fever, small pox and cholera, a clean water supply was essential for public health. Miller's private construction may have contributed to the health of his own children -- all 11 survived. It also led to a public enterprise: Miller established the first company to bring clean water into private homes.

Miller's Quaker background provided motivation for both economic individualism and community welfare. Miller and other Quakers acted on their faith and vision to play central roles in the transformation of Alexandria into a 19th-century city.

Interpreting Alexandria's Archaeology

Research into Alexandria's past is the foundation for both the preservation and interpretation of its archaeological heritage. Research also produces the artifacts, historic documentation and ultimately the story of the past, which is interpreted through publications, museum exhibitions and videotapes.

Cistern and water filtration system located in Robert Miller's backyard



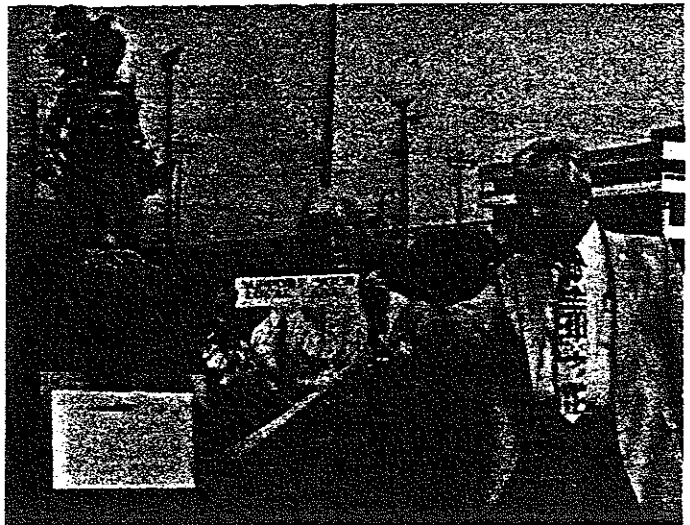
The City of Alexandria's archaeology collection numbers over 2,000,000 artifacts excavated from more than 100 sites. It is the largest and most comprehensive urban archaeology collection in the United States. All the materials excavated in the city are maintained in one collection, which is available to the public and scholars for individual studies. The collection consists of European, American and Chinese ceramics; European and American bottles and glassware; textiles; toys; bones and seeds from food and indigenous species, as well as many specialized tools and objects such as newspaper type, bone combs and toothbrushes.

Archaeology and the Community

Alexandria Archaeology Volunteers are the heart and hands of all projects. Over the last 10 years, more than 2,500 individuals have worked to excavate sites, catalog and illustrate artifacts, draw maps, research documents, write papers, give site tours and enter data into computers. Each year, about 75 volunteers work with



Museum Education Coordinator, Joanna Moyer, discusses new discoveries with students in Alexandria Archaeology Museum.



Mayor Charles E. Beatley, Jr. and Archaeological Commission member, Vivienne Mitchell, celebrate plaque commemorating a portion of the Alexandria Canal.

Alexandria Archaeology and contribute 7,000 hours or more of their time.

To produce work that is valuable to both the individual volunteer and the program, it is necessary to have shared expectations, training and belief in the value of community archaeology. Potential volunteers are asked to fill out application forms, sign an ethics statement and attend a general orientation. If they find the work and methods appealing, these new volunteers are directed to supervisors, training manuals and projects which suit their interests. Systematic supervision is required in all project phases to produce consistent results that lead to a broader view of Alexandria's history.

The business community in Alexandria has provided great support for the public interpretation of sites. Recently, Savage/Fogarty Companies, Inc., completed the reconstruction of the Alexandria Canal Tide Lock on the Potomac River as part of the Canal Center development. The tide lock had been nominated to the National Register of Historic Places by the Alexandria Archaeological Commission. This action created a high community profile for the site and brought it to the attention of Savage/Fogarty. The company has also donated space for the City of Alexandria to create a Waterfront Museum which will open in the fall of 1987.

Archaeology enriches communities and provides a focal point for energy and enthusiasm. One project can create a ripple effect throughout the community leading to museums, school curricula, neighborhood histories, condominium and hotel newsletters and historic street names. All these things have happened in Alexandria and in other cities across the country. Baltimore, Md., Pensacola, Fla. and Cleveland, Ohio, have all reported that archaeology makes a difference. Every community in America has an archaeological heritage which, if managed properly as a public resource, can help us recognize and celebrate the accomplishments of our predecessors. Archaeology brings the American legacy to life.

Alexandria Archaeology is located in a museum space in the Torpedo Factory Art Center. Alexandria Archaeology, the Torpedo Factory Art Center, the Alexandria Tourist council and the new Black Heritage Center and Waterfront Museum are combined into the Office of Historic Alexandria within the city government.

The Alexandria Archaeology museum has exhibits and a "living laboratory" in which visitors can see archaeology volunteers at work. Almost 100,000 people a year view the exhibitions as they walk among the studios of 200 artists in the Torpedo Factory. In the museum, visitors encounter the most recent discoveries, videotapes of current and finished projects and trained interpreters. Workshops, monthly seminars and publications are also available for the public.

To become a Friend of Alexandria Archaeology and receive the monthly Volunteer News or to obtain additional information on publications, volunteer administration and manuals and preservation planning, contact:

Joanna Moyar
Alexandria Archaeology
105 N. Union Street
Alexandria, VA 22314

Archaeology in Your Community

If you are interested in the archaeological study of your city or town, there are a number of steps you can take. Review parts of your city or county to identify known areas of native American or historic sites. If any of these areas will be developed soon, ask that an archaeological study precede site plans and construction. Meetings with site owners, city planners and city officials will aid in this process. Be aware of local, state or federal government plans for new projects that will cause changes in the landscape (i.e., roads, sewers, new buildings, erosion control). Federal legislation, and some state legislation, include archaeological assessments in environmental impact statements. Information from these projects can help in creating awareness of the importance of your area. By asking for funds for archaeological study of local government property or a particular project area, you may develop a catalyst for additional work. Archaeology may also be tied with tourism, recreational activities and historic site museums. See who is interested in developing a local program, and then design the program to fit the needs and character of your town.

There are many archaeologists in universities, museums, private industry and government throughout the country to assist in establishing community archaeology programs. Call your state historic preservation office, state archaeologist, anthropology department of a university or state archaeological society to locate the most knowledgeable individuals in your area. Below is a listing of archaeologists who deal with community heritage issues on a daily basis. Each has information on program goals, budgets and job descriptions that can help you develop your own program.

Recently, the Archaeological Assistance Division of the National Park Service (NPS) in the U.S. Department of the Interior has taken a special interest in helping to expand local archaeological activities. The archaeologists in the NPS regional offices are willing to assist local groups with projects, particularly ones in which federal agencies are involved. The Washington, D.C., office and regional

archaeological assistance programs are also listed below.

National Park Service Regional Archaeologists

Francis P. McManamon, Chief
Archaeological Assistance Division
Washington, D.C.
(202) 343-4101

Lloyd N. Chapman
Mid-Atlantic Regional Office
Philadelphia, Pa.
(215) 597-2337

John Ehrenhard
Southeast Regional Office
Atlanta, Ga.
(404) 221-2629

Stephanie Rodeffer
Western Regional Office
San Francisco, Calif.
(415) 556-5190

Jake Hoffman
Rocky Mountain Regional Office
Denver, Colo.
(303) 236-8675

Ted Birkedal
Alaskan Regional Office
Anchorage, Alaska
(907) 271-2641

City/County Archaeologists and Archaeologists in Local Government

Alexandria, Va.:

Pamela J. Cressey, Stephen J. Shephard
Barbara H. Magid, Don Creveling
Alexandria Archaeology
105 N. Union Street
Alexandria, Va. 22314
(703) 838-4399

Baltimore, Md.:

Elizabeth Anderson Comer
The Baltimore Center for Urban
Archaeology
800 E. Lombard Street
Baltimore, Md. 21202
(310) 396-1866

Boston, Mass.


Steve Pendery
City Archaeologist
Boston City Hall, Room 805
Boston, Mass. 02201
(617) 725-2996

Charleston, S.C.

Martha Zierden
The Charleston Museum
360 Meeting Street
Charleston, S.C. 29403
(803) 722-2996



Enthusiastic high school student proudly displays archaeological discovery.



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Office of Preservation Planning
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Easton, Pa. 18042
(215) 250-6722

Fairfax County, Va.

Susan L. Henry, Michael Johnson
Heritage Resources Branch
Fairfax County Office of Comprehensive
Planning
2855 Annandale Road
Fairfax, Va. 22042
(703) 237-4881

New York, N.Y.

Dr. Sherene Baugher
New York City Landmarks Preservation
Commission
20 Vesey Street
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(212) 553-1135

Philadelphia, Pa.

Carmen A. Weber
Philadelphia Historical Commission
1313 City Hall Annex
Philadelphia, Pa. 19107
(215) 686-4583

Phoenix, Ariz.

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City Archaeologist
Pueblo Grande Museum
4619 E. Washington Street
Phoenix, Ariz. 85034
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Department of Planning and Land Use
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The right way to dig at home

How to find and save your underground heritage

By Pamela J. Cressey and
Keith L. Barr

Overheard at a party:

Hi, Pam. We just bought our dream house. It feels wonderful to be surrounded by history—I can't believe I'm actually living in a house that's nearly 200 years old! We had to reconstruct the entire kitchen wing, and in digging up the floor we found tons of old dishes, bottles and bones. They were all broken, so we didn't think you'd be interested. We just kept a few pretty ones for the mantel and tossed the rest. How are your archeological digs going?

A telephone query:

Hello—my son has been digging up artifacts and oyster shells in our backyard for a sixth-grade science project—he's crazy about archeology and fossils! If we bring them in, can you tell us what they are, so he can write his paper? What? You think they might have some historic value and should be excavated scientifically? Oh, I'm sure they're not important—our property is just an old farmhouse near a creek!

What do these lovers of history have in common? They don't believe their property is important enough to preserve its "underground" heritage. Yet in both cases these families live on and change their own archeological sites. In the past, most building changes were additions: new wings, fill dirt and trash. Today we are experiencing major alterations to residential sites which also deplete, destroy, and irreparably damage information held for centuries in these historic properties.

Archeological sites are finite. They cannot be renovated, replanted or reproduced like old buildings or endangered species. The material evidence—artifacts, foundations, postholes, animal bones, wells, trash pits or even graves—preserved within the soil of your property are virtually the only tangible traces left of the actual occupants of your home. And perhaps there are clues left underground to previous tenants of your land—Native Americans or early settlers—which may not even be recorded in written history.

The "archeological record" is contained within your soil like pages of a book, albeit unbound. These pages, however, may be somewhat shredded and scattered. If the search is conducted carefully with contemporary archeological methods, there is a chance to reconstruct this record in conjunction with written documents, photographs and oral history. This process will transform broken ceramics and dirt into discoveries which add to knowledge about your predecessors and the development of your town.

How can you be a good caretaker of your archeological site? We provide the following steps for owners and occupants of historic properties:

☐ **Caution!** Do not dig your own site without proper training. The results will be hazardous for history. Before you begin renovation, new construction or landscaping, determine whether your property is an archeological site.

☐ Conduct an archival study of your property, focusing upon the names, social history and activities of the occupants; land use; dates and nature of construction and earlier renovation; footprints of buildings; and episodes such as fire or flood that may have affected the site. This information comes from deeds, wills, tax records, censuses, insurance maps and building permits. Produce overlay maps from different time periods showing the property's boundary and building dimensions. Produce a chart showing which occupants and activities are associated with these different periods of your property's development. You may do this yourself, or hire an experienced researcher.

☐ Contact the state historic preservation officer (SHPO), state historical society or museum, state archeological society, anthropology department of your local college, or your city/county archeologist. Ask for assistance in determining whether your property has archeological significance. This requires excavation and cannot be done without professional expertise. Consultant archeologists may be hired, just like architects; or technical assistance may be provided from a government or college. If you make this contact before the archival research, you may be able to put these two steps together. Excavation should never precede the

archival research, however.

☐ If your property is significant, register it with the SHPO. Develop an archeological plan with a trained professional, avocational, or student archeologist. Check to be sure this person is in good standing. This plan is just as necessary as architectural drawings and specifications. It is a map depicting archeological areas and a strategy for preservation—actions, priorities and scheduling with your renovation steps. Meet with the architect, contractor and archeologist to work this out. Wherever possible, leave archeological materials in place underground.

☐ Follow this plan over the years in conjunction with trained assistance. You may become so interested you will pursue avocational training. Your site may be so important that a university professor with students will work with you for many years. If you or the contractors find artifacts, attempt to get the archeologist to remove them. Field notes and photographs should accompany all excavations.

☐ Make sure artifacts and field notes are properly interpreted and curated. Nothing looks sadder than boxes of unwashed, decomposing artifacts sitting in somebody's garage. These are the pages of history which need reconstructing and interpreting so that the story of your property's heritage will be known. Donate the collection to the proper museum. Your SHPO or university can again help on this. Many students may be trained by washing, cataloging and studying your collection. It may contribute greatly to your town's museum or a historic home museum in the state. Or your collection can be the catalyst for a new interpretive center for black heritage, Native Americans, maritime history or labor history. Ask about tax advantages of donating your collection.

☐ Enjoy your archeological site daily by incorporating it into your landscape and home. Depict the old kitchen walls, well, or garden in your yard by above-ground treatments. The walls and well can be reconstructed above ground or outlined with bricks. The historic garden pattern can even be recreated if pollen, seeds and root forms are recovered from the excavation. One creative individual even turned his basement well into the focal point of his room with back lighting and a Plexiglas cover. These treatments will enhance your home. They will also preserve an important part of your property for future generations to appreciate. PN

Pamela J. Cressey is city archeologist and Keith L. Barr is preservation archeologist with the city of Alexandria, Va.

The Green Mole

HISTORY'S
FINAL ASSASSIN HAS COME CALLING
ON WASHINGTON

Like a character from a bad dream, the Green Mole comes riding through Georgetown's back streets and alleyways on a 10-speed bike, shovels banging on both hips. Tied across his back is a burlap sack that's waiting to be filled.

His gloves are tucked in his belt. The leather satchel that's slung over his right shoulder contains the specialized tools of his trade: a jeweler's loupe, utility brushes, and an odd assortment of picks and probes. As he hunches over the handlebars he steadies the swinging pouch with his left hand. A wire screen is secured beneath the seat with twine.

He rides down M Street with the wind at his back, dodging pedestrians and coasting through crowds. His careless glide makes him appear youthful, but he is not.

Risking arrest, he scouts the area with suspicion, his eyes hidden behind the brim of his cap as he circles the intersection of Canal Road and M Street like a vulture. It is 9:34 A.M. when he stops at Key Bridge.

There's not a cop in sight, but today the Green Mole is careful. Because he has previously been arrested and photographed by federal officers, he knows he can be easily recognized. He studies the faces of the people walking by as he dismounts to rest in the shade beneath the entry ramp of the Whitehurst Freeway. The morning's rush-hour traffic is beginning to thin.

Ten minutes later the Green Mole steps out into the sun, shading his eyes. He walks his bike across the intersection, then mounts it and pedals downhill, toward the Canal Road entrance to Georgetown University. He pulls over from the sidewalk to the lawn and sits down. Watching. He is almost there. He is relaxed. He waits.

It is mid morning by the time he is ready to make his final approach. Retracing his route, he pedals slowly back up hill toward the city until he is about 300 yards west of the bridge. On the sidewalk across the street from the canal and nearing the gas station, he slows down. He stops quickly, dismounts, and wheels his bike onto a grassy slope. He hides the bike behind the ruins of a collapsed stone house.

excavations, he sure knows what he's doing. And with that bike of his, you have to corner him on foot. He's gone if you even sneeze."

The federal agents who nicknamed him say that, like other burrowing rodents, the Green Mole sleeps in the winter. Early summer is his prime time. When he stirs from hibernation, he dons camouflage fatigues, a grayish cap, and heavy boots. Then he goes to work and starts digging.

"He's part of a new generation of raiders, and they're no dummies," explains Stephen R. Potter, the National Park Service's regional archaeologist for the national capital region. "They run the full gamut from your good old beer-guzzling red-

Crime

By DEREK V. GOODWIN

Dressed in camouflage fatigues that blend into the dense thicket, the Green Mole is almost invisible from the street. For federal undercover agents looking down from a hillside near the university, however, the view of the Green Mole and Canal Road is unrestricted.

It is 10:18. Cars flood the street. Drivers jockey for position. Joggers pass by. It is time. With his equipment at the ready, the Green Mole has come calling on history—a buried treasure trove of antiques and relics that predate the writing of the Declaration of Independence.

He begins by untying his sifting screen and laying it across two mounds of dirt. By 10:25 he is digging, coring down through the foundations of a home that was built before the American Revolution. Historians believe it is the ruins of a structure similar to the Old Stone House in Georgetown. Across the street is the site where Francis Scott Key lived from 1805 to 1830, but it can wait. For the time being, the Green Mole is focusing on an earlier period.

The Green Mole is a professional archaeological looter, one of many in Washington who glut the black market with stolen antiquities, selling plundered historical artifacts to the highest bidder.

"He gives new meaning to the term 'alien,'" comments an undercover park policeman. "But from the looks of his

A RAID ON A RAIDER

One of the Green Mole's recent assaults on history was interrupted by undercover park policemen. The raiders are systematically searching for artifacts such as arrowheads—those pictured were found near Great Falls—which can fetch up to \$2,000 in the antiques market.



