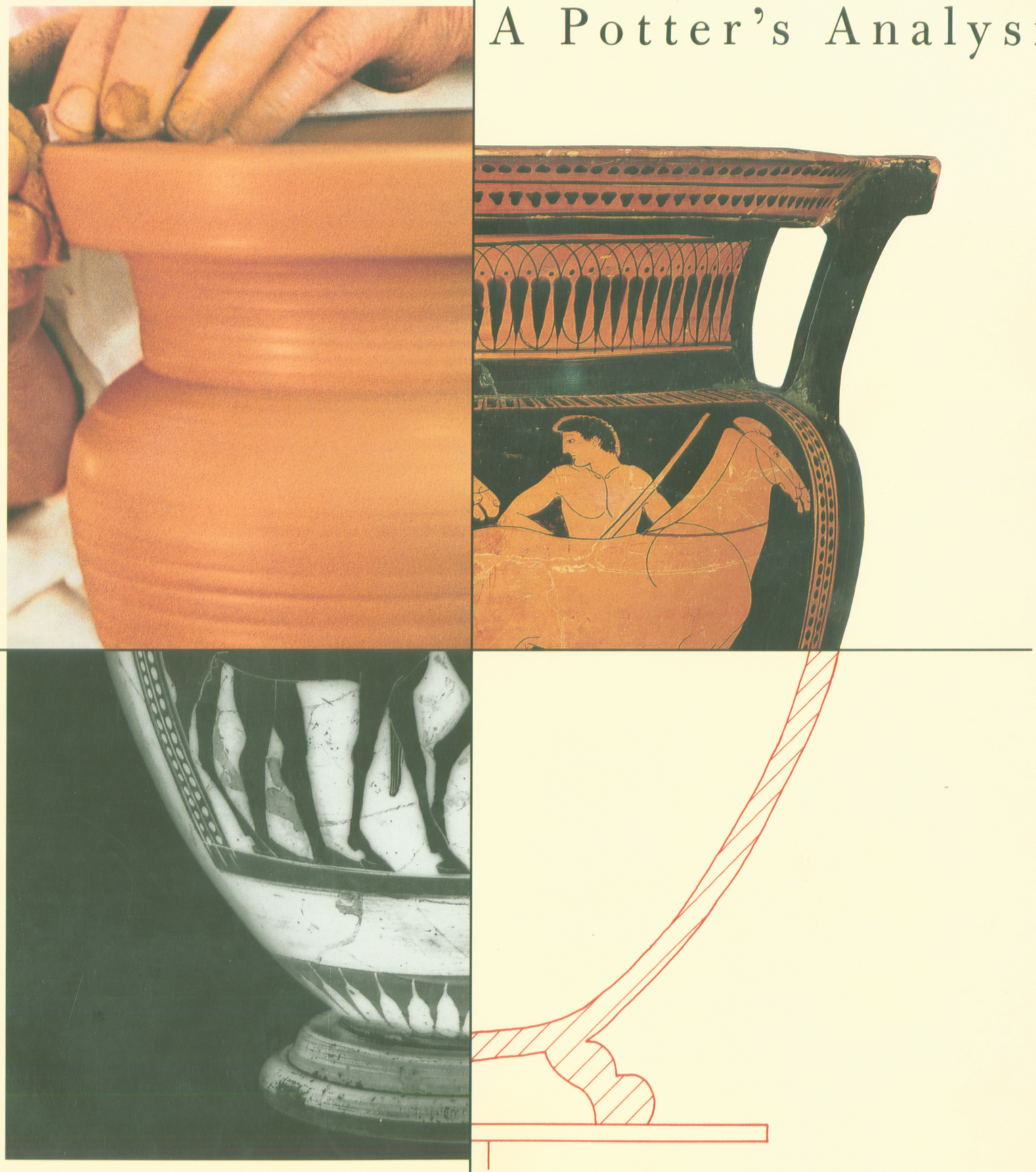
Athenian Vase Construction

A Potter's Analysis



Toby Schreiber

Modern studies of ancient Greek vases have most often focused on the iconography of the painted images. Yet we know that in antiquity the potting of the vases was held in at least as much esteem as the painting, and sometimes potters proudly signed their wares. This book analyzes the construction methods used by Attic potters in the forming of their vases.

Based on her study of Greek pottery sherds and vases and on her profound hands-on knowledge of pottery construction techniques, including experiments with the potting of Attic shapes, Toby Schreiber describes how ancient Greek potters constructed their vases. Drawn in large part from vases and fragments in the collection of the Getty Museum, the many photographs that accompany the text show how much even seemingly insignificant sherds may reveal about technique when studied by someone knowledgeable about potting. The drawings—all done by the author—demonstrate step by step with admirable clarity how the potter executed his craft.

