ARCHAEOLOGY: EARLY CULTURES AND THEIR TECHNOLOGY
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an exhibit in celebration of the Archaeological Institute of America's centennial

MARCH 31 - MAY 16, 1980

FRANK H. MCCLUNG MUSEUM, COLLEGE OF LIBERAL ARTS
UNIVERSITY OF TENNESSEE, KNOXVILLE
FORWARD

The occasion of this exhibit, which coincided with the Centennial Celebration of the Archaeological Institute of America, served to remind us of the diversity of professional backgrounds possessed by the members of the East Tennessee Society, yet all sharing a common interest in archaeology. An extraordinary group of members and friends of the East Tennessee Society graciously shared with the public some of their most cherished artifacts. As a result, many visitors to the Museum had the opportunity to see a unique and handsome selection of archaeological objects. To preserve the visual memory of this memorable exhibit, this catalogue has been prepared from the exhibit label copy and photographs taken of particular objects.

Individuals labored with unequaled dedication to make it happen. Thanks must go to many. Mrs. Thelma Present represented the program committee and secured many of the exhibit items; Dr. John H. Fisher and his wife Jane, generously donated funds to assist in bringing the publication of this catalogue to fruition; Dr. Harry C. Rulledge coordinated the numerous details that inevitably arise; and Elaine Atman Evans designed the exhibition and prepared this catalogue. All these individuals greatly eased my task as general chairman of the local society's centennial committee.

John A. Dean
President (1980-81)
East Tennessee Society, AIA

Left:
"Panoramic View of the Pyramids and Sphinx at Sunset," from an engraving of the Napoleonic expedition to Egypt in 1798. (Photograph through the courtesy of AIA.)
ACKNOWLEDGEMENTS

This is to recognize those of our members and friends who responded so enthusiastically to our appeal for the loan of artifacts for this exhibit in celebration of the Archaeological Institute of America’s Centennial. Without your generosity in parting temporarily with precious objects from your private collections, this exhibit could not have taken place with such success. We, the East Tennessee Society, feel that we accomplished much in presenting such a varied collection to the general public. It was an unusual attraction and display and was enjoyed by an impressive number of visitors.

Our appreciation, also, and warm thanks to Mr. Basil Saffer, curator, General Shale Products Corp., Johnson City, who was especially gracious in allowing us to select a considerable number of brick from their museum to complement our theme.

Finally, but not least, a grateful acknowledgement to a special friend and member of our society, Dr. John R. Fisher, Past President, East Tennessee Society, AIA, who helped make this catalogue a reality.

Mrs. Thelma Present
Past President
East Tennessee Society, AIA

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PREFACE

The aim of this catalogue is not to offer anything particularly new on the subject of technology nor is it intended as a technical work. Rather, it serves merely to provide a few basic technological factors associated with each of the items that were exhibited in order that they may become more meaningful in terms of the development of technology. The writer hopes the catalogue will serve as a useful introduction.

Most of the objects, like many of those in museum collections, are almost all from undocumented finds or random purchases, though for most a source of sorts (country and approximate date) was supplied by the lenders. The value of the material as archaeological data is therefore limited, since absolute accuracy for provenance and dating might in some instances be considered questionable, as they had long been removed from their original archaeological context. For this reason, a technological interpretive approach was taken and the objects arranged according to their composition or material. Although no claim for authenticity can be made with certainty without a technical laboratory, it is believed that with few possible exceptions the objects have been correctly identified.

The references cited in the Selected Bibliography were liberally drawn upon as main sources, and a number of publications on specific materials were consulted, such as "Studies in Ancient Peruvian Metalworking" (History, Technology, and Art. Monograph 3, Royal Ontario Museum, 1975), and J. W. Hayes, Roman and Pre-Roman Glass (Royal Ontario Museum, 1975).