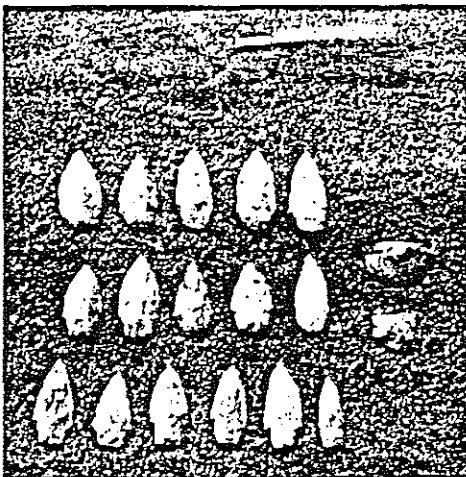
Derek V. Goodwin has written for *Science 82*, *Parade*, and *U.S. News & World Report*. He worked with undercover park policemen in pursuit of the Green Mole.

necks to extremely astute, well-educated lawyers."

The Green Mole and his clients could easily be your neighbors, the ones with the early American furniture and the odd assortment of fine antiques.

According to Potter, "He received training as a volunteer in a local archaeology program, learned his skills, and then went over to the Dark Side of the Force."

While federal archaeologists and law enforcement officials hold emergency meetings to coordinate plans for saving Washington's historic sites, the Green Mole is systematically destroying what little remains of Francis Scott Key's old



neighborhood. In Georgetown, on federal property.

He is suspected of frequenting other sites in the area, but government officials decline to say where or how often. To deter looting, all archaeological sites and activities under federal jurisdiction have been granted a secret classification. Even archaeologists who are anxious to talk about their work speak in general terms when they're asked about specific sites—or about the raiders.

How many raiders operate here? There are no official figures, but based on reviews of damage to sites in metropolitan Washington, some federal officials believe that there may be several hundred of them. And they dig history.



They're digging in Georgetown while you drive to work in the morning. They're drilling and sifting through the banks of the C&O Canal as you jog by. They're breaking ground in Rock Creek Park, tearing into foundations that were laid before "taxation without representation" was anything but a quiet Colonial complaint. Armed with archaeological tools and schooled in the latest research methods, they travel through time, cutting a path of destruction.

They cart away Civil War remains by the truckload near Harpers Ferry. They dig up several centuries' worth of collected garbage behind the Lee Mansion at Arlington National Cemetery, looking for distinctive shards of broken plate that were owned by George Washington—shards that can sell for as much as \$1,000 each. They return with 4,000-year-old relics from Great Falls. A rare spearhead from the Potomac region, known as a clovis fluted point, can fetch between \$500 and \$2,000.

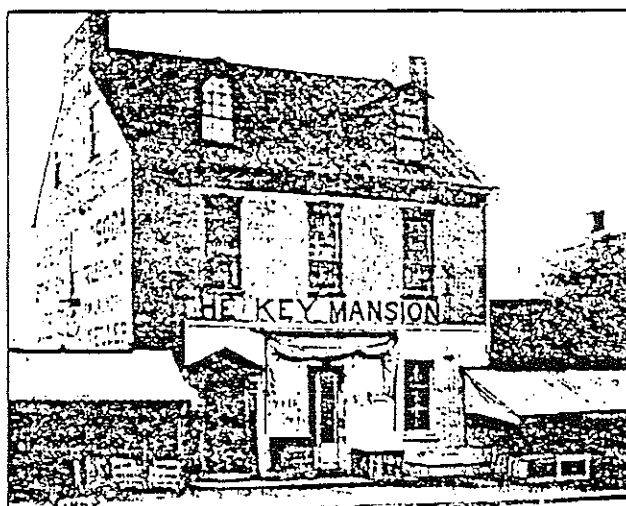
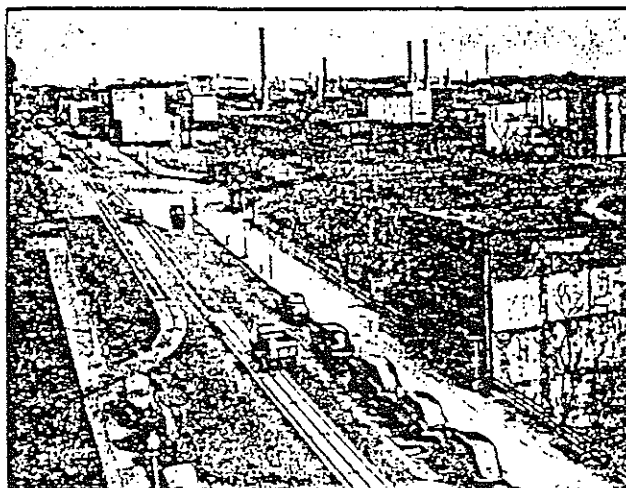
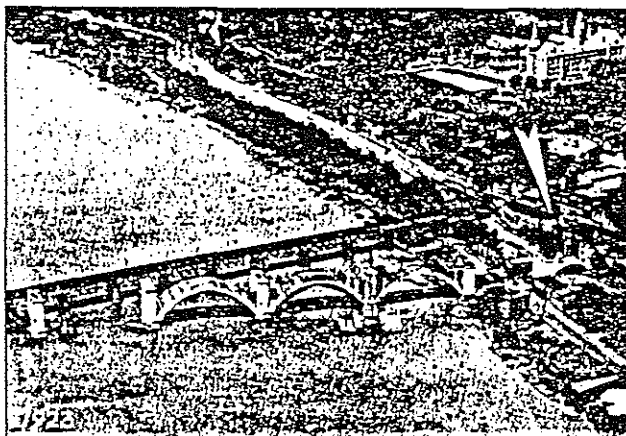
The buried treasure in Washington is a unique national legacy. Underground are relics, large and small, brought through time from all over the world—artifacts that reflect the diversity and origins of the Europeans who settled the city, founded the republic, and established the seat of government.

The raiders know this, and their current assault on Washington's history is a result of three elements that have created a demand for stolen relics. The first is rapid commercial development, which has placed most of the likely archaeological sites on the endangered list; the second is an increased demand for unique Washington-related historic artifacts at a time when normal retail outlets have a depleted supply of them, driving prices up; the third is a growing awareness of archaeological techniques and payoffs.

Consequently, the Green Mole and other looters have hit pay dirt in the Washington area on the thousands of acres of public land administered by the National Park Service.

It's been four years since the release of *Raiders of the Lost Ark*, but scientists still blame the increase in looting on the film's pop-culture portrayal of archaeology. The filmed exploits of Indiana Jones suggested to millions of potential looters that there is money to be made by stealing historical treasures. Equal parts bandit and scientist, the fictional Jones is the

BURIED TREASURE. Union troops marched down M Street on their way to and from the battlefields in Virginia during the Civil War, so Francis Scott Key's neighborhood is rich with historic artifacts. The Key mansion was dismantled years ago; it was to be reconstructed, but the remains were lost.



personification of many of today's educated treasure hunters, and he has become a cult hero to those who employ similar talents in the real world.

The raiders are slick and talented; random looting is for amateurs. Some raiders are freelancers who work for a small network of buyers; others work on assignment or on commission for dealers who need to fill special orders.

Federal agents know the route that illicit antiquities travel, but it is hard to stop. The antiques market is no different than

any other in today's highly specialized society, and looters ply their wares where demand is greatest.

For example, an antiques dealer might balk at the financial risk of buying and trying to move big-tag items, such as rose-colored arrowheads (which carry wholesale price tags of \$300 apiece), but a gemologist with wealthy clients might be interested in such rare curios. Raiders who know their artifacts also know which dealers will buy them quickly.

While many items of personal adornment—jewelry, brooches, hair combs, and the like—may be wholesaled to a generalist, items such as bottles and coins will inevitably go to a specialized dealer, who sells directly to collectors. Coins go to a numismatist, who will identify them, grade their condition, price them, and then help his customers fill their collections.

Law enforcement officials say that the underground traffic in antiquities is largely financed by wealthy collectors and private museums. In most cases, they say, antiques dealers are unsuspecting when they purchase articles that have been taken from public lands. And many individual collectors who request specific artifacts from dealers may be ignorant of the illegal steps that are often taken in filling their orders.

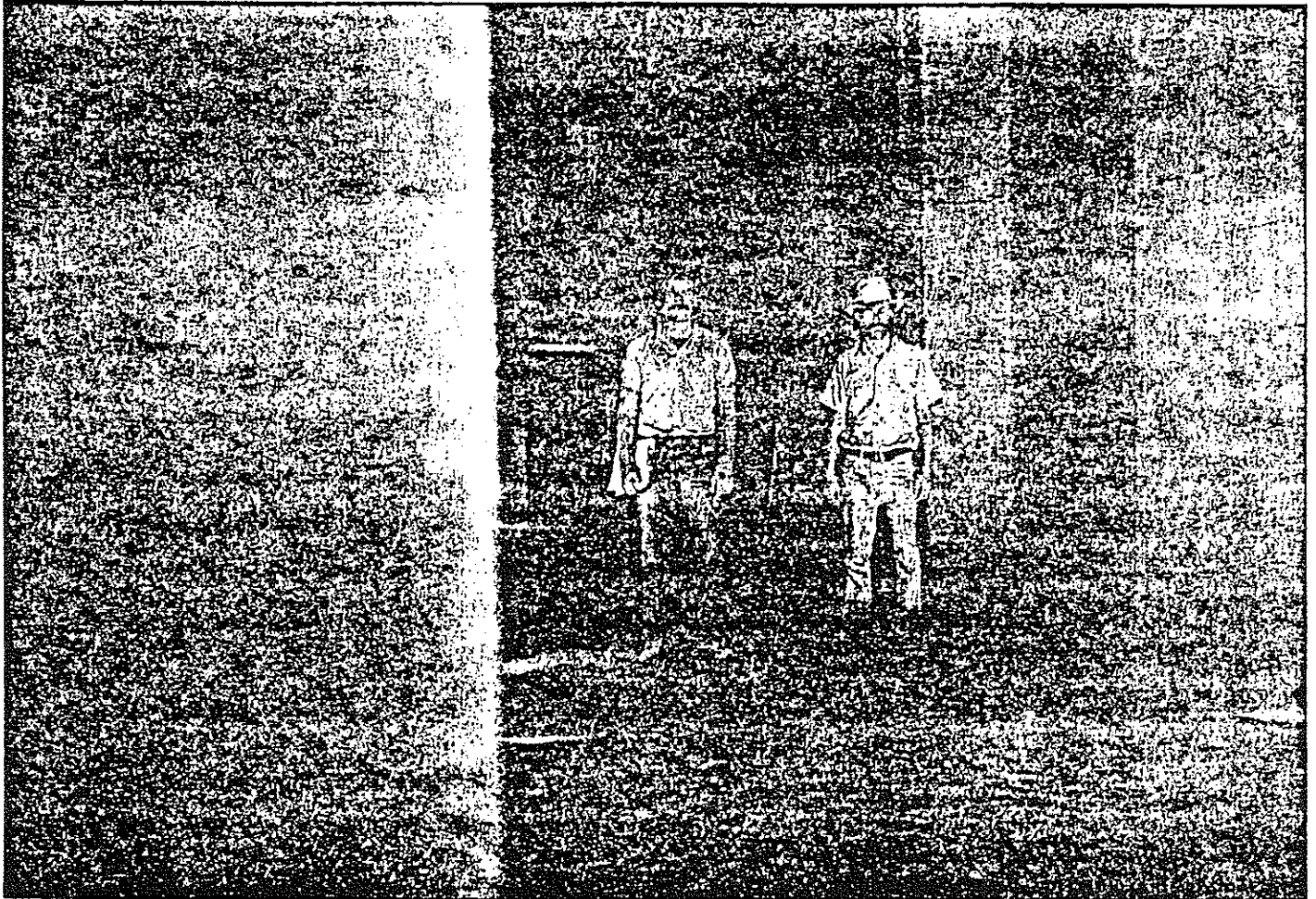
Financially successful raiders stay one step ahead of the market by identifying probable treasure troves early on and then plundering the sites when the artifacts are plentiful and relatively easy to find.

"They start by reading accounts and historical transcripts, and then use information gleaned from the records to pinpoint their harvests," explains Potter. "And I'm willing to bet there are several collectors out there who know some local resources better than we, the National Park Service, who supposedly administer and protect it."

Scarce finds move quickly at top dollar. In Washington raiders work fast, cutting through layers of dirt and silt that represent decades of accumulation, searching for artifacts

that are often found six or more feet deep, in long-buried 18th-century living quarters. For example, American-made coins were scarce before 1776—British currency was still the coin of the realm—and today's collectors and dealers seek them with a fervor. Because the Green Mole's favorite site was occupied before, during, and after the American Revolution, it is very likely that he'll unearth at least a few of the earliest coins that were minted in America. And it's very likely that he'll get away with it.

A RACE AGAINST TIME. Stephen Potter (right) and his only assistant, Robert Sonderman (they're in a chamber beneath the Lincoln Memorial), are trying to protect 138 square miles of federal property, but it's a losing battle. The Green Mole's favorite site, says Potter, "is a speck on a map of 88,000 square acres that I'm supposedly in charge of. I feel like an octopus with all its legs being pulled out at the same time."



Archaeological crime in the Washington area has created a major dilemma for federal scientists and law enforcement officials, whose job it is to protect reserves in three states plus the District of Columbia. Although the Archaeological Resources Protection Act, a federal law that was passed in 1979, makes it a felony to disturb or dig on public lands, in most cases a looter must be caught in the act for prosecution to be successful. In court it must also be shown that the alleged violator knew he was digging on federal land, and an archaeological expert must prove that the artifacts introduced as evidence were looted from the arrest site. And even though violators face fines as high as \$100,000 and 10-year prison sentences, raiders know that such cases are hard to make. Complicating matters here, the National Park Service has only one local expert in the field. Since January Potter has been called on to document nine cases of looting within one national park.

Most cases of looting are discovered when park personnel come across a raider's calling card: a freshly piled mound of dirt. Potter and park police then periodically check the site to see if the looter has returned; they are currently checking

the equivalent of 138 square miles every month.

The hard-hitting reality that the raiders had arrived en masse was driven home five years ago, during a systematic and detailed archaeological survey of the area's parklands. That ongoing survey, the first in the history of the park service, has uncovered some startling remains.

"More than 11,000 years of changing human lifestyles and different cultures are represented here," Potter explains. "Yet this historic potpourri is a pallid reflection of the sites that once existed."

Many sites, he says, were destroyed in the path of urban sprawl, either through ignorance or greed or both. Many were simply looted. "Blind luck saved what is left of the area's rich archaeological record, making it critically essential that remaining sites be rescued," Potter notes.

The locations of the sites have been classified as secret; the release of the information is prohibited by amendments to the National Historic Preservation Act. Potter limits his discussion of Washington's buried treasure sites to vague terms, hoping to protect the areas that the raiders have yet to find. At dozens of sites around the area, scientific teams from local universities work under his direc-

tion in a race against time.

Remnants of long-extinct civilizations exist less than three miles from the White House. The main part of the oldest known stone quarry ever found in the United States is buried beneath Connecticut Avenue. A tribal people worked the land around George Washington University for more than 14,000 years; in a snap of time, they were gone.

From among several hundred different sites that have been inventoried, the excavation of a village dating back to the 15th century begins along the C&O Canal. A cistern that was used to collect or purify water in the early 1800s is uncovered on Pennsylvania Avenue. Beneath the Lincoln Memorial, tools used in its construction are found hanging in sealed chambers, along with a short-brimmed hat that was left behind in 1911. And the work continues.

Potter is quick to point out that the historical information that can be gained from the careful, scientific excavation of these sites is far more valuable than the intrinsic value of the objects themselves. And nothing, he says, destroys the scientific value of a site quicker than a looter, who can render a historic site worthless within hours. Unfortunately, plots and

tracts of land are being plundered throughout the Washington area; there are too many sites for officials to police.

While the Green Mole sifts dirt in Georgetown, other raiders are literally moving a mountain. At Maryland Heights, which is part of Harpers Ferry National Park, they are systematically destroying 747 acres' worth of Union and Confederate bunkers, camp grounds, forts, and ruins. The illegal activity leaves trenches and large earthen pits exposed to the elements, and the once-prized site is eroding away. Maryland Heights, the highest and most strategic point in the area, was the key to controlling the armory at Harpers Ferry, and at one time 12,000 troops inhabited the mountain.

A battle to preserve history now rages on the hillside. The raiders are detected by electronic surveillance, and a patrol unit is quickly dispatched. Even driving four-wheel all-terrain vehicles, however, it takes more than 45 minutes for the police to arrive. They must drive with caution on dirt roads that were built by Union soldiers for pulling horse-drawn field artillery up the mountain side. Along the way they must deal with trees toppled by the raiders to block their approach.

The raiders escape. By the time Potter arrives from Washington, all that remains are freshly dug pits and piles of dirt.

Sophisticated raiders are conducting their own inventory of Washington's archaeological sites. Their search for artifacts starts with research and planning, then continues in the field. To begin, a looter selects a broad historic area, such as the tract known as 404 M, where early residents of the area dwelled for centuries. Then he chases ghosts down miles of dusty archive shelves. Once he has formed a mental image of what should be there, the digging begins.

Although the sites are classified and their secrets guarded, by careful study of public records a discriminating raider can ferret out pristine, undisturbed properties such as 404 M, an oasis from development that's thick with the tangibles of forgotten local folklore. Because this is Washington, the buried cultural legacy is a material text of national history. And artifacts that are linked to historical events or to famous people sell quickly once they are cleaned and packaged.

The words of Mary Nicholson are stored in a public archive: "I will never, never forget, after the battle of Bull Run, the way the returning soldiers dropped on the streets wounded, exhausted and dying. They had managed to get across the river safely and then they fell like so many leaves in the streets, where they

and homes."

The words hint at a potentially rich harvest. Civil War relics imprinted with insignia from the city of Washington or the Army of the Potomac bring high prices from collectors. Artifacts that can be linked in physical proximity to historic properties or figures bring even more.

Born at 3518 M Street, just opposite tract 404 M, Nicholson left behind a record of the painful years when the Union's infantry troops passed before her home on their way to and from the Virginia battlefields. Her father bought the house in which she grew up from Francis Scott Key in the decade after he wrote the national anthem. The house was destroyed during the construction of the Whitehurst Freeway. Now, armed with archival data and maps, the Green Mole is history's final assassin.