The in-depth look at the techniques of pottery-construction techniques presented in this book is bound to increase modern admiration for the abilities of ancient Greek potters.

Written by a master potter, this is a book both for those who know little or nothing about potting techniques and for those who already have an understanding of these matters.

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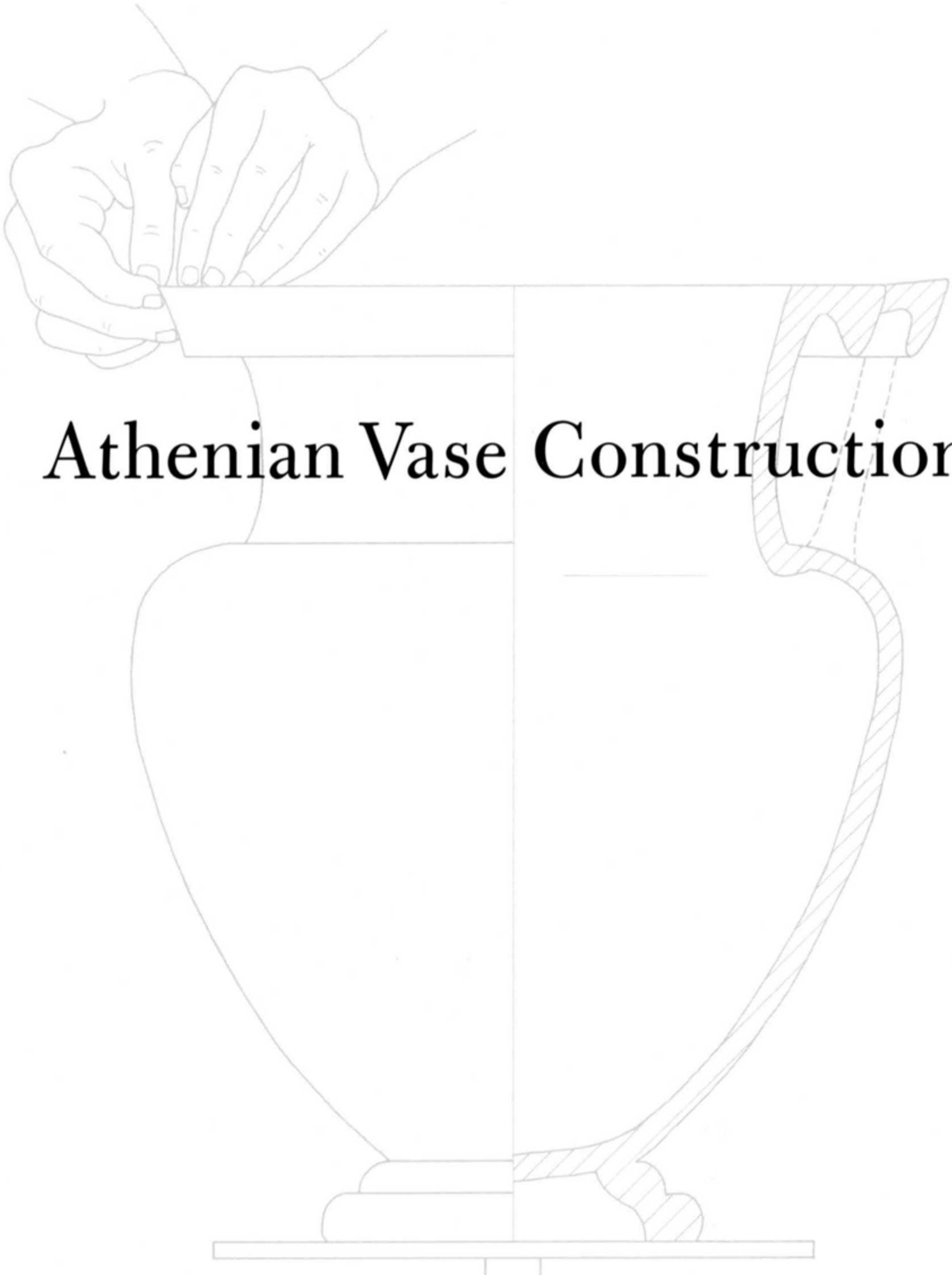