I would like to acknowledge my debt to Mrs. Thelma Present, past president of the East Tennessee Society of the Archaeological Institute of America, whose constant enthusiasm and assistance was invaluable and to Dr. Harry C. Rutfedge, Secretary/Treasurer of the ETSAIA, for his kind support and generous encouragement. I would like to express my appreciation to Mr. Larry Kimble and Mr. Richard Polhemus for the valuable information they provided regarding prehistoric implements. I also wish to thank Dr. Paul W. Parmalee, director of the Frank H. McClung Museum, for his kindness in reading over the text, and Mrs. Betty Creech, Senior Secretary, for her cheerful assistance in typing the text.

Elaine Altman Evans
Curator of Collections

SELECTED BIBLIOGRAPHY

MAYAN BIFACIAL KNIFE
Late Classic, c. A.D. 900
Loftun, Yucatan
Material: flint

MISSISSIPPIAN BIFACIAL KNIFE
A.D. 1300-1450
Sumner County, Tennessee
Material: flint

SHELL
Local Indian groups used flint drill points to pierce bits of animal bone, marine shell and other materials for beads. These were worn for adornment in necklaces, anklets, garments and headbands. Tiny Olivellas and Marginellas were strung as they were.

SHELL BEADS
C. 1400-1600
Toqua Site, Toqua, Tennessee
Found in 1946

MAYAN CELT
Classic, A.D. 325-900
Isla Coxumel, Yucatan
Material: shell

BONE
One important early stage of technology was the discovery of tools to work bone. By the Magdalenian Period, c. 12,000-8,000 B.C., stone gravers, scrapers and blades were being used to fashion bone implements, including spears, harpoons, and needles that reached one millimeter in diameter for sewing or net-making.

ROMAN NEEDLE AND PIN
C. 1st-2nd century A.D.
Mogontiacum (Mainz, Germany)
Material: bone

In Roman times bone was found appropriate for a wide variety of artistic as well as utilitarian purposes.

ROMAN STYLUS
Material: bone

ROMAN SKATE?
1st century A.D.
Mogontiacum, (Mainz, Germany)
Material: bone

Perhaps the hole at one end was for a plug to hold a leather thong that tied around the foot.

ROMAN GAMBLING DIE
1st century A.D.
Mogontiacum (Mainz, Germany)
Material: bone

Two men use hard wood or bone points to trim stone tools (from a tomb at Beni Hassan, c. 1300 B.C., Thebes, Egypt).
LEATHER
Hides and skins were treated different ways in the production of leather. Some were simply dried, smoked or salt cured, softened by alum, oil, fat, dung or urine. The vegetable product such as bark, roots, nuts and berries were used as tanning agents. Armor, shields, helmets, horse trappings, vessels and money are among the items of leather made in Roman times.

ROMAN LEGIONARY SHOE SOLE
c. 1-2nd century A.D. Mogontiacum, (Mainz, Germany) Material: tanned leather, iron

This sole was possibly made of cow hide, tanned with an extract from the oak-bark. Styles varied from simple to elaborate. The soles of soldiers' sandals were thick, with at least two layers of vegetable - tanned hide laced or sewn together, and studded with iron nails or spikes. The uppers were made by a system of laces or straps. The aristocracy wore yellow, red and green dyed sandals, probably of alum-dressed leather.

The Romans had guilds for many types of leather industries to satisfy the great demand for leather goods, including footwear. Based on Greek types, footwear was produced in factories for the flourishing export trade.

POTTERY
Pottery became universally diffused following the birth of early agriculture when the wandering hunter-food gatherer peoples were slowly replaced by permanent and semi-permanent settlers who probably had a need for vessels to store grains. The first pots were of coarse material, crude in shape and poorly baked. Later, sophisticated pottery was produced for beauty as well as utility. A major technological advance was the discovery that clay objects were stronger and more readily replaced.

FUNERARY VESSEL
Dynasty III Sakkara, Egypt Material: hand-formed, baked clay

Inside the container are corn seeds emblematic of Osiris and resurrection. Impressed on the sealed mouth is an undetermined cartouche.