The Green Mole digs deeply, glancing occasionally at the cars that pass before him. For most of the people who might look back in his direction, history was last night's dinner. But the Green Mole knows that in the early autumn of 1862 the yard he is unearthing ran red in bloody testament to national crisis.

"His site is a speck on a map of 88,000 square acres that I'm supposedly in charge of," Potter says of the Green Mole's M Street haunt. "I feel like an octopus with all its legs being pulled out at the same time. I know what's going on out there."

The Green Mole unearths a Union button, inspects it with a magnifying glass, and tosses it onto a discard pile. It's a general-issue item from an enlisted man's frock coat, the stuff of commercial antique shows that are held in shopping malls. It's not worth his time.

What has been looted and carted away by the Green Mole and others like him can only be guessed at from studying the relics found in their discard piles. As though they were reading tea leaves, the scientists at the Museum and Archaeological Resources Storage facility in Glenn Dale, Maryland study the Green Mole's discards and guess at what he has taken and from whom.

He has left behind a woman's tortoiseshell comb from about 1850; it was chipped, and not worth much on the market. If a woman lived on the site where it came from, then perhaps there were other combs, jewelry, or personal items there. He has left behind bottles dating back to about 1917 that held elixirs such as Dr. John's Teething Syrup for Babies. Because the bottles are worth \$10 to \$15, it is safe to assume that the Green Mole considers anything dating after 1900 as garbage. He has left behind clay marbles that were used by children in the early 1800s; they aren't perfect in shape or size, which suggests that other, more perfect specimens were taken.

nation's attic, the MARS facility is America's basement. Since the warehouse officially opened a year ago, it has already become the repository for more than three million artifacts. Some of the pieces were left behind by looters; others are from duplicated museum collections; some are in need of preservation. There are tangibles from such landmarks as the Clara Barton House, Ford's Theatre, the home of Frederick Douglass, the Old Stone House, and the spoils of tract 404 M.

At this time last year, before the Green Mole arrived in Georgetown, Potter and his one assistant, Robert Sonderman, might have been able to write history on a blank page. But that's no longer possible.

"It may not appear as spectacular as the popular concept of looting the tomb of an ancient Egyptian, but this is our past here in the Washington area, and that's what we should be concerned with first," Potter says. "These ruins [at 404 M] would have provided a record from before the revolution to the 1900s, and there are not many other places left in this city that would have had that potential."

"Once we could have detailed the type and quality of life of the people who lived in the structure," adds Potter. "Now it's gone. [The Green Mole] destroyed centuries of our heritage, and I can't tell you anything about those people now. That site looks like the downfield end of an army mortar range."

It's the end of the day, and the Green Mole is packing up. He knows that federal archaeologists have let another day — and perhaps another century — slip away. He is unaware, however, that federal undercover agents have been closely following him — as well as following the guidelines for criminal prosecution under the Archaeological Resources Protection Act.

The Mole was once arrested on tract 404 M, so he cannot say that he does not know he is violating government property. All that remains is for authorities to compile a complete photographic record of his activities — of him removing objects from the ground. The record can later be introduced in court by the government's expert witness as conclusive and final proof. But the expert is not on the premises.

Potter and company have responded to an emergency in Virginia, where raiders equipped with electronic sweeping equipment and two-way radios are systematically attacking a national battlefield. Potter has his priorities. In terms of science, tract 404 M has already been destroyed.

The Green Mole throws a bag over his shoulder and steps into an alleyway. Ever vigilant, he stops to check his escape route to see if he's being followed. Behind him are commuters on their way home from work. And piles of dirt. And ques-

Daniel Haas

Education and Public Outreach in Federal Programs

PARTICIPATE IN
ARCHEOLOGY



A broad array of archeological experiences is available to the general public within the federal archeology program. Volunteers can select from many opportunities ranging from researching family histories to archeological field work. Beyond this, archeological information is reaching a wide audience through brochures, videos, exhibits, and on-site interpretive trails. Also, teachers are finding more curricular materials for classroom use. Federal agencies are contributing significant time and effort in these and other education and public outreach programs.*

Federal agencies are expanding their programs into education in large part because of anti-looting efforts generated in the 1980s. Site protection efforts spawned many of the educational successes evident today. Clearly, public participation is integral to the future of conservation archeology. Congress recognized this need by passing an amendment to the 1979 Archeological Resources Protection Act which requires federal

land managers to establish programs to increase public awareness of the significance of archeological resources.

The Save the Past for the Future project sponsored by the Society of American Archaeology (SAA) laid the groundwork for a national partnership involving federal agencies, national and state organizations, and private foundations to develop strate-

gies to further preservation of our archeological heritage (Reinberg 1991:271-276). The Taos Working Conference held in 1989 produced a series of recommendations and actions to promote site protection efforts. The resulting publication *Action for the 90s* outlined several recommendations focused on education that are guiding efforts today (SAA 1990: 9-17):

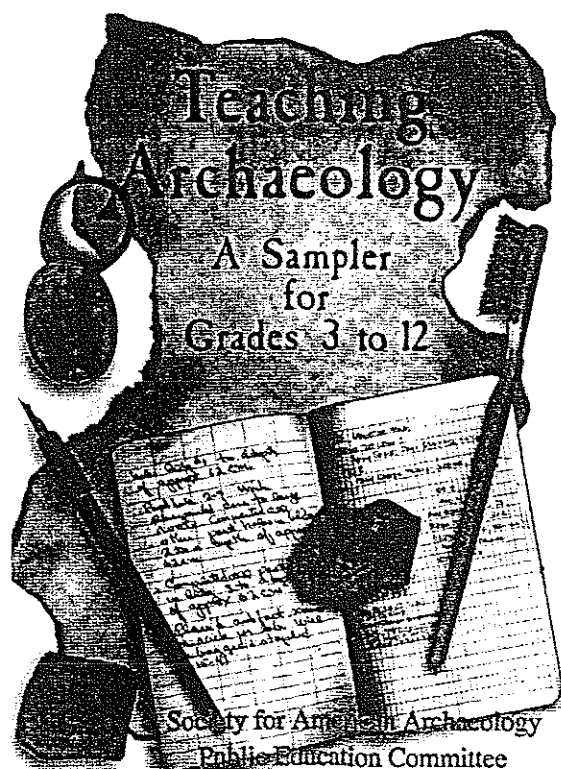
- 1) Information must reach the public about archeology, its benefits and the affect of looting on these benefits;
- 2) Education and training must be improved to inform and sensitize the public and target groups; and
- 3) The public should be provided with alternative ways to participate in archeology ethically and legally, including avocational societies and volunteer projects.

National Partnerships

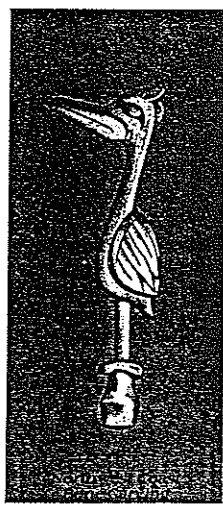
As educational programs spring up in many agencies and places, there is strong concern for developing a national archeological education strategy (Rogge 1991). Coordinated efforts are essential to producing a coherent strategy and to assure that quality education materials are distributed to teachers. What are the core archeological principles that we want to teach? Who are the publics, what do they know, what do they need, and how do we effectively communicate the message? (McManamon 1991). These are not new questions, but are basic to developing any educational program.

The SAA Public Education Committee promotes awareness about and concern for the study of past cultures and encourages people in the preservation of heritage resources. This energetic and productive group of about 50 volunteers, who are members of the SAA and represent all sectors of public archeology, have collectively developed numerous products. (See KC Smith, this issue.)

The Public Awareness Working Group (PAWG), an interagency organization coordinated by the Archeological Assistance Division of the National Park Service, was active in public education and outreach activities during the second half of the 1980s. The group produced *Take Pride in*



TAKE PRIDE IN AMERICA



**Help Protect Our
Fragile Historic
and
Archaeological
Sites**

America archeological theme bookmarks of which 2.9 million have been distributed since 1988. Through their efforts the brochure *Participate in Archaeology* was produced, showing how people can learn more about and participate in archeology and resource protection. Over 150,000 copies have been printed and distributed.

The Intersociety Working Group (IWG) includes the Society for American Archaeology, Society for Historical Archaeology, American Anthropological Association, Archeological Institute of America, National Trust for Historic Preservation, Forest Service, Bureau of Land Management, and National Park Service. Several issues of shared interest have been identified, including the evaluation of precollegiate education materials, establishing a nationwide network to gather and distribute materials, and developing an annotated guide to archeological resource materials. The group, although in its infancy, has the potential for producing nationally coordinated guidance and direction.

Agency Initiatives

One achievement clearly evident in all agency heritage programs over the last decade is the development of outreach initiatives in local programs. These programs often pool the resources of many agencies working together. The public wants archeological information in a readable format. Some of our publics are not satisfied with their role as passive recipients of information but want to participate in heritage management. It is imperative that agency archeologists respond to these needs through active outreach.

The Listing of Education in Archeological Programs Clearinghouse (LEAP) arose from the need to collect and share information about education efforts in agency programs (Knoll 1991). The Clearinghouse is a centralized computer database containing information from federal agencies and numerous public and private organizations who are conducting archeological educational activities.

LEAP contains information on (1) projects and programs to protect archeological resources and to educate the public about these resources; (2) projects or programs with avocational organizations and volunteers involving archeological survey, testing, excavation, curation, or interpretation; (3) projects or programs with museums, academic institutions, historical societies, etc., for exhibits or displays about archeological resources; and (4) brochures, posters, videos, radio and television coverage, and other results of these efforts.

Two catalogues have been produced summarizing this information (Knoll 1990, 1992). The current format of LEAP is undergoing evaluation. There are problems with maintaining a current listing with the exponential growth in education programs and with the method of information distribution. LEAP is being considered as a working model for developing a comprehensive national clearinghouse.

Teaching with Historic Places

Teaching with Historic Places is an educational project developed by the NPS and the National Trust for Historic Preservation in 1990 (Boland 1992). Historic properties listed in the National Register of Historic Places are used by elementary and secondary school teachers to enhance class instruction of history and social studies. The program consists of educational materials including lesson plans, educational kits, and instructional materials related to specific historic themes. Teachers are introduced to the plans at workshops, which are also used to create new ones. Students are exposed to significant places located in their own community. The plans are useful for both classroom and on-site visits.

NPS Public Interpretation Initiative

The NPS Public Interpretation Initiative was introduced by the Interagency Archeological Services Division of the NPS Southeast Region (Jameson 1991, 1993). The program developed from the growing need for archeologists to communicate information effectively to the general public. In particular, the interpretation of archeological materials suffers from poor communication between archeologists, professional interpreters, and educators. Interpreters and educators are tongue-tied by the highly technical nature of archeological information, while archeologists are not well trained to relate their knowledge to members of these professions or to the general public.

The training course, "Issues in the Public Interpretation of Archaeological Sites and Materials," was developed to bring archeologists and interpreters together to learn about their roles in designing effective presentations. The strength of the course is its use of a multi-disciplinary team approach to effectively apply interpretive methods to archeological programs.

Several workshops and symposia have resulted from the initiative. "Toward Sensitive Interpretation of Cultural Resources in a Multi-cultural Society" was held at the 1993 SAA meetings and a workshop titled "Conveying the Past to the Future: Interpreting Cultural History for Young Audiences" was held at the 1993 annual conference of the National Association of Interpretation. Finally, a publications program is being developed which will summarize and rewrite technical reports

for the general public. The first in the series titled, *Beneath These Waters. Archeological and Historical Studies of 11,500 Years Along the Savannah River*, chronicles 15 years of archeological and historical research in the Richard B. Russell Multiple Resource Area. The publication received an Achievement Award in the International Technical Publications Competition by the Atlanta Chapter of the Society for Technical Communication.

Adventures in the Past

The Bureau of Land Management (BLM) created the Adventures in the Past program in 1989. As its goals, the program increases the public's enjoyment of cultural resources and encourages wise stewardship of cultural resources.

The Heritage Education Program (HEP) resulted from the Adventure's initiative in 1991 under the coordination of the Imagination Team, an interdisciplinary team of educators and archeologists centered at the Anasazi Heritage Center in Dolores, Colorado. The long-term strategy of HEP is to strengthen children's sense of personal responsibility for the stewardship of America's cultural heritage. Educational experiences and teaching resources are offered for the school setting as well as for "outdoor classrooms," museums and other informal learning environments. "The projects work to capture the attention of young people at an early age, sustain their attention through hands-on activities, and enhance their skills through hands-on learning experiences." (Heath 1994:16).

HEP involves two major initiatives, Project Archaeology and state partnership projects. Project Archaeology is a program for teachers and youth group leaders providing hands-on activities to teach children about the science of archeology and about stewardship of cultural resources and which supports the existing elementary and secondary school curriculum. The program includes three components: educational materials, a delivery system of teacher training workshops, and on-going teacher support.

Intrigue of the Past: A Teacher's Activity Guide for Fourth through Seventh Grades is the national text. The text won the 1992 Environmental Education Award at the

Utah Society for Environmental Education's conference. Under this program archeology resource guides tied to local curriculum and local cultural resources are provided to teachers through a series of workshops. The initiative piloted by the Utah State Office and now being developed by other states, reaches 10,000 -12,000 students annually in Utah alone (Smith, et.al. 1993).

BLM sponsors a teacher institute with the Utah Museum of Natural History. The workshop includes teachers and social studies curriculum directors from Utah's 40 school districts. Rural school districts are targeted because there is where most of the threatened cultural resources are located. The archeology teacher institute is a means to establish a network of trained teachers statewide and to form a base for continued teacher involvement (Smith 1991).

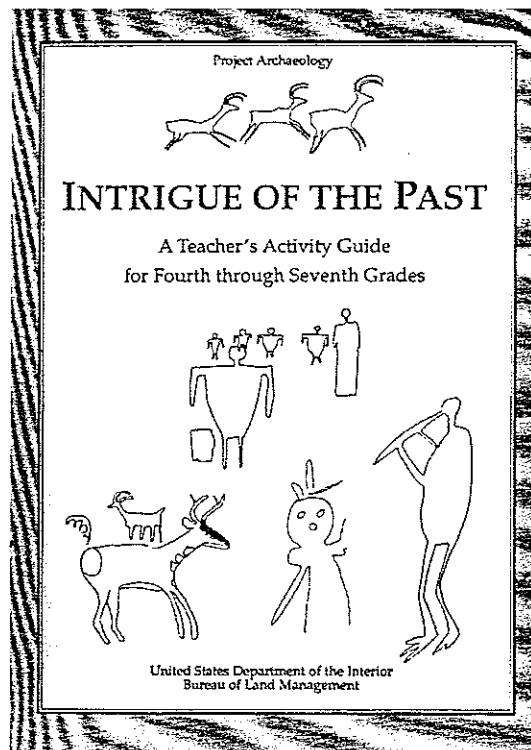
The state partnership program allows local field offices to compete for national funds to produce educational projects. A good example is the Spain'92 Foundation celebrations. This project involved partnerships with the Government of Spain, the Universities of Arizona and New Mexico, the Arizona Humanities Council, the Art Students League of Denver, and the FWS, NPS and many others.

Windows On the Past

The Forest Service Windows On the Past national initiative was originally defined in a servicewide National Recreation Strategy to improve visitor services. The strategy was based on the growing public demand for cultural resource interpretation and the need to provide recreational and

educational experiences for visitors. A vital component of this strategy is to provide opportunities for the public to participate in the heritage resource program. These opportunities include volunteerism, partnerships, and cost-share programs. A variety of projects ensued including brochures, exhibits, interpretive trails, site tours, and field schools. The most exciting outgrowth was the Passport in Time program.

Passport In Time has grown from a pilot project in 1988 to an established, national program that has offered over 350 projects to over 3,000 volunteers. It is devoted



to research and heritage preservation, while providing volunteers with a "sense of ownership and a vested interest in the care of heritage resources (Osborne 1994:16). In 1994 volunteers were provided opportunities on some 85 projects (Schamel and Schaefer 1994). The projects included test excavations, wilderness inventories, restoration of lookout towers, architectural documentation, and recording rock art.

Legacy

In 1991 the Department of Defense (DoD) launched the Legacy Resource Management Program, a program that called for the improvement of natural and cultural resource management activities with the department (DoD 1993). Many of the Legacy cultural resource projects include public education and outreach activities and products. Over 500 demonstration projects were funded during FY91-93 and produced resource inventories, management-restoration-rehabilitation projects, brochures, reports, videotapes, and public participation and awareness programs. Through 1993, about \$90 million had been used for the identification, evaluation, protection, use, and enhancement of natural and cultural resources on military lands or lands affected by military activities.

Noteworthy Outreach Programs

Classroom education is the fastest growing activity in federal agency programs. The BLM heritage education program is notable for its leadership in this area. Other agencies are also working in this direction. NPS holds workshops for Alaska teachers, and the Forest Service sponsors the Ketchikan Teachers' Institute, which provides teachers with an overview of local native cultures and ways to bring multicultural education to their classrooms. The Department of Energy (DOE) sponsors a teacher fellowship program in Nevada providing local high school science teachers with the opportunity to work with professional archeologists.

Native American education is receiving some attention as well. The DOE-Hanford facility actively works with students on nearby reservations. BLM works closely with the Santa Fe Indian School on developing interactive computer programs on the pre-history of the Tewa Pueblo and Hupobi Pueblo. A multi-agency partnership from states in the

Four Corners area with endorsement from the Arizona Inter-Tribal Council, Hopi, Indian Pueblo Council in New Mexico, and the Gila River Indian Community are producing a video series designed to improve public perception of the value of pre-historic and historic cultural resources, archeology, and the accomplishments of ancient Native Americans which will be aired on PBS.