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Toby Schreiber

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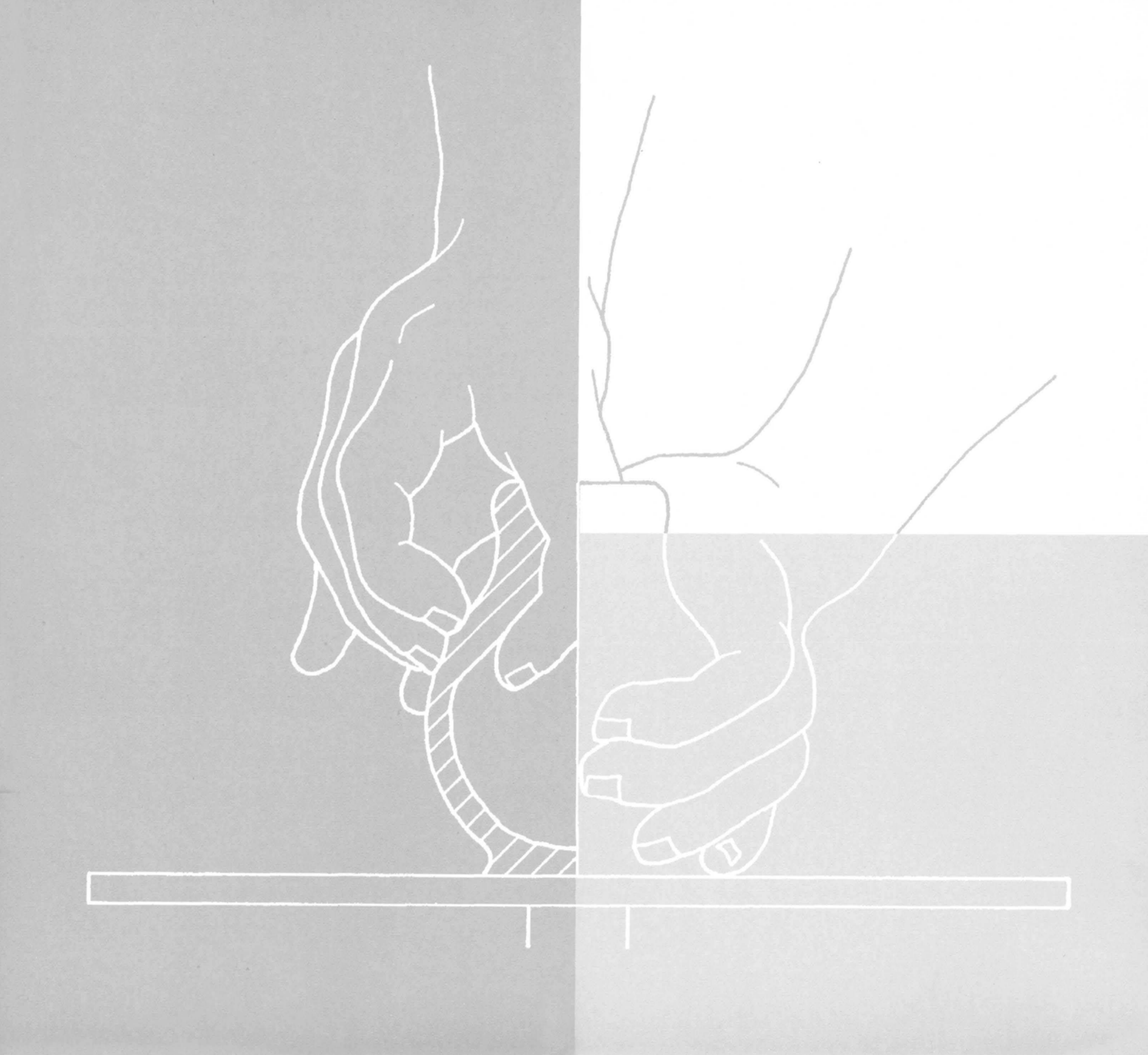

Foreword

For more than twenty years the gifted Malibu ceramicist Toby Schreiber has been working with the collections of the Antiquities Department of the J. Paul Getty Museum to understand and define the ancient potters' techniques in the production of the Greek and South Italian vases. With her extensive practical experience in the manufacturing of ceramics, she has provided valuable advice and observations on the collections as they have grown, and she has assisted the specialists in the department in comprehending the art of vase construction. The appearance of her original article, "Handles of Greek Vases," in *The J. Paul Getty Museum Journal* in 1977, demonstrated at once the importance of the potter's perspective in understanding the production of these vessels. Her demonstration of the potting of a Greek kylix, featured prominently in the Museum's interactive educational program on Greek vases, was enjoyed by many thousands of visitors over the last ten years. As her research progressed to the construction methods for more complex forms, such as the fragmentary black-figured psykter-krater in the Museum's collection, Toby Schreiber creatively explored the uses of sophisticated scientific equipment, such as the CAT scanner, and radiographic analysis to gain even greater understanding of the ancient potters' craft. Her studies were not limited to the collections in the Getty Museum. Ever in search of unusual or puzzling features on ancient pots, she has visited major collections of vases in the United States, Canada, and Western Europe. Finally, the results of her years of experience and investigation are presented in this masterful publication. All of us who have for many years benefited from Toby Schreiber's expertise and enthusiasm have long recognized the need for such a book and knew that it could be written only by this remarkable and dedicated artist.