GROUP OF SHARDS
C. 4500 B.C.-A.D. 800 Gezer (southern Palestine) Material: baked clay

JUGLET
C. 1200-1500 B.C. Palestine Material: hand-formed, baked clay, burnedished

JUGLET
Cyprus-style, c. 1570-1340 B.C. Palestine Material: hand-formed, baked clay

GROUP OF SHARDS
C. 1200-250 B.C. Gezer (southern Palestine) Material: baked clay, wash, natural pigments

JUGLET
C. 1200 B.C.? Canaan Material: earthenware

UNGUENT JUGLET
C. 800-600 B.C. Palestine Material: hand-formed, baked clay

VESSEL HANDLE
C. 700 B.C. Jerusalem Material: earthenware
SAUCER-SHAPED LAMP  
c. 2100-1500 B.C.  
Palestine  
Material: hand-formed, baked clay  
Pinch-nosed lamps were one of the earliest forms of oil lamp.

OIL LAMP  
c. 930-586 B.C.  
Palestine  
Material: hand-formed, baked clay  

OIL LAMP  
3rd century B.C.  
Sardis?, Asia Minor  
Material: baked clay, orange slip  

OIL LAMP  
c. 1st century A.D.  
Palestine  
Material: moulded, baked clay  

ROMAN OIL LAMP  
1st century A.D.  
Mogontiacum (Mainz, Germany)  
Material: moulded, baked clay  

OIL LAMP  
3rd-4th century A.D.  
Palestine  
Material: baked clay  

ROMAN OIL LAMP  
3rd-4th century A.D.  
Volibas, Morocco  
Material: carved, steatite  
Pottery lamp styles were used for stone lamps.

ROMAN OIL LAMP  
3rd-4th century A.D.  
Volibas, Morocco  
Material: carved, sandstone  

ROMAN JUG  
c. A.D. 120  
Mogontiacum (Mainz, Germany)  
Material: hand-formed, baked clay  
Common Roman household pottery was usually unglazed.

ROMAN VOTIVE HORSE  
c. A.D. 100  
Mogontiacum (Mainz, Germany)  
Material: moulded, baked clay  
The Celto-Roman Goddess Epona (goddess of horses), originally mounted on the horse, was lost in ancient times. The figurine was moulded, finished with wooden or metal tools, and then covered with a layer of white clay wash and baked at a low temperature. After baking it was colored with tempera pigments now gone.

ROMAN VESSEL FRAGMENTS  
A.D. 90-2nd century A.D.  
Mogontiacum (Mainz, Germany)  
Material: moulded, glazed, kiln baked clay  
The Romans' love of Greek art is reflected in these terra sigillata (stamped earth) fragments. They are a combination of wheel-work and precise moulding and are glazed. In the kiln they were supported on stilts with temperatures up to 1050°C to 1150°C. Some are impressed with a maker's mark.

PLATE  
2nd century A.D.  
Mogontiacum (Mainz, Germany)  
Material: moulded, glazed, kiln baked clay  

ROMAN VOTIVE CHALICE  
2nd Century A.D.  
Mogontiacum (Mainz, Germany)  
Material: wheel and hand-formed, baked clay  

A female artist shows a pot in a Greek factory; a rarity as males were usually employed as painters (from an Athenian vase, c. 400 B.C.).
TRIPOD VESSEL
Pre-Classic: 800-300 B.C.
Colima, Mexico
Material: part moulded?, baked clay, red slip

FIGURE
Pre-Classic, 800-300 B.C.
Chupicuaro, Mexico
Material: hand formed, baked clay, natural pigments, applique

INCISED HEAD
Classic, 300 B.C. - 500 A.D.
Papantla, Mexico
Material: baked clay, applique

FIGURE
Classic, 300 B.C. - 500 A.D.
Colima, Mexico
Material: hand formed, baked clay, applique

STIRRUP-SPOUTED JAR
Mochica style, c. A.D. 400?
Cañitas, Peru
Material: moulded baked clay, burnished

ZOOMORPHIC JAR
Nasca style, c. A.D. 400?
Cayamarca, Peru
Material: baked clay, burnished

ANIMAL-SHAPED VESSEL
c. A.D. 500-600
Ixtlan, Mexico
Material: hand formed, mottled, baked clay

SEATED FIGURE
Pre-Tarascan, c. A.D. 600-700
Chupicuaro, Mexico
Material: hand formed, baked clay, natural pigments, applique

A pot is being shaped by a wheel, clay kneaded with the feet, and a brick kiln tended (from a tomb painting, c. 1450 B.C., Thebes, Egypt).