Volunteerism is both popular and contributes significant labor to heritage programs. The BLM cultural heritage program received 13% of all volunteer time donated to the agency. Between 1991 and 1993 the effort equaled approximately 450,000 hours equivalent to roughly \$6 million in contributed time. NPS volunteers in archeological services between 1991 and 1993 equaled roughly 9,000 hours totalling about \$1 million in contributed time. The Arizona Site Steward program is frequently used by agencies for site monitoring and land management activities (Hoffman 1991). Avocational archeology groups are participating in agency programs, but there is little data on the nature and success of these activities. There is enormous potential to improve site protection efforts by seeking the assistance of statewide avocational archeology groups (Davis 1990,1991).

Video presentations have enormous potential for presenting sophisticated messages to a variety of target audiences and have become popular interpretive media. The BLM in Montana assisted New Dominion Pictures with filming *Ice Age Crossings*, a Learning Channel archeology series presentation. NPS helped produce a video for television in the Washington metro area about 19th-century African American sites discovered at Manassas National Battlefield Park. The DOE-Hanford facility participated in development of videos emphasizing the importance of respecting Native American cultural interests and protecting archeological sites for public television viewing in public schools.

Another fascinating media development is the *ZiNj* children's magazine in partnership with the BLM, FS, NPS, National Park Foundation, and the State of Utah. Stories feature archeological topics and federal agency programs encouraging youngsters to visit public lands and to volunteer on scientific projects. *ZiNj* will be syndicated on television soon in Seattle and Salt Lake City with plans for national programming.

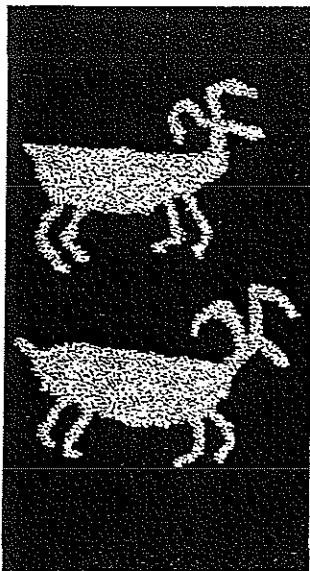
Public outreach is becoming a standard requirement in cultural resource management projects. The General Services Administration produces brochures and other materials as a routine component of data recovery programs. The Federal Energy Regulatory Commission often requires licensees to prepare public programs about archeological sites in the project area by publishing arti-

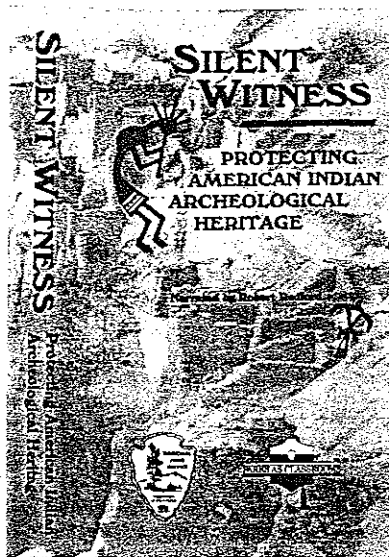
Windows on the Past

Interpretive Guide to
Pacific Northwest History

United States
Department of
Agriculture

Forest
Service





cles in popular and technical journals for distribution to Native Americans and the general public. The Bureau of Reclamation requires contractors to sponsor "open-houses" and other programming as part of site evaluation contracts.

Statewide archeology events are found in over 30 states across the country. Between 1983 and 1992, 22 states held archeology weeks; 5 had activities for either a day or a weekend (Greengrass 1993: 6-7). Attendance figures reported from 14 states in 1991 ranged from over 300 to 122,000 people

(Greengrass 1993: 9). Federal agencies with other partners have a prominent role in organizing and sponsoring these events. Federal contributions include funds, in-kind time, and technical services. More importantly, federal agency support and involvement is critical in rural areas that are difficult to reach during a state's activities.

Conclusion

As pointed out by Smith and Ehrenhard (1991: 104):

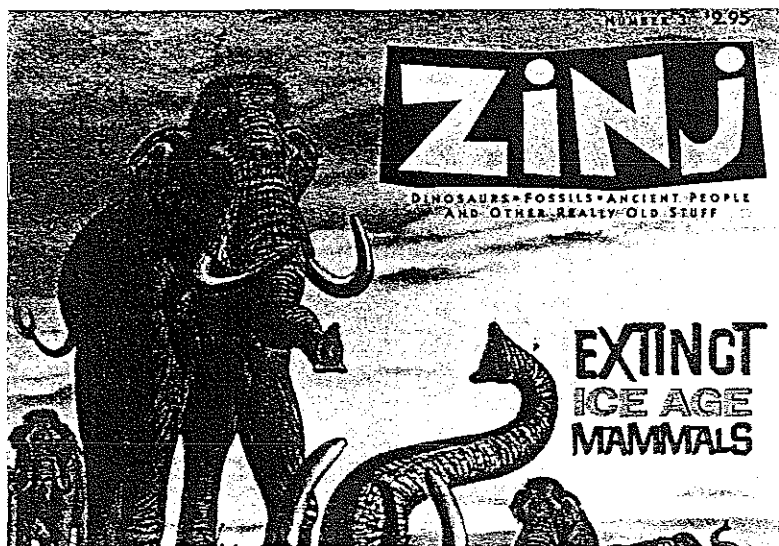
While there are a number of excellent programs being used to disseminate archeological information through public school systems, they have evolved with little coordination and direction.

Fortunately, a national program is not far off in the horizon. At the most recent "Save the Past for the Future" Working Conference, participants in the education workshop recognized a need in this direction and recommended the following: (1) develop a national clearinghouse for the collection and dissemination of information on archeo-

logical resource materials and programs, (2) develop minimum standards for education programs, (3) conduct studies to determine the effectiveness of programs and target groups, particularly private landowners, and (4) strengthen coordination with national leaders in education agencies. The IWG, or a group similar to it, can bring these items to the forefront of their agenda and begin making progress with securing funding.

Our most supportive and informed partners, Native Americans and avocationalists, need to be actively engaged in agency programs. Tribes are actively developing programs to better manage heritage resources on tribal and ancestral lands. They have a genuine interest in how Native Americans are portrayed to the general public. We need to join them as participating partners in our educational efforts. Avocational archeology organizations also provide an immediate and energetic source of support and assistance for heritage programs. In turn, avocational societies need certification and training programs to fully participate in archeological activities. Communication must be expanded between avocationalists and professionals to create a better understanding of each others' expectations.

The success and variety of education and public outreach in the federal archeology program demonstrates the vigor and personal commitment of agency archeologists to promote archeological stewardship. These efforts frequently are performed under funding constraints and constant challenges to maintain a functional heritage management program. The future is no less challenging, with reorganization and restructuring in the federal government and the redefinition of program functions. Strong and long-term partnerships between agencies and with other organizations, Native Americans, and the public must be maintained to sustain the current level of educational and outreach programming.



Note

* Federal agency information was obtained from the 1991-1993 questionnaire for the Secretary's Report to Congress (SRC). The SRC is required by the 1974 Archeological and Historic Preservation Act (Moss-Bennett Act) and the 1979 Archeological Resources Protection Act, as amended. The National Park Service, Archeological Assistance Division is responsible for reporting this information on behalf of the Secretary of the Interior. Information presented in this article was contributed by many agency archeologists, but the author takes full responsibility for its content.

References

Boland, Beth
1992 "Teaching with Historic Places." *Archaeology and Public Education*, Vol.2, No.4, p.9.

THE FORUM

Piaget and Archaeology by Richard Onderdonk

Along with archaeology's established recognition as a scientific methodology, it has another innate feature that has been seldom discussed. This is the educational value of archaeology inherent within the process of its application. By merely participating in archaeology one is actively involved in a variety of learning processes that reinforce, verify, and establish educational skills and may also promote cognitive development.

For the past ten years I have offered a course in Archaeology at Arcadia High School in Arcadia, California. The basic objectives of this course are: 1) to provide students with a conceptual and applicable definition of archaeology (many still hold the simplistic notion that archaeologists merely "dig up old bones"); 2) to review the historical development of archaeology; 3) to present archaeology's contributions to our knowledge of the origins and behavior of ancient civilizations; and 4) to create an actual archaeological experience by allowing the students to apply concepts and methodologies during on-campus excavation. This is conducted in a fenced-off area 50 yards square, for 52 minutes a day over a five-week period.

During these excavation exercises I have noticed a quickened interest and concern for the past on the part of students, and have become acutely aware that this activity has the potential for attaining many of the educational objectives touted by the comprehensive high school—particularly those designated for the social studies curriculum. Not only am I struck by the advantages of archaeology as a way of teaching historical content and processes, research skills, reading and writing proficiency, data analysis, and hypothesis formulation, I am also impressed by the effect on the psychological and emotional development of my students. They have demonstrated a heightened sense of self-worth, patience, cooperativeness, and respect for property in their careful handling of tools. They have shown appreciation for the scientific methods of observation, description, and explanation. And from their behavior I have come to recognize archaeology's potential for cognitive development through the processes outlined by the Swiss psychologist Jean Piaget.

A pioneer in the study of children's cognitive development, Piaget has been called the discoverer of the "embryology of intelligence." According to Piaget, cognitive growth in childhood depends not upon heredity or environment but upon the interaction of various behavioral factors as the child develops his or her own view of reality in several successive stages. He has formulated a number of important observations concerning cognitive development in adolescence, which he believes to be

the final stage of the human being's learning to deal effectively with his/her environment.

Piaget posits four major factors undergirding cognitive development: 1) Maturation—physical development; 2) Experience—contact and interaction with one's environment; 3) Social Transmission—education and training in language, culture, and customs through reading or instruction; and 4) Equilibration—the balanced psychological integration of all of these into cognitive structures. He has divided this fourth factor into a series of cognitive stages that progress chronologically with the age of the individual: Sensorimotor (ages 0-2 years); Preoperational (2-7); Concrete (7-11); and Formal Operational (11-adult). Each stage is characterized by a cognitive process of "active structuring" to reach what Piaget calls equilibration.

What relation does an archaeology course have to cognitive development? As Herbert Ginsburg and Sylvia Oppen point out in their discussion of the curricular implications of Piaget's thought, the teacher, instead of merely trying to impart information, should consider designing experiences that allow the student to actively structure the subject being taught, by questioning, experimenting and discovering facts and the relationships among them.

On examining the characteristics of archaeology, we recognize that Ginsburg and Oppen's suggestions can be applied here. In the actively structured experience of doing archaeology (the excavation phase), the student is prompted into interpreting and evaluating information from artifactual evidence, led to appreciate the scientific method, and motivated to question the validity and value of cultural development.

What other characteristics of archaeology may bring about cognitive development? To me it seems that they can be classified into four important areas:

- **Personal Involvement.** One of the primary motivational aspects of archaeology is the student's quick realization that he will actually be *doing* something. A student's interest is piqued immediately when s/he learns that s/he will be actively involved in excavating, measuring and cataloguing artifacts. The opportunity to discover the unknown, to "find buried treasure," is another cause for certain excitement.
- **Reflective Thinking.** While participating in the excavation the student is thinking about what s/he is finding, interpreting data, and drawing inferences. The thought processes may include deductive and inductive reasoning, inferential and interpretational analysis, and hypothesis formulation. It is this domain of critical thinking that Piaget considers the distinguishing

difference between the "concrete" stage of the older child and the "formal operational" stage of the adolescent/adult. The latter is capable of theoretical thought, while the former can deal only with concrete reality.

- **The Student as Scientist.** Trying to apply the scientific method to problem-solving situations which are authentic and real, instead of pre-designed in a textbook, makes the archaeological experience especially meaningful to the student. Piaget has observed that from birth the child needs to touch objects and manipulate them, and that through action, not passive observation, s/he develops an understanding of the world. The activities involved in archaeology—surveying and mapping, excavating, collecting and measuring artifacts, note-taking, and writing a site report—carry the learning process to a higher stage.
- **Social Interaction.** Most often, excavation is not done alone. In a group activity where students work together over longer periods of time than usual students quickly learn the advantages of being adaptable and tolerant of others' personality traits and mistakes. They learn to cooperate and share their respective contributions in order to reach a common goal—the success of their group project.

As the debate over the purpose and policies of social studies continues—whether to stress citizenship education or values, historical content or processes, sociology or history—educators should be aware that archaeology contains an unusual curricular flexibility that can adapt to a variety of themes, topics, or concerns, and it may very well create opportunities for cognitive development.



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Prominent Places for Historic Places K-12 Social Studies Curriculum

John J. Patrick

Curriculum reformers of the 1980s and 1990s have emphasized knowledge and skills that all students should learn to be equipped for intelligent and fruitful participation in the 21st century world. In 1983, Ernest Boyer and other leaders of curriculum reform called for development of a new core curriculum for schools. Boyer wrote, "A core of common learning is essential. The basic curriculum should be a study of those consequential ideas, experiences, and traditions common to all of us."¹

In 1993, Diane Ravitch and others heralded national standards projects as one means to carry out the continuing calls for a new core curriculum. The mission of these projects is to identify clearly and compellingly what all students need to know and be able to do to become well-educated participants of a vibrant, free society.² Three of the National Standards Projects pertain to core subjects of the social studies curriculum: history, geography, and civics.³

There are prominent places or openings for content about historic places in the emerging social studies core curriculum exemplified by the National Standards Projects. Historic places are tangible forms of our legacy from preceding generations, and, like written primary sources, they embody and reflect the traditions, experiences, ideas, and controversies of our past. The National Register of Historic Places database includes information on a variety of properties in all regions of the country.

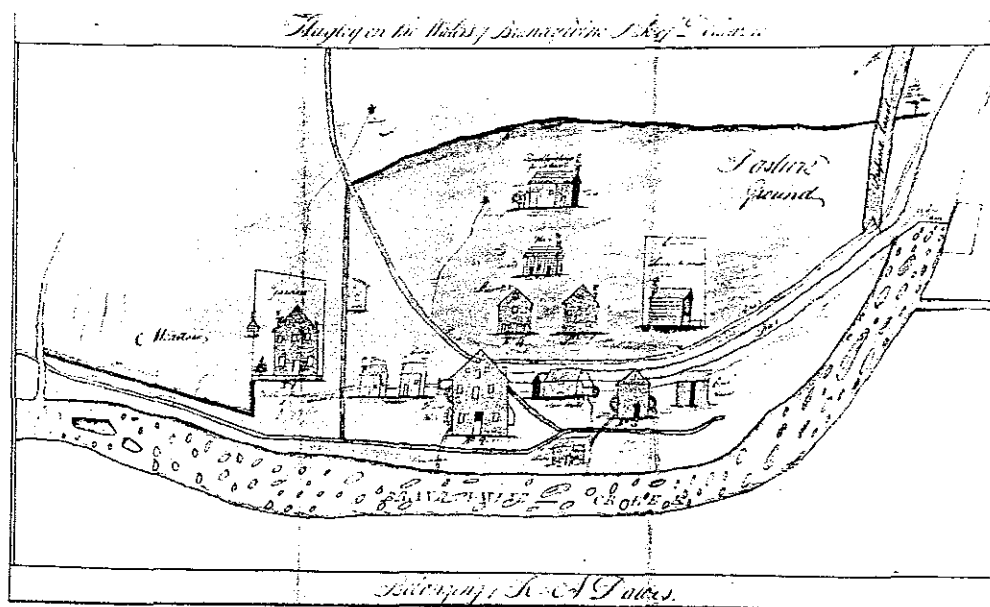
The historic places in the National Register can be used by teachers and students as objects of inquiry, in the same way that written primary sources are used in the classrooms of good history teachers. Teachers unable to take students directly to particular sites—because of such barriers as too many miles or too few funds—can use video programs, photographs, or specially developed learning materials about these places. The contents and pedagogy of two sets of instructional materials developed by the National Park Service and the National Trust—the Teaching with Historic Places lesson plans, and the "American Work, American Workplaces" educational kit—fit directly into

the priorities of the History Standards Project, which has included historic places in its list of sources of evidence for historical inquiry by students.⁴

Item six in the History Standards Project's list of 15 criteria says, "Standards should include awareness, appreciation for, and the ability to utilize a variety of sources of evidence from which historical knowledge is achieved, including written documents, oral tradition, literature, artifacts, art and music, historical sites, photographs, and films."⁵ Thus, the National History Standards and school curricula that reflect them include the use of historic places as primary sources for students to interpret, analyze, and evaluate in combination with written documents and other primary sources.

Item 12 in the History Standards Project's list of criteria also pertains directly to the use of historic places: "Standards in U.S. history should utilize regional and local history by exploring specific events and movements through case studies and historical research."⁶ The resources of local history and culture certainly are a readily accessible laboratory for studies of culture in the past and present, especially the material culture embodied in historic places. Curricula developed in terms of the History National Standards will include nearby historic places as focal points of investigation. However, lessons on places in local history are flawed if treated in isolation from the larger history and culture of the United States and other parts of the world. The best teaching about places and events of local history connects them to broader events and themes in national and world history.