Marion True
Curator

Preface

The study of Athenian pottery is focusing more and more on the process of production and on technical analysis. Decorated Greek vases are of exceptional quality, and the potting has greatly influenced their overall quality. The purpose of this study is to analyze in depth the techniques used in forming each of the major types of Attic decorated vases produced from early black-figured through the decline in red-figured vases (610 to 390 B.C.). Decoration and firing are considered only as they pertain to the forming process.

While individuality was apparently not encouraged in Attic workshops, some potters have recognizable styles, just as do some vase-painters. Some examples reveal what are undoubtedly individual potters' idiosyncratic methods, and these are duly noted. This study does not, however, single out individual potters, nor pursue their particular styles of potting. Sometimes several examples of the result of a specific construction method are included.

References in ancient literature, carvings in gemstones and on stelae and statues, drawings on vases and plaques of potters at work, and the vases themselves have served as sources of information on the techniques of vase making, as noted by Beazley and by Richter.[1] The literature that has been left to us from antiquity on Attic vase forming is meager at best[2] and does not give us detailed knowledge. The drawings on vases and the carvings on plaques of potters at work[3] give us little information on construction technique. There is, in fact, much speculation over exactly what is represented by some of the drawings.

Of the several dozen ancient depictions in various media of potters and vase-painters at work,[4] almost all show them to be men. The only exceptions are on the Caputi hydria in Milan (see FIG. 1.2), which illustrates a woman who may be painting a vase, and on a stela in the Metropolitan Museum of Art in New York, which Richter suggested may depict a woman potter. Consequently, all references here to potters are in the masculine gender.

Abundant material on the Athenian pottery industry dealing with the history of vase-painting, iconography and mythology, potters and painters, workshops and their patrons, the Attic gloss (glaze), and vase-painting methods can be found elsewhere. Scant material, however, has been published on the forming techniques, and most of that has been written by archaeologists and art historians. Apparently no seasoned potter has ever before published a comprehensive study of the techniques used by the Greeks to form their many pottery shapes. This book is written by a practicing potter with extensive, firsthand knowledge of wheel-thrown vase-making techniques, and it is based on a potter's knowledge of the fine details of the craft. A firsthand knowledge of contemporary pottery techniques lends credence to the belief that wheel-thrown pottery making has changed little since the invention of the potter's wheel.[5] The importance of firsthand knowledge was noted by Richter,[6] who as an archaeologist felt her lack in this area and attended a pottery school to learn the basics. Noble, too, recognized the need to pursue further the forming techniques used in making Greek vases.[7]

Fragments (potsherds) are a most valuable source of practical information that has largely been ignored as a source for construction techniques. Close scrutiny by someone versed in the art of potting can pick up both obvious and subtle features about the creative process that cannot be seen by any other method available to us. The fragments allow us, unencumbered by the rest of the vase, to examine closely the throwing, joining, and turning processes used by Greek potters and to scrutinize the inside of vases with ease. Fragments reveal in detail differences in surface treatment, clay composition, wall thickness of various vase parts, and forming and firing flaws; and they can reveal particulars about different join methods, strengths and weaknesses in joins, and comparative thicknesses of clay in joins. Fragments make possible a close comparison of similar as well as different vase types. Fragments may aid in identifying the work of a specific potter.

The author had the good fortune of working in a small, family-run, modern Greek pottery shop in the Athens suburb of Amarousi in 1977 and of visiting the same shop again in 1994. Working in such a setting afforded insight into traditional methods of Attic ceramic manufacturing. Appropriately for a study such as this, the climate there is similar to that at her studio in Malibu, California. Most of the techniques presented for the various types of vases studied have been tried out by the author.

The modern Greek clay bodies used for these experiments came from a ceramic supply shop in Athens or from either of two pottery supply shops in Amarousi. Fine-grained clay from a supply house in Los Angeles and raw clay from Athens not mixed with other clays were also used. The book deals only with Attic fabrics and not with those of South Italy, Boeotia, or other areas unless they are pertinent to understanding Attic vase construction.