MAYAN FIGURINE
14 cm. high
(Page 22)

SEATED FIGURE
9.5 cm. high
(Page 16)

INCISED HEAD
9.5 cm. high
(Page 16)

FIGURE
8.3 cm. high
(Page 16)

ANIMAL-SHAPED VESSEL
9.5 cm. high
(Page 16)
CERAMIC ITEMS
Left: 4.7 cm. high
Middle: c. 5 cm. high
Right: 8 cm. high
Bottom: c. 5 cm. high
(Page 21)

ANIMAL HEAD
C. A.D. 300-600
Monte Alban, Mexico
Material: hand-formed, baked clay, applique

MAYAN HEAD
Late Classic: A.D. 700-900
Izamal, Yucatan
Material: part moulded?, baked clay, red slip

MONKEY WHISTLE
c. 8-9th century A.D.
Flores, Guatemala
Material: baked clay

JAGUAR HEAD
8th century A.D.
Flores, Guatemala
Material: moulded, baked clay

CERAMIC ITEMS
8-9th century A.D.
Flores, Guatemala
Material: moulded, baked clay

FIGURINE FRAGMENTS
c. Classic-Post-Classic Periods
Gulf Coast, central Mexico
Material: hand-formed, baked clay

A variety of clays were used in the Huastec cultural area, near Vera Cruz.

HEAD
C. A.D. 800
Teotihuacan, Mexico
Material: moulded baked clay

The fragment represents the rain god Tlaloc.
Moulding was begun at Teotihuacan, Mexico in the 6th century A.D., and later in Peru and Yucatan. Moulds were for mass production of objects, particularly those with magical or religious significance. Objects were baked or "fired" in either an open fire or in unlined kilns. Some objects were unslipped and finished by burnishing, usually with a quartz stone, pieces of cloth, calabash or leather.

TRI-COLORED SHARDS
C. A.D. 700-1100
Southern Peruvian Highlands
Material: baked clay, natural pigments

These unglazed fragments were hand-decorated by the Huari and Pikillacta and show decorative influences from the Nasca culture of Peru and the Tiahuanaco of Bolivia.
WATER PURIFIER JAR
C. A.D. 1000
Chancay Valley, Peru
Material: baked clay, white wash, natural pigments

The Chancay Culture used such vessels as river water filters. In the desert dryness clear water sweated through the jar into a separate container.

MAYAN FIGURINE
Post Classic: A.D. 900-1400
Tzatan, Yucatan
Material: part moulded?, baked clay, applique

SHARDS
Mimbres culture, c. A.D. 1000
Southeastern New Mexico
Material: earthenware, natural pigments

EFFIGY FRAGMENT
C. 1400-1600
Toqua Site, Toqua, Tennessee
Material: clay, shell
Found in 1946

This cougar? head is unique, since no other like it has been recovered from Toqua. Crushed shell was mixed with local clay to prevent cracks or shrinkage while it was being made, probably as part of a vessel.

CUNEIFORM FRAGMENT
C. 2150 B.C.
Gir`Su, Akkad (Iraq)
Material: baked clay

Clay "writing tablets" were prepared in various sizes for the scribe, who pressed wedge-shaped characters in the wet clay with a beveled reed "pen". Clay contracts were often signed with a cylinder seal engraved with the owner's name and baked to a brick. Cuneiform was used by the ancient Akkadians, Assyrians, Babylonians, and Persians.