In addition to fitting the priorities of the History Standards Project, historic places as objects of inquiry also are compatible with the teaching and learning of geography as envisioned by the geography educators of the 1980s and 1990s. Geography educators have formulated five fundamental themes as organizers of content and instructional activities in the school curriculum: location, place, relationships within places, movement, and regions.⁷ Teaching and learning about each of these five



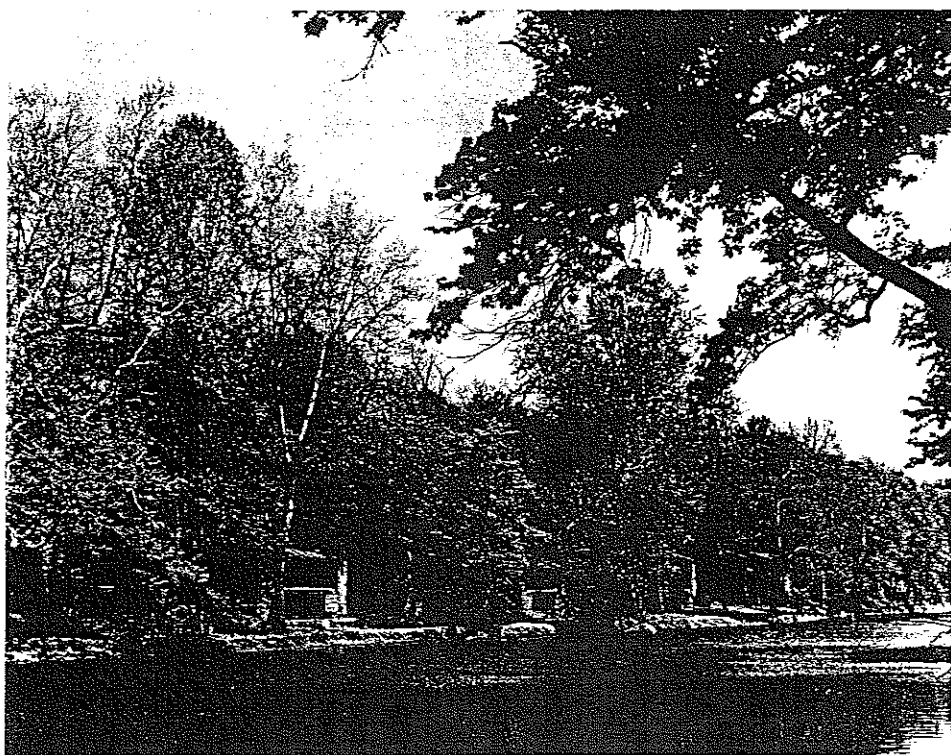
A 1797 insurance map shows the Dawes property before it was acquired by du Pont in 1812; the sawmill (center) may still exist as part of another building at Eleutherian Mills (within the Brandywine Powder Mills District), New Castle County, DE. Photo courtesy The Hagley Museum.

geography themes can be greatly enhanced through the use of historic places.

In one illustration, Brandywine Creek near Wilmington, DE, was an important site in the early industrial development of the United States. In 1803, Eleuthere Irenee du Pont built a gunpowder factory along the Brandywine. By 1810, the Eleutherian Mills was America's largest gunpowder factory. Today, it is preserved as a historic landmark, open to the public, and is a source of data relevant to all five geography themes. Students could conduct investigations about (1) the factory's location along Brandywine Creek, (2) its physical and human characteristics during the first decade of the 19th century, (3) the impact of workers on the environment and its impact on them, (4) the movement of people and goods into and out of this place, and (5) the impact of this place on the development of the Mid-Atlantic region of the United States.⁸

The use of historic places in teaching fundamental themes of geography indicates the great educational value of closely connecting history and geography in the school curriculum. Key concepts of geography are tied inseparably to major ideas of history, such as time, period, and events. Geography and history in tandem enable learners to understand how events and places have affected each other across time, how people have influenced and been influenced by their environments in different periods of the past.⁹

Historic places clearly can have a large place in the history and geography facets of the emerging K-12 social studies curriculum. They have been prominently recognized in the work of the History Standards Project, and they are compatible with key ideas of the Geography Standards Project. Historic places are valuable primary sources of data to be used in conjunction with primary documents in studies of the past. Historic places can also be used to illuminate fundamental themes of geography. Finally, historic places can become links for builders of curriculum connections between geography and history.



The shells of 17 of the original 21 roll mills survive along Brandywine Creek; buildings open to the water and tree density were safety features in case of explosions. Photo courtesy The Hagley Museum.

the National Geographic Society; 1600 M Street, NW; Washington, DC 20036; contact Anthony de Souza.

⁴ Charlotte Crabtree, National History Standards Project: Progress Report and Sample Standards (Los Angeles: National Center for History in the Schools, November 1992), pp. 23-24.

⁵ *Ibid.*, p. 23.

⁶ *Ibid.*, p. 24.

⁷ Joint Committee on Geographic Education, *Guidelines for Geographic Education* (Washington, DC: Association of American Geographers and the National Council for Geographic Education, 1984); the five fundamental themes of geography education have been incorporated into the *Geography Assessment Framework* for the 1994 National Assessment of Educational Progress, and they are being used in the Geography Standards Project.

⁸ The Agency for Instructional Technology (AIT) has produced a prize-winning instructional video program for use in secondary schools—"The Industrial North"—which highlights the Eleutherian Mills. It is part of a 16-program series, *America Past*, produced in 1987. For information about these video programs, which emphasize historic places, contact AIT, Box A, Bloomington, IN 47402; telephone 800-457-4509.

⁹ The Agency for Instructional Technology (AIT) has produced a series of 10 video programs, *Geography in U.S. History*, which emphasize historic places. These programs, produced in 1992, have been designed for use in secondary school U.S. history courses. Two of the programs in this series have been awarded prestigious national prizes. For additional information about these programs, contact AIT.

John J. Patrick is a professor of education at Indiana University, where he also serves as Director of the Social Studies Development Center and Director of the ERIC Clearinghouse for Social Studies/Social Science Education.

¹ Ernest L. Boyer, *High School: A Report on Secondary Education in America* (New York: Harper & Row, 1983), p. 302.

² The U.S. Department of Education, in collaboration with major associations of scholars and educators, has launched National Standards Projects in mathematics, science, history, geography, civics, the arts, and English.

³ Information on the three National Standards Projects pertaining to the social studies curriculum can be obtained from: (1) History National Standards Project of the National Center for History in the Schools at UCLA; 231 Moore Hall; 405 Hilgard Avenue; Los Angeles, CA 90024; contact Charlotte Crabtree. (2) Civics National Standards Project of the Center for Civic Education; 5146 Douglas Fir Road; Calabasas, CA 91302; contact Charles Quigley. (3) Geography National Standards Project of the National Council for Geographic Education and

Apothecary site was home to more than nostrums

By STEPHEN LANKENAU
Gazette Picket Staff

An Alexandria archaeologist has found several artifacts in a trash pit at 105 S. Fairfax St., below the basement of the old the Stabler-Leadbeater Apothecary. The items appear to have been unrelated to the business that lonoc-cupied the site.

Steven Shephard, archaeologist and assistant director at the Alexandria Archaeology, said he and two experienced volunteers made the find Feb. 18, uncovering English Creamware cup and saucer fragments, pieces of a Delft punch bowl, storage jar remains, an unbroken wine bottle, Chinese porcelain fragments, a broken flask, a tobacco pipe bowl and an ink well, plus bone and oyster-shell remains.

Barbara Magid, archaeologist in charge of artifact dating and assistant director at Alexandria Archaeology, said she believes the trash pit, of a type common in colonial times, dates from 1765-1780 based on which artifacts were found as well as not found: Creamware, produced in 1762, was found in abundance, but Pearlware, manufactured in 1779, was absent from the trash pit. Thus, she concluded, the trash pit was filled during the 1765-1780 period, before the brick building at 105 S. Fairfax St. was constructed.

The question remains as to who owned the land surrounding

Fragments suggest the trash might have come from a tavern.

the trash pit when the items were discarded.

George Mason purchased the property in 1752 and sold it to Richard Arell, a large property owner from Pennsylvania, in 1762. Arell held a tavern license from 1768 to 1773 and operated a tavern in Market Square during this time, accoring to Yvonne Carignan, Lloyd House branch librarian.

The wine bottle, punch bowl, flask and saucer fragments appear to have been deposited together, and suggest the trash might have come from a tavern, according to Magid.

Shephard said he and the volunteers removed every possible piece from the trash pit, located in the southwest corner of 105 S. Fairfax St., but their excavation efforts were limited because the pit ran below a back alley and beneath the adjacent 107 S. Fairfax St. building.

Shephard was notified of the trash pit, which appeared as a dark patch of earth with pieces of oyster shell visible, by workers

underpinning the basement of the structure at 105 S. Fairfax St. on Feb. 14. The underpinning, begun in December 1988, is part of the Landmarks Society's Phase One effort, as the Stabler-Leadbeater Apothecary conservator, to preserve and expand the two buildings for greater public use.

Archaeological excavation efforts began in June 1982 after Brown Morton, the Landmarks Society's preservation consultant, suggested the dirt basement of 107 and 105 S. Fairfax Streets be examined in hopes of discovering archaeological features, such as a well or privy, according to Shephard.

In 1985, two wells at 105 S. Fairfax St. and one well at 107 S. Fairfax St. were excavated by Alexandria Archaeology. Thousands of artifacts from the Leadbeater drug warehouse, which operated in the three floors above, were recovered.

During the recent trash pit excavation, Shephard discovered a relieving arch, used take the brunt of a wall's weight, above the trash pit. He said the builders of 105 S. Fairfax St. knew soft ground existed there, and constructed the arch for support.

Two other relieving arches were discovered, one under a wall at 107 S. Fairfax St. and one under the wall separating 105 and 107 S. Fairfax St., and could portend future finds, according to Shephard.



Gazette Packet/Chester Simpson

Archaeologist Steven Shephard shows some of the interesting artifacts found at the site of the old Stabler-Leadbeater Apothecary.

TECHNICAL LEAFLET

Technical Information Service

American Association for State and Local History

BURIED IN STORAGE: *The Alexandria Archaeology Collections Management Project*

by Barbara H. Magid and Carol E. Snow

INTRODUCTION

The importance of historical archaeology collections to the research and interpretation of the past is well known and well documented. The problems of unprofessional curation, lack of management and horrendous storage conditions of many of these collections is also recognized. Archaeological excavations in the United States are documented back to Thomas Jefferson's time, but it is only in the last decade that archaeologists and museum professionals have begun to address the effects of storage conditions and packing materials on their collections and to take actions to improve existing conditions and prevent recurring collections management nightmares. Without proper storage and conservation treatments, many important collections are rapidly deteriorating.

The old storage conditions of the Alexandria Archaeology collection offer a prime example of a collections management nightmare. Artifacts were disintegrating, storage bags and their all-important labels were being destroyed by dampness and mice, and boxes of artifacts were collapsing. Such problems

were successfully overcome through a cooperative effort of many people, professions and agencies. Grant-funded projects were developed and carried out with careful planning and a phased approach that allowed us to cope with seemingly overwhelming tasks. The methods used were simple and economical, yet effective.

In 1991 we are celebrating thirty years of archaeology in Alexandria, Virginia. Excavations have produced several million artifacts from 155 sites. Many of the artifact assemblages are from residential sites representing a broad cross section of the city's inhabitants from the 18th to 20th centuries. Other sites relate to business establishments including cabinetmakers, shoemakers, combmakers, copper and tinsmiths, potters, a glass factory, a sugar refinery, taverns, a doctor's office and an apothecary shop. The breadth and depth of the collections make them one of the foremost comparative studies in urban archaeology. But if steps had not been taken to improve collections storage, there would be no cause for celebration.

THE PROBLEMS

The Alexandria collections are now housed in a state-of-the-art, climate-controlled storeroom, in archival record storage boxes on compactor shelving. But this is a very recent accomplishment. For many years the artifacts were stored in a damp, crowded basement, similar to conditions in many museums and repositories across the country. Like many historical archaeology collections, they were out of sight and out of mind and nearly inaccessible for the research purposes for which they had been collected.

Our storage and conservation problems derived from a dangerous combination of overcrowding, high humidity and, in many instances, inappropriate packing materials. The basement storeroom, in a city facility two miles from our museum, was large enough to shelve only half the collections. The remainder of the boxes were then stacked on floors, in hallways and in an adjacent garage. Continuing excavations added to the problem, so that eventually boxes in the aisles blocked access to nearly all of the shelved boxes. The environment in these spaces was completely uncontrolled. High humidity caused growth of mildew on the walls, delamination and collapse of cardboard boxes, disintegration of paper bags and labels, and corrosion of metal artifacts.

Many of the boxes, bags and labels used to house the artifacts were, for a variety of reasons, made of unsuitable materials. For economy, liquor boxes had been used as containers, grocery bags made of acidic paper or unstable plastic for artifact storage and acidic newspaper as padding. These materials were originally obtained at no cost to the city. Many artifacts were never washed and remained in their paper bags from the field. These bags had begun to fall apart, mixing proveniences and losing some field records entirely.

SOLUTIONS

It was clear that steps needed to be taken to improve conditions, but the problems seemed insurmountable. We needed more money, more staff time and more professional expertise than were available in our city budget, so we decided to apply for federal grants.

The grant application process turned out to be beneficial to the planning process, as the granting agencies required a logical approach and large amounts of detail. It was the process of applying for our first grant that made us look at each step of the project and develop rational goals instead of jumping ahead to the desired results. Input from a contract



conservator, who was later funded by the grants, helped the staff archaeologist in developing a project with professional standards. Program officers at the granting agencies helped us decide if our projects were appropriate before the application process began and provided assistance along the way.

The Alexandria Archaeology Collections Management Program was broken down into three phases: surveys, renovations and rehousing and conservation. The phases were funded through a cooperative effort among the National Science Foundation, the Institute of Museum Services and the city of Alexandria. In all, the three sources provided approximately \$150,000 for consultant fees, storeroom renovations, storage equipment and supplies. For a small museum, it seemed like a fortune.

PHASE I: SURVEYS

The goals of Phase I of the program were ambitious and multifaceted: to survey, identify and quantify our storage problems. We accomplished the goals in three simultaneous tasks: 1) collection inventory, 2) conservation survey and 3) environmental survey.

Phase I required a motivated crew with skills in archaeology, computers and conservation. Archaeology staff, grant-funded contractual staff, and other city departments participated. The key players were the staff archaeologist, who masterminded and supervised the project, the conservator and two conservation assistants. For the conservator, with a background in fine art conservation and archaeological field experience in the eastern Mediterranean, the nature of the

materials was at first a hurdle. We overcame it with the enthusiasm and knowledge of the assistants, both anthropology students who had worked on excavations in Alexandria. The design of the project required the players to be able to trade positions regularly, adapt to logistical challenges and maintain a sense of humor throughout a long summer.

The survey team examined the contents of each of the 3,158 boxes. The inventory and conservation survey were entered together into a computer data base using a portable computer in the storeroom. Our data base recorded up to forty-nine fields of information for each box of artifacts, providing various reports, statistics and even box labels. For each box, we recorded the site numbers and other information about the provenience of the artifacts. We included a brief description of box contents using codes for artifact categories. To improve access, we recorded the exact location of each box. At the end of the inventory, we printed out box labels in site, provenience and material order. We then color coded the labels by their designated shelf unit, and later put each box easily in its place in the new storeroom.

We also recorded past treatments (i.e., washed, marked, catalogued), the current methods of storage and the number, size and type of new boxes, bags and labels needed. We then used the computer's statistics function to calculate instant counts of supplies to include in the budget of our next grant application.

The conservation survey assessed current conditions and conservation needs of the artifacts. We provided a description of the level of conservation required, from simple surface cleaning to sophisticated treatments, a notation of whether the treatment should be done by a trained staff person, supervised volunteer or professional conservator, and a time estimate in hours required for the treatments. A priority system was developed to quantify the urgency of the treatment, with "1" being the highest priority and "5" the lowest. After looking at many similar artifacts, the two assistants were eventually able to give reliable conservation estimates. The results were not highly refined, but that was not what we were after; we want-



In the new storeroom, Alexandria Archaeology volunteers help to replace nearly every box, bag and label.

Photograph courtesy of Alexandria Archaeology

ed an overview of the conservation needs of nearly three million artifacts.

The contract conservator simultaneously performed a survey of the storage facility's environment. A close look at the storage areas gave a few causes for concern. The city's nearby sewage treatment plant produces a number of pollutants. Supervisors there assured us that enough distance protected us from any ill effects. Of more serious concern was the city's fire-burn building where firemen practice rescue techniques in a smoke-filled tower located virtually outside the collection storeroom. These outside forces, beyond our control, were not ideal, but given the alternatives, especially the

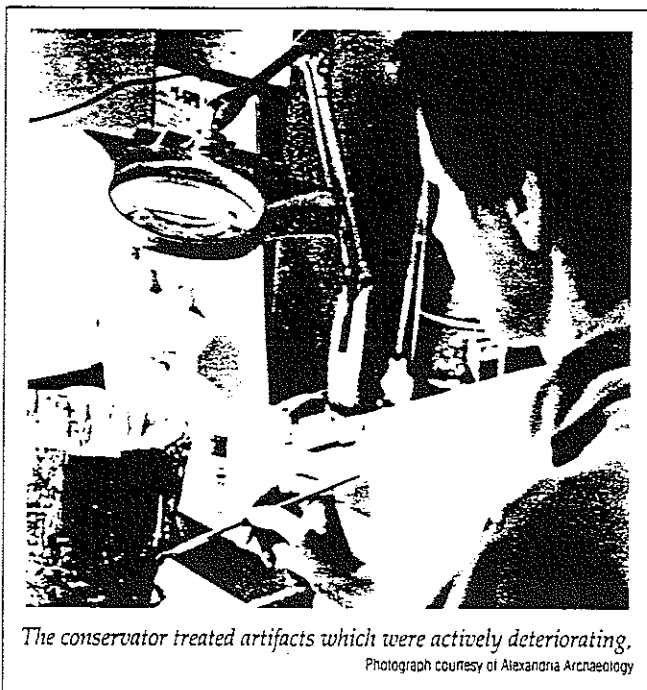
option of leaving the artifacts where they were, we felt the decision to renovate a room in the same building was the right choice.

The internal storage environment that existed in 1989 had been monitored for temperature and relative humidity with recording hygrothermographs and for pests by periodic inspections of "Mr. Sticky" insect traps. Occasional sightings of mice and snakes had been reported by employees in the building.

The three months spent in the dampness of the basement storeroom, known as "The Pit," tested team spirit and motivation. Personnel, the computer and the tape player survived three floods in storage and work areas. The mouse nests and empty snakeskin we found in the collapsing cardboard boxes and among the artifacts added nothing to our sense of comfort.