A certain amount of repetition in the various chapters has been unavoidable in order to complete the continuity of construction of each vase. Descriptions for throwing are for a right-handed potter throwing on a potter's wheel that turns counterclockwise.

There is a good deal of discrepancy in the names applied to vases in antiquity. Consequently, the names in this study are those currently in use and generally accepted in modern times. They do not necessarily reflect the ancient nomenclature, which is not always known today.

The word *gloss* is used throughout this book to connote the black surface layer of fired, decorated Attic vases. This black layer has often been called "black glaze." However, the substance contains insufficient silica to justify the term *glaze*, and the firing temperature is not high enough to create the fusion that characterizes a true vitreous glaze.[8] Glaze is the siliceous, vitreous layer covering most porcelain, stoneware, and earthenware, in contrast to the surface coating of Greek vases, which is made from clay "slip" that has been very finely levigated and probably deflocculated (peptized) to minimize settling out. "Finely levigated slip" or "levigated slip" is used herein to describe its unfired state.

The drawings and photographs accompanying the text are meant to facilitate the understanding of the written descriptions of Athenian vase construction, particularly for those who absorb information more readily in visual form.

All photographs of vases and fragments are of material in the Getty Museum unless otherwise specified. Except where noted, the author has examined, drawn, and photographed all of the material shown in this work.

All illustrations are drawn from the observer's point of view, not from that of the potter seated at his wheel, the only exceptions being those showing the creation of certain handle details (*ills. 2t, 2u, 2z*). The left half of most of the illustrations is a cutaway section of the vessel.

The information in this book will allow students of Greek art, scholars, archaeologists, potters, museum personnel, teachers, and art educators to understand better the detailed technicalities of Athenian vase making and the observable remains of same.

Readers are urged to peruse the chapter on Forming Techniques to familiarize themselves with the general technique of throwing before looking up the construction techniques for a specific vase.

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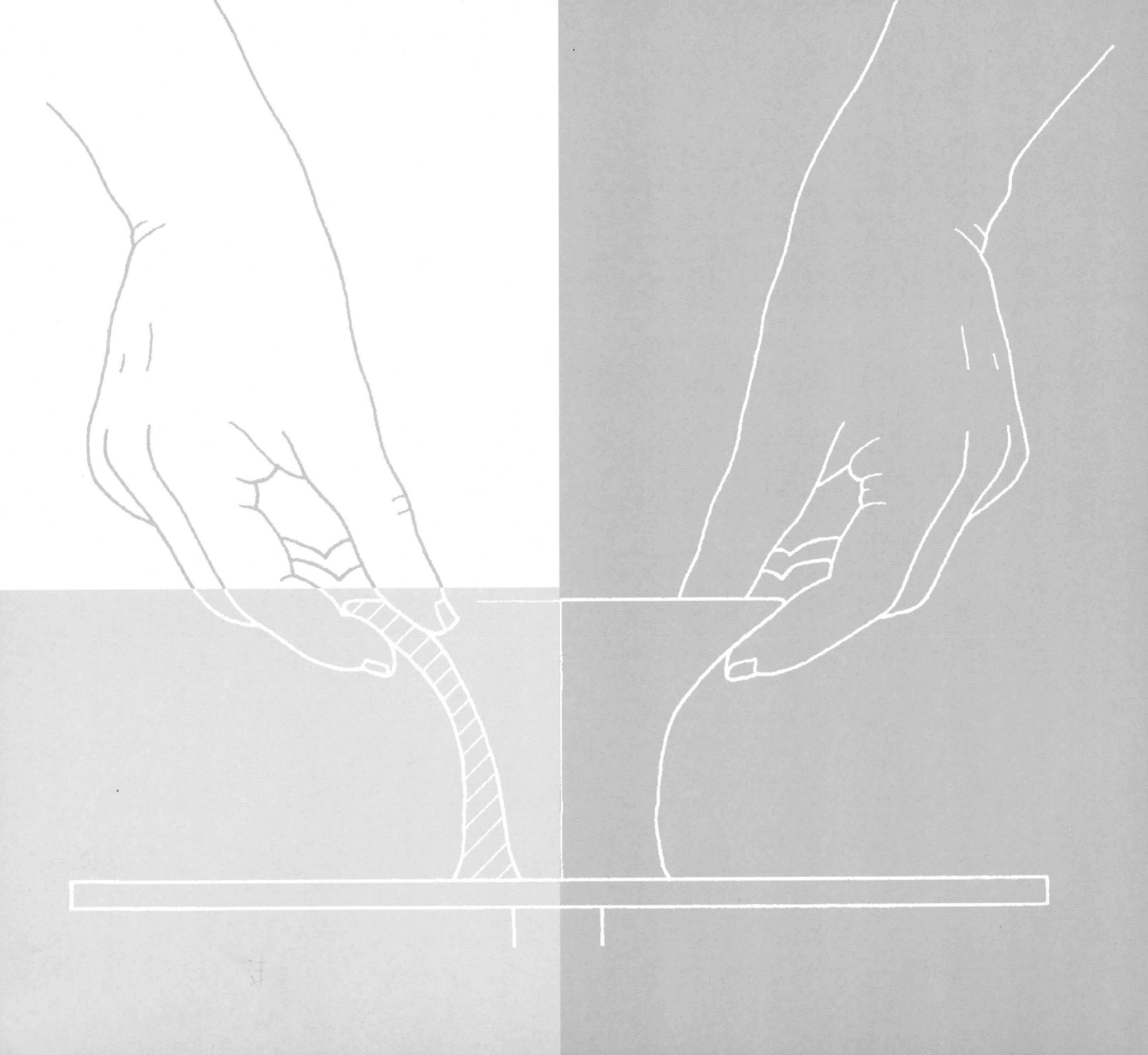