EARLY STAMPING SEAL
Asia Minor?
Material: basalt

EARLY CYLINDER SEALS
Babylonian?
Material: basalt

METAL
An essential factor in metal production is fire. Once fire had been controlled it became the basis for better shaping and transforming metallic materials. Early metal objects were hammered to shape, but hammering often caused problems of brittleness. This was subsequently solved by the important discovery of annealing, a heating process to relieve stresses that could occur from the pounding. After it was found that metallic elements could be reduced from ores, piece moulds developed for the molten metal, first of stone, then of fired clay and later for the more sophisticated lost wax moulding process.

WARRIOR AXE
C. 1500-1200 B.C.
Glamorganshire, South Wales
Material: cast, bronze

The axe was possibly cast by the cire-perdue or lost wax method; the blade was cold hammered to a sharp edge. Originally it was attached to a wooden shaft (handle) by a leather thong tied through the side loop.

ROMAN COINS
305 B.C. - 44 B.C.
Material: Silver, bronze

Apparently the earliest coinage was produced by the Lydians in northern Anatolia, Asia Minor, who, around 700 B.C., issued coins for commercial use. Pure silver was produced by heating impure silver with materials to absorb the impurities, particularly lead. A blank of metal was pressed by punch blows into a bronze or iron mould. The pieces were stamped according to weight, purity, and the issuing authority. Often it was thought unimportant to strike a well-centered impression on the coin.

ROMAN CHARM
Material: moulded bronze

ROMAN NAILS
C. 1-2nd century A.D.
Mogontiacum (Mainz, Germany)
Material: wrought iron

ROMAN FIBULAE
Material: bronze

One of the first safety pins!
RITUAL KNIFE
Lambayeque style, 12th century A.D.? Material: cut, hammered, soldered, sheet gold, gold wire, beads

Metalworking in ancient Peru was a sheet technology and the main type of decoration was embossing. Native gold was refined and then smelted in an open terracotta furnace. Soldering was a combination of heating, hammering and welding gum to join the pieces of sheet gold.

BRICK
In ancient Egypt, sun-dried brick developed from a need for more solid dwellings than those made of clay-plastered reeds or twigs. The brick was easily replaced, kept the house cool in summer and warm in winter. Present day villagers construct houses with sun-dried brick as was done 6000 years ago.

Nile mud, a mixture of clay and sand, varies. When the percentage of clay was high a binding material was often unnecessary, but when low chopped straw and sometimes animal (donkey) dung and other organic materials were added to increase its strength and plasticity. The mud was broken up with a hoe, water added and kneaded into the mixture with the feet to the correct consistency. A brickmaker packed the mud in wooden moulds which were then lifted off so the bricks could dry in the sun.

HOG-BACKED BRICK
c. 7000-8000 B.C.
Jericho, Palestine
Material: clay
This plano-convex sun-baked brick was recovered from a pre-pottery neolithic settlement beneath the biblical city of Jericho. It is indisputably the oldest brick ever found to date and possibly one of the first ever made.

SUN-BAKED CONES
c. 4500 B.C.
Ur, Mesopotamia
Material: clay, earth pigments
Cones such as these were hand-rolled, dipped in color and inserted side by side in thick mud plaster to create patterns. Some of the original red, buff, and black paint can be seen.

SUN-DRYED BRICK
c. 1413-1377 B.C.
Nubia, Egypt
Material: clay, straw
Impressed on the brick is the cartouche of Amenophis III and Queen Ti, rulers of ancient Egypt and parents of the famous heretic King Akhenaten.

BABYLONIAN TABLET
c. 1323-1298 B.C.
Material: clay
This is an inventory of the sheep and goats entrusted to a Mr. Rabasha-Ninurta and dates to the reign of a Kassite King of Babylon. The sun-baked tablet was fired after being found to prevent it from crumbling.

INSCRIBED BRICK
c. 2000 B.C.
Ur, Mesopotamia
Material: clay
Dating back to the Elamite Dynasty, the kiln-fired brick is inscribed in Sumerian pictographic script.