PHASE II: STOREROOM RENOVATION

Renovating the storeroom, which we had planned from the start, really took shape as we saw the results of the environmental survey. The goal of the renovation included providing optimum storage conditions in an available room on the second floor of the same off-site facility. This 1,500-square-foot room had unfinished cinder block walls, twenty-foot ceilings and huge Palladian windows. We needed to provide shelving for 3,000 boxes, with room for growth, and to provide an environment that would maintain the stability of the artifacts. We also wanted a work area



The conservator treated artifacts which were actively deteriorating.
 Photograph courtesy of Alexandria Archaeology

so that researchers could use the collections in the storeroom, all of which we had to accomplish, of course, at minimum cost and as quickly as possible.

The contract conservator collaborated with the staff archaeologist, architects, engineers and city administrators to plan the new facility. The simple renovation included blocking the windows as an economical solution to insulation and security, insulating walls, hanging drywall and installing new lighting. The conservator supplied a list of materials that could be harmful to the artifacts and approved all materials which were to be used in construction.

A "computer room" HVAC unit, which combines heating, cooling and humidity control, was installed. The unit provided the optimum environment for most of the artifacts and also filters out smoke and other pollutants from our neighbors. A strip to seal the door provided further protection from the outside. The storeroom was wired to security and smoke detectors and a wet-pipe sprinkler system was installed. Wet artifacts are far better than burned ones!

Compactor shelving doubled the storage space of regular shelving. Our ten-foot high shelving units roll laterally on a track, so that only one aisle is open at a time. By turning a handle, we can move ten fully loaded rows of shelves at once. In an area of expensive real estate like Alexandria, compactor shelving is less costly in the long run than additional floor space. Compactor shelving can be purchased with fancy cabinets and drawer units, but we took the more economical approach of lidded boxes on open shelving.

The construction was nearly completed when the shelving arrived. A little cooperation between shelving installers and electricians helped complete the

project the day before our grant-funded staff and movers arrived to commence Phase III. The archaeologists, Phase III staff, Alexandria Archaeology volunteers, city staff and workers from a labor pool all helped to move the collections onto compactor shelving one aisle at a time.

PHASE III: REHOUSING AND CONSERVATION

Phase III had two goals: 1) passive measures to enhance preservation of the entire collection by providing improved storage conditions and rehousing the artifacts in stable, inert packing materials and 2) active measures to conserve deteriorating artifacts identified as high priority in the collections survey. Our goals would have been useless without the provision of a climate-controlled storeroom from Phase II.

The contract conservator was hired to perform the treatments. A diverse group of assistants, interns and volunteers worked steadily on rehousing the collection under the supervision of one of the Phase I assistants. The continuity of staff helped to make a smooth transition to the new phase of work.

The survey revealed that the old storage materials were often in much worse condition than the artifacts themselves. But the packing methods were also detrimental to the artifacts. Almost every box, bag and label needed to be replaced, artifacts needed to be sorted by material, and microenvironments needed to be created. We bought 2,000 new boxes, 17,000 plastic bags and 245 pounds of silica gel. The rehousing team dealt with the worst parts of the collections over a six-month period.

We store most artifacts together by provenience, but we made exceptions for artifacts requiring microenvironments. As we repacked the collections, we removed all metal artifacts and placed them in airtight polyethylene boxes arranged by site. Other artifacts were packed in unsealed polyethylene bags along with an appropriate amount of silica gel conditioned to halt or slow down corrosion processes. Museums with larger budgets can use specially built, airtight desiccating cabinets, which serve a similar purpose to our micro-environments in polyethylene boxes. Other artifacts were sorted and placed in new polyethylene bags and archival record storage boxes. We used our portable computer and a word-processing program to print uniform and legible labels on acid-free card stock. An important aspect of the project was updating the inventory, which sometimes presented a challenge as box contents were divided or combined. Updated conservation information was also entered into the data base.

The general philosophical approach used for conservation treatments in the project complemented standard archaeological conservation. We followed the principle of minimal intervention, or "less is more." Our goal was to stabilize actively deteriorating artifacts in order to provide and preserve maximum information for archaeologists studying the collections. Unlike many treatments for historic or decorative arts objects, the treatments were not done for aesthetic or cosmetic reasons. The artifacts were not returned to a new or "as used" appearance, but are still exhibitable, if not pretty. Preventive measures were employed wherever possible, such as providing microenvironments for temperature- and humidity-sensitive artifacts, like ivory combs, or potentially unstable artifacts, like corroded iron gunlocks. Written and photographic documentation was recorded for all treatments. A final report provided a summary of the treatments, environmental recommendations and advice on cleaning and packing artifacts. It also included Material Safety Data Sheets on the conservation materials, now stored in the Alexandria Archaeology Laboratory, to inform the staff of the toxicity and safe handling of the chemicals.

Conservation treatments were only performed on artifacts whose survival was seriously threatened. The treatments were carried out in twenty days over a six-month period, during which the conservator addressed any problems encountered by the rehousing crew. A wide range of materials received treatment: ceramics, glass, metals, wood, leather, textiles, bone, horn, ivory and paper. The quality, which may have no bearing on archaeological or historical significance, varied from well-preserved silver coins to sludgy textile fragments excavated from a privy to fine Chinese export porcelain. Treatments ranged from relatively simple surface cleaning and reconstructions to more sophisticated desalination and consolidation treatments. Because the laboratory was set up in a small space within the Alexandria Archaeology Museum, museum visitors, volunteers and staff members were able to observe and learn about the conservation processes.

ONGOING RESPONSIBILITIES

Phases I, II and III have been successfully completed, but we cannot boast that the Alexandria Archaeology Collections Management Program is over. The collection received emergency care, but ongoing preservation measures never end.

Routine maintenance and continuous monitoring of the storeroom and collections allow us to identify and resolve any problems as they arise. Regularly

scheduled housecleaning and maintenance of the HVAC system has been set up with city employees. A recording hygrothermograph monitors the storeroom environment. The monthly changing of the hygrothermograph charts mandates periodic inspections of the room, the microenvironments and the collections. No food or drinks are allowed in the new storeroom, and the area is monitored with "Mr. Sticky" insect traps. Our aim is to prevent the need for fumigation. Emergency needs are addressed in the museum's disaster plan.

The work area of the storeroom provides space for processing artifacts and studying the collections. Computers generate information on the artifact assemblages as well as on their exact locations. Access to the collections for research and exhibition is at last possible.

Long-range conservation plans include surface cleaning and rehousing the backlog of excavated artifacts, the remaining low-priority conservation treatments, proper care of artifacts from current excavations and preservation of archival materials. We hope these efforts will avoid future conservation nightmares, and we hope our efforts will inspire others to establish their own archaeology collections management programs.

SUPPLEMENTAL INFORMATION

SUGGESTED READING

- 1990 Department of the Interior, National Park Service. 36CFR Part 79, *Curation of Federally Owned and Administered Archaeological Collections*, Federal Register Vol. 55, No. 177.
- 1990 *History News*, July/August.
- 1990 National Park Service. *Museum Handbook, Part I*, Washington, D.C.: Superintendent of Public Documents, U.S. Government Printing Office.
- 1989 National Institute for the Conservation of Cultural Property. *The Conservation Assessment: A Tool for Planning, Implementation, Fund Raising, (Draft)*, Washington, D.C.: National Institute for the Conservation of Cultural Property.
- 1988 Parezo, Nancy J. and Germaine Juneau. *The Fine Art of Federal Grantsmanship for Museums, Resource Report 7*, Washington, D.C.: American Association of Museums Technical Information Service.

1988 Sease, Catherine. *Field Conservation for Archaeologists: A Manual, Archaeology Research Tools*, Vol. 4, University of California at Los Angeles: Institute of Archaeology Press.

1988 Singley, Katherine. *The Conservation of Artifacts from Freshwater Environments*, South Haven, Michigan: Lake Michigan Maritime Museum.

1985 Baer, N.S. and P.N. Banks "Indoor Air Pollution: Effects on Cultural and Historical Materials," *International Journal of Museum Management and Curatorship*, Vol. 4, pp. 9-22.

1982 Marquardt, William H., Anita Montet-White and Sandra C. Scholtz. "Resolving the Crisis in Archaeological Collections Curation," *American Antiquity*, Vol. 47, pp. 409-418.

1981 Cantwell, Ann-Marie E., James B. Griffin and Nana Rothschild, editors. *The Research Potential of Anthropological Museum Collections*, New York: The New York Academy of Science.

1981 Hilberry, John D. and Susan Kalb Weinberg. "Museums Collections Storage," *Museum News*, Vol. 59, No. 5, pp. 7-21; No. 6, pp. 5-23; No. 7, pp. 49-60.

SOURCES OF FUNDING

Institute of Museum Services
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(202) 786-0539
Conservation Project Support Program
and Conservation Assessment Program

National Endowment for the Humanities
Office of Preservation
1100 Pennsylvania Avenue, N.W.
Washington, D.C. 20506
(202) 786-0570

National Heritage Preservation Program

National Science Foundation
Anthropology Program
Division of Behavioral and Neural Sciences
1800 G Street, N.W.
Washington, D.C. 20550
(202) 357-7804
Support for Systematic Anthropological Collections

FINDING A CONSERVATOR

The Foundation of the American Institute for Conservation (FAIC) offers a Conservation Services Referral System. It provides a brochure on the system and a computer-generated list of conservators to anyone interested. Contact them at FAIC, 1400 16th Street N.W., Suite 340, Washington, D.C. 20036, (202) 232-6636, FAX (202) 232-6630.

Carol Snow is a conservator in private practice, specializing in objects conservation. Snow was consultant conservator for Alexandria Archaeology's National Science Foundation and Institute of Museum Services grants and completed a conservation survey of the Alexandria Archaeology collection in 1989.

Barbara Magid is assistant director of Alexandria Archaeology. She has worked extensively to improve the care of Alexandria's archaeological collection through developing computerized inventory and cataloguing systems and assisting in the design of Alexandria Archaeology's museum, laboratory and storage facility at the Torpedo Factory Art Center in Alexandria, Virginia.

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Alexandria Exhibit to Feature Excavations at Apothecary

By Peter Whoriskey
Special to The Washington Post

"Mrs. Washington," wrote Martha Washington to her druggist in 1802, "desires Mr. Stabler to send by the bearer a quart bottle of the best castor oil and the bill for it."

This letter, hundreds of similar ones, and a collection of medicinal herbs have been found in an Alexandria drugstore in the years since the business closed during the Depression. The drugstore will be the focus of an exhibition opening March 5 at the Torpedo Factory in Alexandria called "Archaeologists at Work: Excavations at the Stabler-Leadbeater Apothecary Shop."

The exhibit will feature relics from the shop as well as the archeological techniques used to uncover their origins and significance. "The exhibit will show people what is involved in re-creating history from archeological evidence," said Barbara Magid, leader of the Stabler-Leadbeater excavation and assistant director of Alexandria Archaeology, a city agency. "They'll see that there is more to it than just digging up bottles and looking at them."

While Magid and others have been examining relics from digs in the basement of the Stabler-Leadbeater Apothecary, experts from the National Museum of American History and other historians have been uncovering historic treasures from the second and third floors, where the manufacturing of the drugs took place. The areas have remained undisturbed since the business closed in 1933.

"Walking into the Stabler-Leadbeater Apothecary is like walking into King Tut's tomb," said W. Brown Morton III, a professor in the Historic Preservation Department at Mary Washington College. "To find so much intact dating back to the 18th century is extremely rare. The collection of potions and plant materials has tremendous scientific value."

The walls of the second and third floors are lined with mahogany drawers filled with the ingredients—wild carrot tops, dragon's blood reeds and liverwort leaves—that went into the remedies of the past.

"The Stabler-Leadbeater Apothecary is unique because it is the only site in the United States where you can see how 18th century med-



PHOTOS BY SHARON FARMER FOR THE WASHINGTON POST

Bottles that may have contained 17th century tonics and ointments are among artifacts found at the Stabler-Leadbeater Apothecary Shop at 105 S. Fairfax St. in Alexandria. It's "like walking into King Tut's tomb," one historian says.

icines were manufactured," said Ramunas Kondratas, a curator for the medical sciences division of the National Museum of American History.

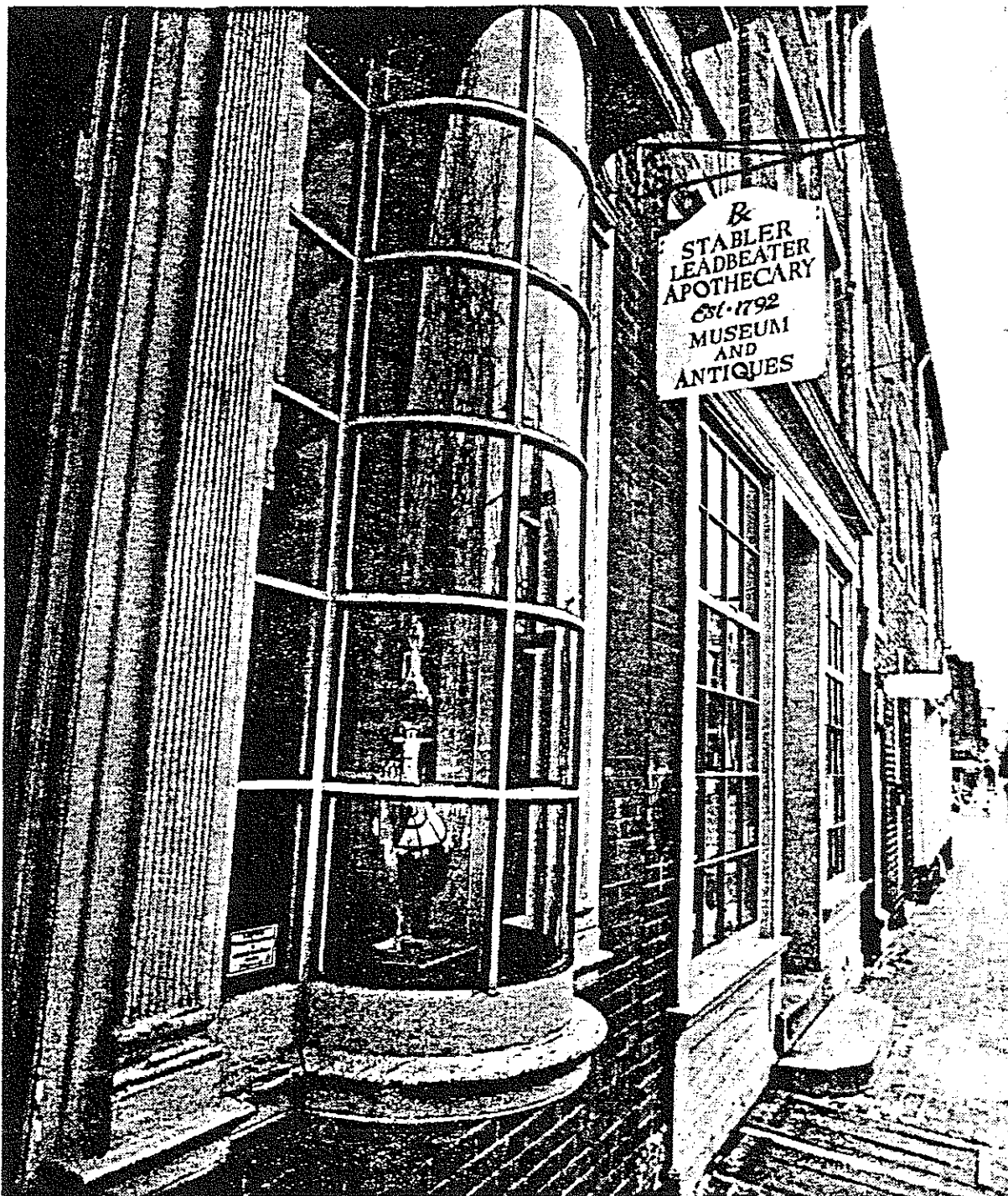
The remedies that were made in the late 1700s and early 1800s were composed of minerals and plant parts that the druggist mixed into ointments, teas and potions, Kondratas said.

The early 19th century, when the manufacturing plant at Stabler-Leadbeater was in full operation, is referred to as the "heroic age of medicine" because the remedies inflicted considerable pain on the patient. Mercury was often prescribed for venereal disease, for example, and it caused many un-

pleasant side effects, such as hair loss, according to Kondratas.

Tonics were used during this period to revitalize the patient after the painful part of the treatment. One tonic invented by an Atlanta pharmacist had a particularly pleasing taste and evolved into the product known today as Coca-Cola, Kondratas said.

The Stabler-Leadbeater Apothecary was founded in 1792 by a young man named Edward Stabler who decided that the bustling port city of Alexandria needed a drugstore, according to members of the Alexandria Landmarks Society, the current owners of the apothecary. After borrowing \$100, Stabler opened a shop at 105 S. Fairfax St.



The business prospered and at one time occupied 11 buildings.

The store served Alexandria as a post office and meeting place as well as an apothecary, and George Washington, Robert E. Lee, Henry Clay and Daniel Webster are said to have been among its regular customers. Many ledgers containing the formulas for cures, and letters from the shop's distinguished patrons, were only recently uncovered.

The Alexandria Landmarks Society, which acquired the building in 1933, keeps the first floor open to the public as a museum and has begun restoring the drugstore. Plans for the apothecary include several costly structural repairs and

the opening of the second and third floors to the public.

The restoration will cost at least \$600,000, according to Anne Paul, president of the society.

The society has raised \$150,000, mainly from local individual donors. The National Association of Retail Druggists has launched a drive to raise \$300,000 for the apothecary, and a drive is under way to raise \$100,000 from Alexandria businesses.

The restoration is expected to be completed in two years.

Before any of the structural repairs can be made to the building, the Landmarks Society is faced with the enormous task of cataloguing, moving and storing the entire col-

lection of vials, herbs, bottles, powders, potions and boxes. No place has been found to store the collection during the repairs.