Acknowledgments

I should like to express my gratitude to Jiří Frel, the first Curator of Antiquities at the Getty Museum, for allowing me access to its study collection of fragments and vases. His encouragement, enthusiasm, and faith were important in the early years of work on this project. I also wish to thank Marion True, current Curator of Antiquities at the Getty Museum, for allowing me continued access to the study collection, for clarifying certain facts, and for allowing me access to information in her doctoral dissertation.

Many other curators and scholars at museums in Canada, Europe, and the United States have generously allowed me access to their study collections, and I am pleased to have this opportunity to thank them: Dietrich von Bothmer, Distinguished Research Curator, Metropolitan Museum of Art, New York; Jacques Chamay, Conservateur des antiquités grecques et romaines, Geneva; W.D.E. Coulson and Jan Jordon, American School of Classical Studies at Athens; Ursula Knigge and Klaus Vierneisel, German Archaeological Institute, Athens; Neda Leipen, Curator of Classical Art, Royal Ontario Museum, Toronto; Dieter Ohly and Friedrich Wilhelm Hamdorf, Staatliche Antikensammlungen, Munich; Ricardo Olmos Romera, Conservador de la Sección de Antigüedades griegas y etruscoitálicas, Museo Arqueológico Nacional, Madrid; Cornelius C. Vermeule III, Curator of Classical Art, Museum of Fine Arts, Boston; and Michael Vickers, Keeper of Greek and Roman Antiquities, Ashmolean Museum, Oxford.

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The contributions of Andrew J. Clark have been most appreciated. He guided me to invaluable sources of material and gave freely of his time and knowledge of Attic vases to discuss, critique, and read especially the early parts of the manuscript, all of which enhanced this work. I am indebted to him for his advice, assistance, support, and encouragement.

My sincere thanks are due the outside reader of the manuscript, whose suggestions and recommendations were of great help.

In the Getty Museum, I would like to thank the following for their valuable help in putting this book together. In the Department of Publications, Christopher Hudson and Mark Greenberg for guiding the project; and Benedicte Gilman, a talented, capable, and dedicated lady, for meticulous and knowledgeable editing and for always being pleasant and patient during the arduous process of refining such a complicated work. In Trust Publications, Vickie Sawyer Karten, whose creative design has made the book artfully attractive and logically organized; and Elizabeth Chapin Kahn, for carefully and skillfully coordinating the many facets of such an involved production.

Above all, I wish to express my gratitude to my husband, Richard R. Schreiber, M.D., for his constant encouragement, support, and patience. He contributed many valuable interpretations that led to additions, clarifications, and revisions. Without him, the book would never have been started, or completed.