BABYLONIAN BRICK
c. 604-562 B.C.
Babylon, Mesopotamia
Material: clay, straw
Found in the ruins of Babylon, the kiln baked brick carries the cuneiform inscription: Nebuchadnazar, King of Babylon, beautifier of the Temple of Esagil and Ezida, first son of Nebuplaxarr, King of Babylon. Impressions are seen from the straw layers that separated the bricks in the kiln.

ROMAN BRICK
A.D. 79
Pompeii, Italy
Material: clay, crushed fired brick
Kiln-baked brick became popular and replaced sun-dried brick apparently at the time of Augustus (63 B.C. - A.D. 14).

As for sun-dried brick, in the late century A.D. Vitruvius wrote that it was better made of white clayey earth, red earth, or rough gravel to be strong, light and easy to manage, and was best produced two to five years in advance for still greater durability.

Kiln-baked brick became useful as the top layer (coping) for mud-brick walls, columns and floors. Bricks were used for walling and vaulting, but covered with plaster or marble slabs as the Romans thought bricks unattractive.

ROMAN BRICK
A.D. 72
Rome, Italy
Material: clay, crushed fired brick

The triangular-shaped kiln-fired brick is from the original construction of the Colosseum in Rome.

ROMAN ROOF-TILE
c. 1-2nd century A.D.
Mogontiacum (Mainz, Germany)
Material: kiln-baked clay

Impressed on the surface is LEG. XXII, indicating it was produced for the 22nd Roman legion.

Terracotta roof-tiles were very popular. Similar to the Greek method, the tiles were butted together on the roof and the joints covered by separate semi-circular cover-tiles tapered to over-lap the adjoining cover-tiles.

ROMAN ROOF-TILE
C. 1-2nd century A.D.
Mogontiacum (Mainz, Germany)
Material: kiln-baked clay

A dog left its paw print to history!

TEXTILES
Pre-Columbian Peruvian textiles display some of the finest weaving techniques in the world. Basket weaving, requiring no preparation other than splitting plant fibers into strips for plaiting, probably predates textiles and no doubt sparked the idea for textile weaving.

By 1000 B.C., the settled agricultural peoples of Peru were shearing wool from the llama, vicuna and alpaca and preparing it for the widely used backstrap loom. At the beginning a fragile twig was used as a spindle to produce a coarse and uneven thread. Later small ceramic whorls were added to a finely balanced spindle. Some threads were so finely spun that modern machines cannot copy them.

TEXTILE FRAGMENT
Nasca culture, c. 400-1000 A.D.
Paracas, Peru
Material: wool, natural dyes

Textiles were made in narrow strips. When wider cloth was desired, the narrow pieces from the loom were hand sewn together side by side. The pattern of one strip did not have to match the pattern of the adjacent strip.

SPINDLE WHORL
Pre-Toltec
Teotihuacan, Mexico
Material: burnished baked clay

SPINDLE WHORLS
Cholula Pyramid, Puebla, Mexico
Material: moulded baked clay
ANCIENT EGYPTIAN FAIENCE

The invention of faience in Dynasty II greatly influenced the jewelry industry. Small objects, ornaments, pendants, and scarabs were made in pottery moulds and often engraved with a point when dry for finer detail.

VASE FRAGMENTS
c. 2065-1785 B.C.
Luxor, Egypt
Material: faience

Ancient Egyptian faience is made from powdered quartz and is not a glazed pottery or porcelain; it comes in three major types:

a) a body material (core) of granular texture, varying in color from white pale brown and yellow to slightly blue or green that is coated with a vitreous alkaline glaze (a true glaze).

b) a single self-glazing mixture where the copper color rises to the surface through capillary action that results in a single semi-glass fused vitreous mass.

c) a vitreous glaze applied to carved steatite (soapstone) objects.