However, Paul said she is certain that the efforts and the cost are worth it. "Few other collections are as extensive as ours, and even fewer exist on the original property in the original building," she said, breathing in the fragrances of the medicinal herbs left open in boxes all around her.

"What I really like about this place is that, unlike so many museums, the smell of the herbs adds another dimension that really helps to bring the visitor back in time," she said. "It's like entering a time capsule."

The Federal Archeology Program

Jerry L. Rogers
Francis P. McManamon

Every time a Federal highway is laid or a foundation dug, archeologists are consulted to make sure America's heritage is protected. With about a third of the nation's land under government jurisdiction and Federal undertakings constantly in progress, hundreds of archeology projects are underway at any time. But archeology at the Federal level means more than turning spades of soil.

As this issue of CRM shows, Federal archeology encompasses the activities of a range of agencies at the national, state, and local levels. All share the program's central purpose: managing the nation's archeological heritage in the interests of the public. Federal archeology is part of the larger National Historical Preservation Program, which operates by authority of various laws.

An agency's involvement depends on its function. Some, such as the Forest Service, oversee land. Others, like the Federal Highway Administration, help other departments or the private sector develop resources or facilities. Whether they manage land or not, agencies must ensure that the developments they facilitate, license, or fund do not destroy the archeological record.

Most carry out a combination of the two functions. The land management agencies also undertake or permit development. Some agencies that primarily do development, such as the Corps of Engineers, also administer recreation lands. Large agencies, especially, perform a range of tasks requiring archeological investigations.

As one might expect, agencies can take very different approaches to meeting their responsibilities. Some, such as the National Park Service, have extensive archeological programs with large professional staffs. Agencies that assist other levels of government, such as the EPA, may pass along their responsibilities to a development project's sponsor. Yet, no matter what their mission, all agencies must meet their statutory and regulatory responsibilities. But they do so in different ways.

Land managing agencies have begun to inventory sites they administer. But the degree of completeness varies widely. Before the 1980s, several agencies had inventory programs, but most were eliminated in the Reagan years. Current efforts come largely from investigations associated with development projects.

Many agencies have overviews of the archeology and history of their lands, which assist in assessing known sites as well as in predicting where sites will likely be found. Most land managing agencies consider archeology in their guidelines for managers, and many provide cultural resources training. Land units such as national forests often have specific directives for dealing with archeological resources.

Land managing agencies also undertake archeological projects themselves, which typically involve excavation, collection, analysis, reporting, and—increasingly—curation of remains and associated records. Development and

regulatory agencies tend to require these projects of their clients and applicants rather than do them with staff. On average, there are over a thousand of these annually.

Increasingly, all Federal archeological projects, whether funded, permitted, or carried out by an agency, include public outreach efforts such as lectures, publications, newspaper articles, and archeology fairs.

This is quite a leap from the Federal program's humble beginnings. The preservation of archeological remains became a concern for the Federal government in the 19th century. But it wasn't until 1892, when President Benjamin Harrison issued an executive order to preserve Arizona's Casa Grande Ruins, that the nation had its first federally protected archeological site.

During the next two and a half decades the concern grew within and outside the government, leading to the Antiquities Act of 1906. This far-reaching statute made Federal officials responsible for protecting sites on lands they administered, while presidents could protect sites by designating them as national monuments.

With that law and the 1935 Historic Sites Act for authority and guidance, Federal activities increased dramatically during the massive public works programs of the 1930s. In the late 1940s, professional and scholarly groups—along with the National Park Service and the Smithsonian Institution—worked with the U.S. Army Corps of Engineers and the Bureau of Reclamation to mitigate damage to sites threatened by the widespread construction of dams and reservoirs.

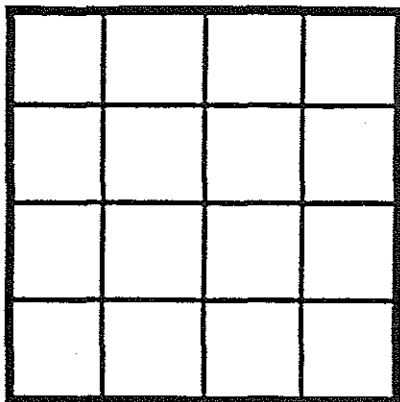
The National Historic Preservation Act of 1966 embodied the concern for adverse impacts to historic properties of all kinds. In 1974, with amendments to the Reservoir Salvage Act, Congress required that agencies fund archeological activities necessitated by their projects.

The Archaeological Resources Protection Act of 1979 enforced prohibitions against looting and vandalism, stiffened penalties, and prohibited trafficking in illegally removed artifacts. The Act also addressed the custody of collections and called for cooperation among Federal authorities, professional groups, private archeologists, and individuals. Amendments in 1988 improved enforcement and emphasized inventories and public outreach.

In 1990, the Native American Graves Protection and Repatriation Act signalled a new relationship between Indian tribes and the government. Land managing agencies now must consult with Indian tribes and Native Hawaiian groups before archeological investigations that might lead to the excavation or removal of Native American human remains, funerary objects, sacred objects, or objects of cultural patrimony. By law, these kinds of remains and artifacts must be turned over to groups culturally affiliated with them. Similar provisions apply to collections in museums and repositories receiving Federal funds.

Today, it is clear that the past belongs to all Americans. As more and more of the archeological record is uncovered under government auspices, the Federal program looms large as a steward of that heritage.

Jerry L. Rogers is Associate Director, Cultural Resources, National Park Service. Francis P. McManamon is Departmental Consulting Archeologist and Chief, Archeological Assistance Division, National Park Service.



ARCHEOLOGICAL ASSISTANCE PROGRAM

Technical Brief No. 4, May 1989

ARCHEOLOGY IN THE CLASSROOM: A Case Study from Arizona

By A. E. Rogge and Patti Bell

Arizona Archaeological Council, Archaeology for the Schools Committee

U.S. DEPARTMENT OF THE INTERIOR NATIONAL PARK SERVICE

There is a growing awareness that public outreach programs are necessary for the continued preservation of archeological resources. The Federal archeological community, through the Interagency Working Group on Public Awareness of Federal Archeology, has identified several goals for a comprehensive public outreach effort. This Technical Brief, which situates archeology in the public schools, and Technical Brief No. 2, which describes the "Take Pride in America" award winning Arizona Archaeology Week, are two examples of how we can further these goals.

The Archeological Assistance Division supports a clearinghouse, Listing of Education in Archeology Projects (LEAP), which serves as a guide for national, regional, and local public education projects and programs. The exchange of information about the research and developmental activities that lie behind these achievements cannot be conducted through a clearinghouse, however. Rogge and Bell recount the efforts of Arizona's Archaeological Council's schools committee to place archeological concepts and values within the context of the classroom. Their experiences, like those of countless others across the country, exemplify "what it takes" to produce the products listed in the LEAP clearinghouse.

Technical Brief No. 4 was originally one of a series of papers presented in the symposium entitled, "Fighting Indiana Jones in Arizona," appearing on the program of the 53rd Annual Meeting of the Society for American Archaeology. The papers in this symposium, all of which highlighted various approaches used to educate the public about the science of archeology, are published in the ASCA 1988 Proceedings. The Archeological Assistance Division is publishing an expanded version of the original paper by Rogge and Bell because of the timeliness of their information. Recent amendments to the Archaeological Resources Protection Act of 1979 call on Federal land managers to increase "public awareness of the significance of the archaeological resources located on public lands and Indian lands and the need to protect such resources" (emphasis added).

The January/February 1989 issue of *Archaeology* magazine is filled with predictions of what archeology will be like in the middle of the next century. Although some of the contributors are very optimistic about archeological perspectives

becoming more valued as we cope with global cultural and environmental issues, other authors paint a very dismal picture for the future of archeological resources. For the past couple of decades, American archeologists have recognized the alarming rate of site destruction and responded to it by seeking regulatory protection and imposition of legal penalties against vandals and looters.

Arizona archeologists have been in the forefront of much of this "cops and robbers" approach to protecting archeological resources, but they have also come to realize the benefits of a more positive longer range tactic. Taking steps to educate the general public about the values of archeological resources and to instill a sense of why it is important to protect them may do more to conserve our cultural resources than threats of fines or jail sentences.

In 1985, the Arizona Archaeological Council (AAC) organized an Archaeology for the Schools Committee with the goal of enhancing appreciation of archeological resources among the state's younger citizens. Our committee realizes that the precollege teaching of anthropology and archeology is not a particularly new endeavor, and we have learned of many efforts to spread the message about the values of archeology into elementary and secondary schools. For example, we are aware of programs in several states including Georgia, Kentucky, Louisiana, Maine, Missouri, South Dakota, Texas, Vermont, and Virginia, as well as efforts north of the border in Toronto, Canada, and in the provinces of Alberta and Nova Scotia. We are also aware of growing interest in other western states such as Colorado, Wyoming and Montana. Our goal in this technical brief is not to review those programs but to focus on our experiences over the last few years as a case study of the challenges we have faced, the successes we have achieved, as well as the not so successful approaches we have tried.

In this brief, we

- describe the goals and motivations of the AAC's schools committee,
- summarize what we have learned about the "ethnography" of the Arizona school system, and
- highlight a strategy to get teachers to not teach archeology as much as to teach with archeology.

The Schools Committee

The AAC is a statewide organization of more than 150 people, most of whom work in some aspect of public archeology. It is similar to organizations formed in many other states in the 1970s in response to issues of professionalism in the arena of regulatory archeology and development of the subdiscipline that has come to be known as cultural resource management.

Since its formation in 1985, the AAC's Archaeology for the Schools Committee has tended to number between 10 and 20 members; activities typically involve 5 to 10 members at any given time. Committee members include professional archeologists from the federal, state, and private sectors, avocational archeologists, museum staff, and teachers. Many of the committee members are not the types of people who would typically join the AAC, but they were specifically recruited to broaden the perspective and expertise of the committee. The committee's activities reflect the strengths of enthusiastic volunteers, as well as the weaknesses of part-time, unpaid service.

The motivations of the committee members are diverse. Some members are professional educators, some are interested in public schools because they are parents, but all committee members share a common concern with giving the public a more accurate image of what archeology is all about. How many archeologists still have to explain to the uninitiated that, as practicing archeologists, they do not have houses full of really nice artifacts? And how many have to explain to their neighbors that they do not study rocks or dinosaurs? Do even the parents of most archeologists really understand the profession of their children? We find that the general public, including most teachers, knows a lot about the "Indiana Jones" approach to archeology, but very little about what it means to say that archeology is an anthropological study of past societies.

Our members also believe that the message of archeology is simply too good to reserve for college students. The perspectives of prehistory ought to be taught to a much broader audience.

The committee's other motivation is, of course, to fight the increasing problem of vandalism and loss of sites due to development. Legislation and regulations may deter some pot-hunters, but education may be the only real hope as Arizona's population continues to explode. The protection that has been afforded to the archeological resources of the Southwest in the past has largely resulted from benign neglect. As the Sunbelt population increases, the future survival of our archeological sites will depend more and more on the public proactively valuing these resources. To make the public aware of the values will take education.

When the schools committee first organized, it enunciated three specific goals:

1. to inventory and evaluate existing public school programs and opportunities to learn about or experience archeology,

2. to formulate recommendations for enhancing student and public exposure to archeology, and
3. to offer advice or participate in developing programs and materials for students and teachers.

We have come to realize these goals were ambitious, but we are making progress in several directions.

Ethnography of the School System

We have learned several things in the past three years. First, we have come to realize that there are really quite a few teaching materials about archeology and anthropology. (See Holm and Higgins [1985] and Selig and Higgins [1986] for recent overviews of efforts to expand precollege teaching of anthropology and archeology.) We have created a partially computerized inventory of more than 200 books and pamphlets, plus almost as many audiovisual materials, but most of these materials remain unevaluated. Although we have recognized some gems (for example, *Dig 2* [Lipetzky 1982], and *Motel of the Mysteries* [Macaulay 1979]), we have made little progress toward any systematic review because of the effort this requires. (See Higgins [in Holm and Higgins 1985] for an annotated bibliography of almost 50 articles.) It does seem that the available materials are not widely used and the use they do receive largely reflects individual interests and initiatives of a limited number of teachers.

The lack of materials does not seem to be a primary reason for the limited teaching of anthropology and archeology at precollege levels, nor do we believe the reason to be the complexity or excessive erudition of the concepts involved. A more probable explanation is the fact that concepts such as ethnocentrism and cultural relativism conflict with typical nationalistic perspectives and other core societal values that schools are charged with transmitting from one generation to another (see Kehoe 1988). Earlier efforts to develop curriculum materials, such as *Man: A Course of Study*, encountered severe resistance because of such conflicts (Rice 1986). Archeology, in the eyes of most teachers, is also tinged with a certain disquieting otherworldiness, but it is quite possible to convey a sense of the value of prehistoric perspectives as an adjunct to the generally accepted values of history without focusing on controversial red-flags such as creationism versus evolution.

A second thing we have learned is that Arizona school districts operate quite autonomously. They reflect the long-standing tradition of the local American school board, which grew out of the feisty early New England town governments. The state superintendent and board of education certify teachers, monitor pupil attendance, regulate some financial support, develop in-service programs, and issue curriculum guides. However, it is the local districts that guard local traditions and monitor what values are conveyed to their students. It is the local districts that make the basic day-to-day decisions about how schools are run. And, we all know from our own experience, it is the individual teacher in the classroom who is the crucial factor in determining exactly what is taught and how.

Arizona's 15 counties are divided into about 220 school districts. There are about 910 schools in these districts--an average of just over 4 per district. There are about 580,000 registered elementary and secondary students, and we estimate that there are approximately 20,000 teachers in the state's school system. This then is the size of the challenge we face in designing a system to introduce archeology into Arizona's precollege school system.

One of our committee's first major projects was to prepare an eight-page, teachers' packet, which we distributed in conjunction with a statewide celebration of Archaeology Week in 1986. The packet included several archeological activities that could be adapted for various grade levels, a brief summary of Arizona prehistory, and a list of recommended readings and places to visit. Although we managed to scrape together several hundred dollars for reproduction and postage to send a copy to virtually every school in the state, only about a dozen teachers responded to the questionnaire we had attached. We learned that media specialists and librarians in every school probably receive several mass mailings a week, and we suspect most of our cherished packets probably never emerged from the bottom of the stack to be hung on bulletin boards or to be routed to the teachers themselves. Without some personal contact, even our bright multihued packets were probably read by few teachers.

After that disappointment, we made some overtures to the state Department of Education and the state Social Studies Council to determine whether some "top down" support might help our cause. We hoped that the mandated Arizona history taught to all fourth graders might be strengthened in the area of prehistory. Although we had some polite expressions of interest and support and some acknowledgement of archeology in new social studies curriculum guidelines, the reality is that archeology must compete among a variety of social studies, none of which fare well in the move back to basics. High priority supplemental programs, such as drug prevention and sex education, stress the already full agenda, and peripheral subjects, such as archeology, are assigned a very marginal priority (Figure 1). Thus, we have come to the conclusion that the current issues and priorities facing public education will not lead to archeology becoming mandated curriculum any time soon.

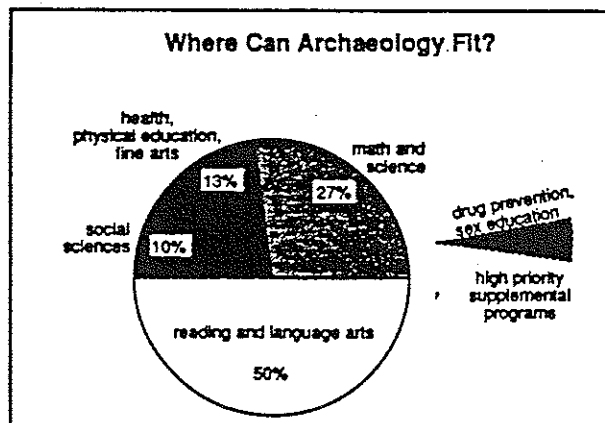


Figure 1. Typical Elementary Curriculum (see Cawelti and Adkisson 1985).

Teaching Archeology versus Teaching with Archeology

Because we are convinced that archeology will not soon be mandated in the curriculum, we are currently promoting archeology as supplemental curriculum that can be implemented without overloading teachers who feel stressed by the materials they are already expected to cover. Supplemental activities can range from a 45-minute exercise that presents a realistic perspective of prehistoric Indians (in conjunction with Columbus Day or Thanksgiving) to a several week unit involving a mock dig. Or it could simply include arithmetic story problems about the average number of sherds per broken pot or an art project modeling a prehistoric pit house or pueblo.

In addition to promoting archeological awareness as an adjunct to teaching the required curriculum, we are trying to convince teachers of the values of archeology as integrative curriculum. One of the chief strengths of archeology is that it is a motivating, fun, hands-on, experiential way of integrating artificially compartmentalized subjects, including life sciences, earth sciences, physical sciences, math, computer science, social studies, language skills, art, music, and drama. More and more teachers are recognizing that multisensual experiences greatly improve on the 10 percent retention rate for facts that have been doled out in textbook fashion (see Bruner 1963, Clark 1986, Wonder and Donovan 1984).

In fact, one Tucson teacher is convinced that an archeology unit, which included gridding and plotting artifacts, has improved her students' scores on the standard Iowa test of basic skills in the area of visual skills including reading charts, maps, and coordinates. Those are the kinds of testimonials that will win us other converts.

A California high school teacher (Onderdonk 1986) cogently argues that the spin-off values of archeology include cognitive maturation in the areas of personal involvement, reflective thinking, realistic exposure to scientific methods, and social interaction.

Many other teachers who have experimented with archeology in their classrooms have been enthusiastic about the benefits (Carroll 1987, Catalina 1983, Cotter 1979, Dyer 1983, Passe and Passe 1985, Watts 1985).