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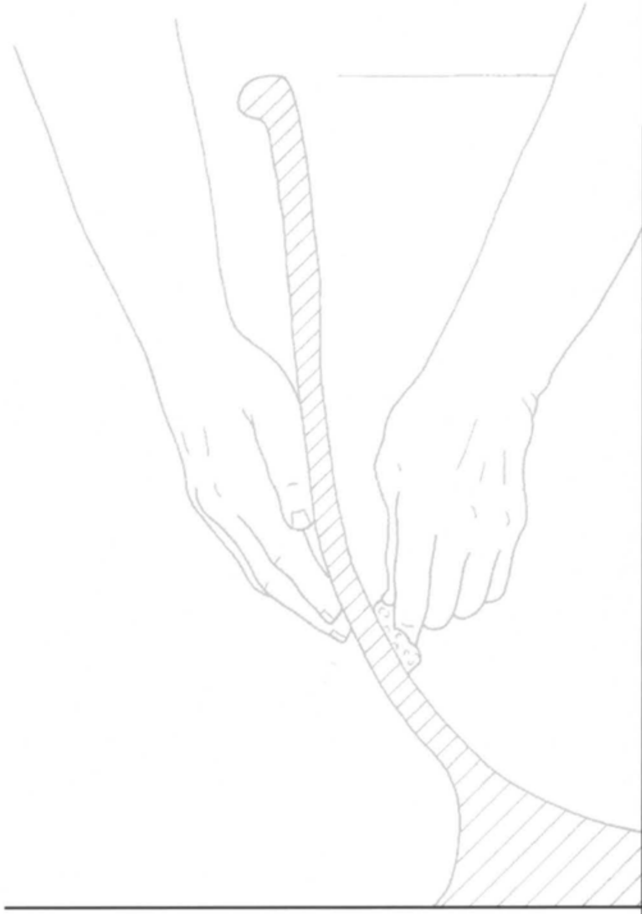