SCARAB
Reign of Tuthmosis IV, Dyn. XVIII
Egypt
Material: yellow faience

The most common type of amulet was the scarab beetle that was so closely associated with the life-giving properties of the sun. Made of faience or stone, the undercarriage usually had incised hieroglyphics, figures, animals or designs, representing magical formulae, royal or non-royal names and dates.

HEART SCARAB
c. 1585-1050 B.C.
Abydos, Egypt
Material: faience

The scarab was placed over the heart of the deceased and stitched through the holes to the linen shroud.

ANUBIS AMULET
Sakkara, Egypt
Material: faience

The beautiful and bright green, blue or greenish-blue color results from using copper oxide in the glaze or mixture.

GODDESS NEFERTUN AMULET
Sakkara, Egypt
Material: faience

NECKLACE WITH WEDJAT-EYE
Egypt
Material: faience, mummy beads

The Wedjat-eye on this faience necklace was moulded, dried, coated with a glaze wash and fired. The amulet represents the eye of the god Horus and is a symbol for sacrifice. It was thought to protect the wearer from sickness and restore the dead to life.

NECKLACE
Egypt
Material: mummy beads

Great quantities of beads were made from pulverized quartz mixed with lime or alkali; these were formed around an axis and rolled on a board. The long cylinder was then sectioned into desired sizes, dried, glazed and fired, or after baking then dipped in a glaze wash and fired again. The threading holes with slight or no discoloration of the inner surfaces suggest the beads were strung on threads or other material which burned out in the firing. However, some beads were pierced, probably with a wire or bone awl, while the paste was soft.

USHABTI
Egypt
Material: faience

Ushabtis, or "answerers", were magically animated in the hereafter to serve the deceased. The moulded faience figures are in the conventional coirride pose, with crossed arms holding hoes.

USHABTI
c. 1085-960 B.C.
Thebes, Egypt
Material: faience

The figure was recovered from the lower court, Temple of Hatshepsut at Deir el-Bahri.
GLASS

Mould-blown glass was probably first invented in Syria in the 1st century B.C. and free-blown soon thereafter. Simple free and blown-moulded vessels were mass produced by ancient glass-makers and swiftly spread throughout the Roman Empire. Palestinian and Syrian glass is susceptible to “weathering” that causes flaking in thin powdery layers, creating an iridescence.

PENDANTS
Arikara culture, c. A.D. 1790-1830
Corson County, South Dakota
Material: glass trade beads
(red, white, blue)

To make pendants, colored seed beads were pulverized to powder and moistened to a paste. The paste was shaped with a tool, or perhaps a clay mould, and fired on a copper baking pan. These pendants were found associated with burials at the Leavenworth site.

BOTTLE
c. 2-3rd century A.D.
Syria
Material: free blown, glass

UNGUENT BOTTLE
c. 2-3rd century A.D.
Syria
Material: free blown, glass

GLASS FRAGMENT
Roman
Material: mould blown glass

A man blows glass in front of a three-storied glass furnace (from an Italian manuscript, 12th century).

GLASS FRAGMENT
c. 5.7 cm. diameter
(Pages 30)

BOTTLES
Left: 7 cm. high
Right: 10 cm. high
(Pages 30)

OIL LAMPS
(Page 14)
SHELL BEADS
0.5 cm. - 1 cm. diameter
(Page 10)

ROMAN LEGIONARY SHOE SOLE
20.3 cm. long
(Page 12)

JUGLETS FROM PALESTINE
Left: 14.5 cm. high
Right: 12.5 cm. high
(Page 13)

ROMAN JUG
10.5 cm. high
(Page 14)
ROMAN VOTIVE CHALICE
12.7 cm. high
(Page 15)

ROMAN NAILS
Left: 20.3 cm. long
Right: 15.3 cm. long
(Page 25)

ROMAN VESSEL FRAGMENTS
(Page 15)

BABYLONIAN TABLET
7.6 cm. high
(Page 25)

INSCRIBED BRICK
28 cm. high
(Page 25)

SUN-DRIED BRICK
38 cm. long
(Page 25)
Officers during 1979-1980:
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