The Workshop as a Delivery Tool

In April 1986, our committee developed a display and prepared a workshop for the Rocky Mountain Regional Social Studies Conference. Although the response was not overwhelming, the experience whetted our appetites. The workshop promised to be an effective tool for spreading our message, and we developed a weekend workshop. Drawing heavily on personal contacts to generate our first roster of participating teachers, we made a pilot presentation to about 35 teachers who were hosted by the Mesa Southwest Museum during the spring 1987 celebration of Arizona Archaeology Week.

Future Challenges

During our first year of workshops, about 100 teachers participated. At that rate, it will take us only 200 years to indoctrinate every teacher in Arizona. Although that is a short time by archeological chronologies, it is a daunting challenge in real time, even if many teachers who attend our workshop in turn introduce several of their colleagues to archeology. But we are not working alone in Arizona. Spin-off workshops by other organizations are being developed, and numerous public outreach programs are being pursued throughout the state (Rogge 1988).

We know other groups in other states are out there working towards goals similar to those we are pursuing. We suspect that some national coordination of these grass-root efforts might be useful, and there are several candidate organizations or institutions that might provide national leadership. We call particular attention to the Smithsonian's program of teacher support and its publication of *Anthro Notes*, which seems to us to be a very viable mechanism for building a strong national network. Whoever takes on the job will need funding as well as continuing volunteer efforts. We would point to Project WILD as a successful model to emulate (WREEC 1988). The result of a three-year cooperative effort by state education and wildlife agencies and other environmental organizations throughout the West, Project WILD distributes an impressive set of supplemental curriculum materials that focus on the importance of natural resources. We believe that our cultural resources warrant as much effort.

Despite all the challenges of educating the general public about archeology, we remain optimistic that people's inherent interest in archeology is on our side and that the heightening environmental awareness of the general public will continue to spread to cultural resources. From the perspective of archeologists in A.D. 2050, the educational efforts we initiate in our public school systems today are likely to be seen as a crucial factor in determining the condition of our cultural resources in the next century.

Note

¹ Committee members who contributed substantially to the development of the workshop materials include teachers Donna Benge, Jeanne Miller and Jean Cross (retired); Arizona State Museum staff members Charles Adams, Rich Lange and Shurhan; teaching consultant Barbara Gronemann; and Federal archeologist Penny Rucks.

References Cited

- Archaeological Institute of America
1989 *Archaeology*. January/February.
- Bruner, Jerome
1963 *The Process of Education*. Vintage Books, New York.
- Carroll, Rives Fowlkes
1987 *Schoolyard Archaeology*. *Social Studies* 78: 69-75.

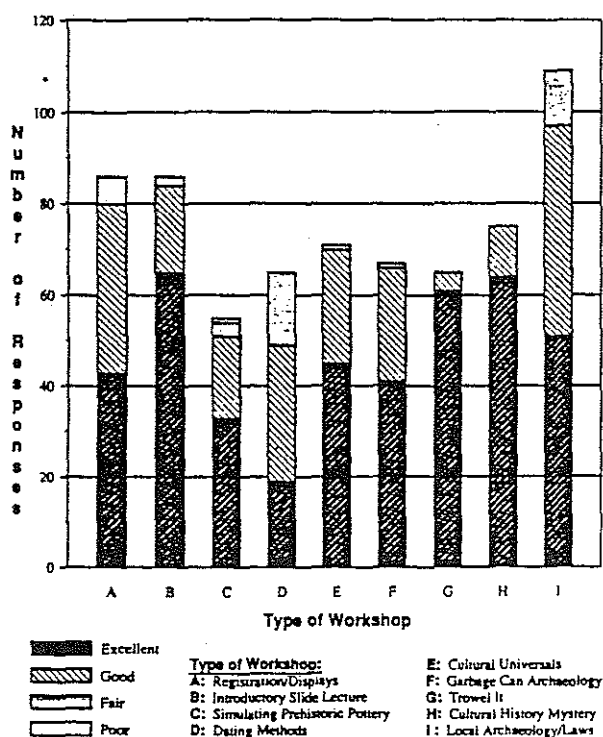


Figure 4. Teacher Evaluations of workshops.

seek out additional information before using them. The content and organization of the workshop are dynamic, and we are continually trying to respond to comments and suggestions from the participants.

We initially charged \$5 to cover the cost of the packet of materials we distribute at the workshop, but we have been able to raise our tuition fees to \$20 without any complaints of gouging. That income and the money from book sales typically cover our costs, which are averaging \$300 to \$400 per workshop. All labor is volunteered, and we have managed to use rent-free facilities, overcome liability insurance issues, and subsidize much of our cost for sending out announcements and registration forms through our members' institutions. The enterprise clearly has the potential of being virtually self-sustaining--as long as the volunteer efforts and cooperation hold out.

- Catalina, Lynn S.
1983. Digging into Hometown History. *Cobblestone Magazine*. June 4:10-13.
- Cawelti, Gordon and Janice Adkisson
1985 ASCD Study Reveals Elementary School Time Allocations for Subject Areas: Other Trends Noted. *ASCD Curriculum Update* 85. April. Association for Supervision and Curriculum Development, Alexandria, Virginia.
- Clark, Barbara
1986 *Optimizing Learning: The Integrative Education Model in the Classroom*. Merrill, Columbus, Ohio.
- Cotter, John L.
1979 Archaeologists of the Future: High Schools Discover Archaeology. *Archaeology*. January/February: 29-35.
- Dyer, James.
1983 *Teaching Archaeology in Schools*. Shire, United Kingdom.
- Holm, Karen Ann and Patricia J. Higgins (editors)
1985 *Archeology and Education: A Successful Combination for PreCollegiate Students*. Anthropology Curriculum Project, University of Georgia, Athens.
- Kehoe, Alice B.
1988 In Fourteen Hundred and Ninety-Two, Columbus Sailed. . . : The Primacy of the National Myth in American Schools. In *The Excluded Past-Archaeology in Education*, edited by Peter Stone. Unwin Hyman Ltd., London, in press.
- Lipetzky, Jerry.
1982 *Dig 2*. Interaction, Lakeside, California.
- Macaulay David.
1979 *Motel of the Mysteries*. Houghton Mifflin, Boston.
- Onderdonk, Richard
1986 Piaget and Archaeology. *Archaeology*. November/December: 80.
- Passo, J. and M. Passe
1985 Archaeology: A Unit to Promote Thinking Skills. *Social Studies* 76:238-239.
- Rice, Marion J.
1986 Curriculum Artifacts: The Remains of Three Anthropology Projects. *Practicing Anthropology* 8(3-4): 6, 19.
- Rogge, A.E. and Patti Bell
1988 Teaching Teachers to Teach with Archaeology. In *Fighting Indiana Jones in Arizona*, edited by A. E. Rogge, pp. 69-74. *American Society for Conservation Archaeology, 1988 Proceedings*. Agency for Conservation Archaeology, Eastern New Mexico University, Portales.
- Rogge, A.E. (editor)
1988 *Fighting Indiana Jones in Arizona. American Society for Conservation Archaeology, 1988 Proceedings*. Agency for Conservation Archaeology, Eastern New Mexico University, Portales.
- Selig, Ruth Osterweis and Patricia J. Higgins (guest editors)
1986 Practicing Anthropology in Precollege Education. *Practicing Anthropology* 8(3-4).
- Watts, Lou Ellen
1985 They Dig Archaeology. *Science and Children*. September 23: 5-9.
- Western Regional Environmental Education Council
1988 *An Introduction to Project WILD*. Project WILD, P. O. Box 18060, Boulder, Colorado.
- Wonder, J. and P. Donovan
1984 *Whole Brain Thinking*. Morrow, New York.

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Alexandria Exhibit to Feature Excavations at Apothecary

The Washington Post February 4, 1988

By Peter Whoriskey
Special to The Washington Post

"Mrs. Washington," wrote Martha Washington to her druggist in 1802, "desires Mr. Stabler to send by the bearer a quart bottle of the best castor oil and the bill for it."

This letter, hundreds of similar ones, and a collection of medicinal herbs have been found in an Alexandria drugstore in the years since the business closed during the Depression. The drugstore will be the focus of an exhibition opening March 5 at the Torpedo Factory in Alexandria called "Archaeologists at Work: Excavations at the Stabler-Leadbeater Apothecary Shop."

The exhibit will feature relics from the shop as well as the archaeological techniques used to uncover their origins and significance. "The exhibit will show people what is involved in re-creating history from archeological evidence," said Barbara Magid, leader of the Stabler-Leadbeater excavation and assistant director of Alexandria Archaeology, a city agency. "They'll see that there is more to it than just digging up bottles and looking at them."

While Magid and others have been examining relics from digs in the basement of the Stabler-Leadbeater Apothecary, experts from the National Museum of American History and other historians have been uncovering historic treasures from the second and third floors, where the manufacturing of the drugs took place. The areas have remained undisturbed since the business closed in 1933.

"Walking into the Stabler-Leadbeater Apothecary is like walking into King Tut's tomb," said W. Brown Morton III, a professor in the Historic Preservation Department at Mary Washington College. "To find so much intact dating back to the 18th century is extremely rare. The collection of potions and plant materials has tremendous scientific value."

The walls of the second and third floors are lined with mahogany drawers filled with the ingredients—wild carrot tops, dragon's blood reeds and liverwort leaves—that went into the remedies of the past.

"The Stabler-Leadbeater Apothecary is unique because it is the only site in the United States where you can see how 18th century med-



PHOTOS BY SHARON FARMER FOR THE WASHINGTON POST

Bottles that may have contained 17th century tonics and ointments are among artifacts found at the Stabler-Leadbeater Apothecary Shop at 105 S. Fairfax St. in Alexandria. It's "like walking into King Tut's tomb," one historian says.

icines were manufactured," said Ramūnas Kondratas, a curator for the medical sciences division of the National Museum of American History.

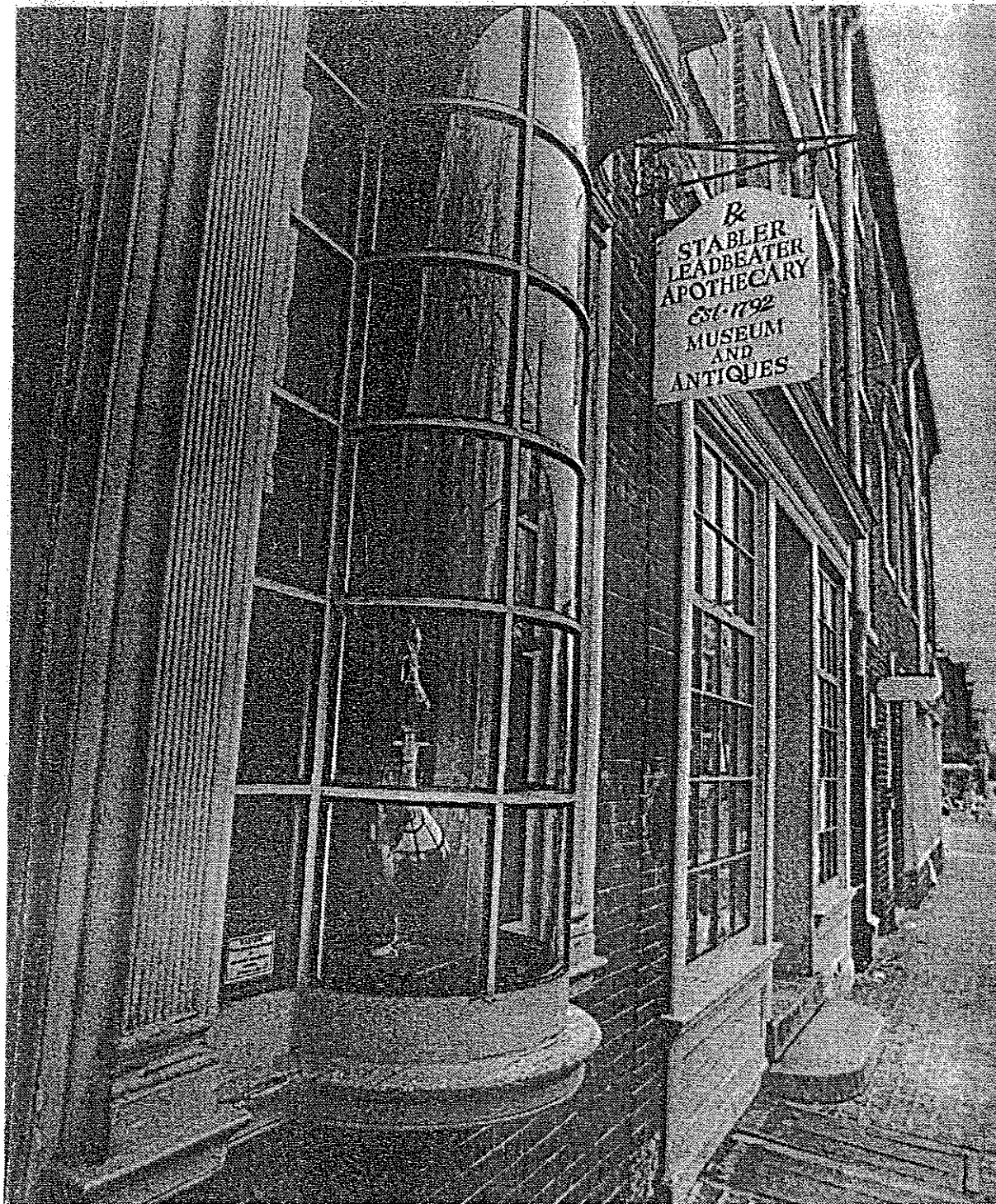
The remedies that were made in the late 1700s and early 1800s were composed of minerals and plant parts that the druggist mixed into ointments, teas and potions, Kondratas said.

The early 19th century, when the manufacturing plant at Stabler-Leadbeater was in full operation, is referred to as the "heroic age of medicine" because the remedies inflicted considerable pain on the patient. Mercury was often prescribed for venereal disease, for example, and it caused many un-

pleasant side effects, such as hair loss, according to Kondratas.

Tonics were used during this period to revitalize the patient after the painful part of the treatment. One tonic invented by an Atlanta pharmacist had a particularly pleasing taste and evolved into the product known today as Coca-Cola, Kondratas said.

The Stabler-Leadbeater Apothecary was founded in 1792 by a young man named Edward Stabler who decided that the bustling port city of Alexandria needed a drugstore, according to members of the Alexandria Landmarks Society, the current owners of the apothecary. After borrowing \$100, Stabler opened a shop at 105 S. Fairfax St.



The business prospered and at one time occupied 11 buildings.

The store served Alexandria as a post office and meeting place as well as an apothecary, and George Washington, Robert E. Lee, Henry Clay and Daniel Webster are said to have been among its regular customers. Many ledgers containing the formulas for cures, and letters from the shop's distinguished patrons, were only recently uncovered.

The Alexandria Landmarks Society, which acquired the building in 1933, keeps the first floor open to the public as a museum and has begun restoring the drugstore. Plans for the apothecary include several costly structural repairs and

the opening of the second and third floors to the public.

The restoration will cost at least \$600,000, according to Anne Paul, president of the society.

The society has raised \$150,000, mainly from local individual donors. The National Association of Retail Druggists has launched a drive to raise \$300,000 for the apothecary, and a drive is under way to raise \$100,000 from Alexandria businesses.

The restoration is expected to be completed in two years.

Before any of the structural repairs can be made to the building, the Landmarks Society is faced with the enormous task of cataloguing, moving and storing the entire col-

lection of vials, herbs, bottles, powders, potions and boxes. No place has been found to store the collection during the repairs.

However, Paul said she is certain that the efforts and the cost are worth it. "Few other collections are as extensive as ours, and even fewer exist on the original property in the original building," she said, breathing in the fragrances of the medicinal herbs left open in boxes all around her.

"What I really like about this place is that, unlike so many museums, the smell of the herbs adds another dimension that really helps to bring the visitor back in time," she said. "It's like entering a time capsule."

—BIBLIOGRAPHY—

Alexandria City Public Schools. *Alexandria Is* 4th Edition. Alexandria, VA, 1992.

Bell, Patti. *Exploring Archaeology - 10 Week Science Unit*. Prehistorics/Cultural Connection: Bozeman, MT, n.d.

Bell, Patti and Jeanne Miller. *Dig Into the Past*. Phoenix, AZ: Thinking Caps, Inc., n.d.

Hawkins, Nancy W. *Classroom Archaeology: An Archaeology Activity Guide for Teachers*, Division of Archaeology, Office of Cultural Development, 1987.

McIntosh, Jane. *The Practical Archaeologist: How We Know What We Know About the Past*. Facts On File: New York and Oxford, 1986.

Onderdonk, Richard. "Piaget and Archaeology." *Archaeology*." Vol. 39, no 6, Nov./Dec. p. 80, 1986.

Silvio, Teri J., Barbara J. Waite and Janice G. Artemel. *Historic, Archaeological and Cultural Resources, Washington, D.C.: A Curriculum for the Department of Recreation*. Washington, D.C.: Engineering-Science, Inc., 1987.

Smith, K.C. "Teacher's Corner: Resources for Teaching Archaeology in Anthro Notes." *National Museum of Natural History Bulletin for Teachers*, Vol. 13, no. 3, 1991.

Smithsonian Institution. *A Guide to Resources on the Local Archeology and Indian History of the Washington, D.C. Area*. Washington, D.C.: Smithsonian Institution, Dept. of Anthropology, Public Information Office, 1988.

Voris, Helen H., Maija Sedzielarz and Carolyn P. Blackmon. *Teach the Mind, Touch the Spirit: A Guide to Focused Field Trips*. Chicago, IL: Dept. of Education, Field Museum of Natural History, 1986.

Wheat, Pam and Brenda Whorton. *Clues From the Past: A Resource Book on Archaeology*. Dallas, TX: Texas Archaeological Society, Hendrick-Long Publishing Co., 1990.

Williams, Martha, compiler. *Archaeological Resources for the Classroom: A Guide for Virginia Teachers*. Falls Church, VA: The Education Committee, Archaeological Society of Virginia, 1990.