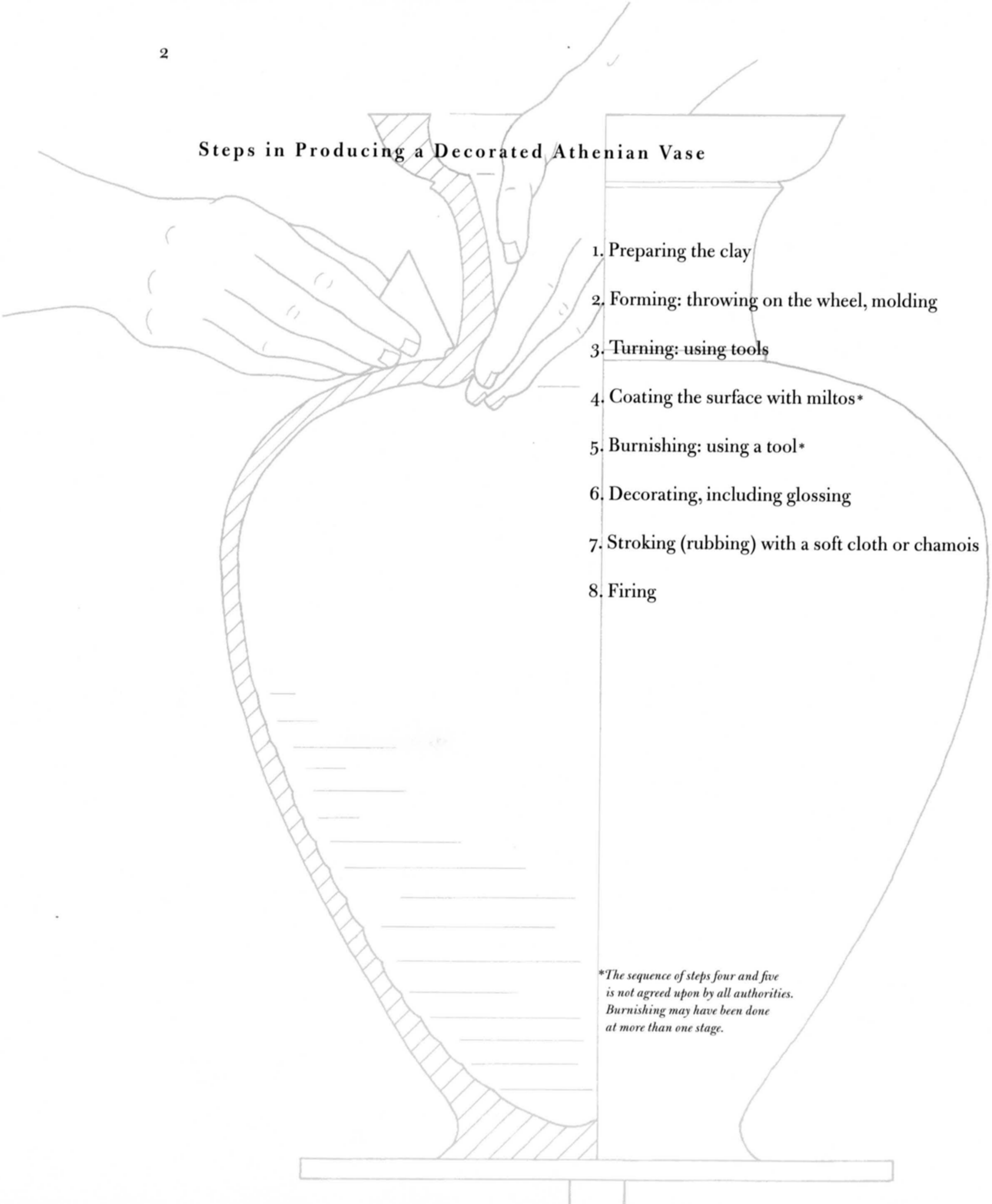
The Basics

Part One

The general techniques involved in potting, and specifically in the potting of Athenian vases, are described in part 1. Separate chapters focus on clay as a raw material; the techniques of forming vases; modern Attic potting; various treatments of surfaces; gloss and firing methods; and, finally, the flaws and defects that sometimes occur for even the most accomplished of potters.

Part 1 is meant to give readers who are not familiar with potting techniques enough general information to enable them to understand the detailed and specific descriptions that follow for each vase shape in part 2 of the book.

Steps in Producing a Decorated Athenian Vase



1. Preparing the clay
2. Forming: throwing on the wheel, molding
3. Turning: using tools
4. Coating the surface with miltos*
5. Burnishing: using a tool*
6. Decorating, including glossing
7. Stroking (rubbing) with a soft cloth or chamois
8. Firing

**The sequence of steps four and five is not agreed upon by all authorities. Burnishing may have been done at more than one stage.*

1. Clay

Origin, Composition, Properties, Purification

Knowledge of the origin, composition, properties, and purification of clay, especially Greek clay, is basic to understanding the techniques of Attic vase making.

The crust of the earth is made up of various materials, the most abundant of which are alumina and silica in the form of feldspathic rock.[1] As glaciers, earthquakes, growing plants, wind, water, and temperature changes work on feldspar, it breaks down and erodes, allowing the soluble materials to dissolve and wash away. Alumina (aluminum oxide) and silica (silicon dioxide) are left, and they, along with water, make up the main ingredients of clay in the form of hydrous aluminum silicate, which has the chemical formula $Al_2O_3 \cdot 2SiO_2 \cdot 2H_2O$. The potter variously refers to this mineral as kaolinite, kaolin, or China clay. It is the purest form of natural clay.

Clays mined from the location where they decomposed from the parent rock are called primary or residual clays. They are usually white in color and mostly coarse-grained in texture. They are found in pockets and are relatively free from mineral impurities. Rare in comparison to secondary clays, primary clays are extremely difficult to work or mold by themselves, since they have very little plasticity. They require the addition of a more plastic material to turn them into a workable substance called a clay body.

The vast majority of clays have been transported by water and wind from their place of origin to the stratum where they have finally come to rest. These clays are called secondary or sedimentary, and their composition varies considerably, depending on the parent rock and the impurities gathered along the way. As secondary clays are transported, they are ground into smaller and smaller particles. Their final deposition is often carried out by moving water. As the water in which they are transported slows down, the coarser particles settle while the finer ones remain in suspension until quieter waters, such as a lake, are reached. Secondary clays are thus sorted into various types. Very fine-grained clays, such as those around Athens, may be found at the end of the erosion and transportation chain, often in ancient lake or marine beds. The lands surrounding the Mediterranean Sea were a marine environment in ages past.

Secondary clays gather impurities during transportation. These impurities affect the clay in various ways, one of which is to impart color. Brick-red, brown, and buff-colored clays have picked up various amounts of iron, a common impurity. Iron is found in various clays throughout Greece and the surrounding islands; it is the ingredient giving raw and fired Attic clay its rich orange-red color. Another impurity in clay—organic matter—accounts for the gray, green, blue, and black colors in some raw clays.

Organic matter also affects plasticity, the property in a moist clay that allows it to be manipulated into a shape and retain it without returning to the original form when pressure is released. Bacterial action working on the organic matter breaks it down into smaller particles; it is the fineness of the grains and their shape that give plasticity to clay.

The mineral illite in a clay also adds to its plasticity. It is a fairly common mineral, which is prevalent in marine sediments,[2] including Attic clay.[3] Illite settles in the "fines,"[4] those particles smaller than average in a mixture of particles of various sizes.

Aging and souring aid in creating plasticity. Aging is the slow penetration of an adequate amount of water between the tiniest particles of clay, which compresses the clay by virtue of its own weight. Well-compressed clay is strong clay. Souring involves bacterial action breaking down the natural organic matter in a clay, which releases amino acids. If the clay is aged adequately, these acids flocculate (aggregate, or coalesce) the tiny particles, again increasing the strength of the clay. Most Greek vases were thrown on the potter's wheel, and successful throwing demands a clay with good plasticity. (Only a few types of Attic vases and some sections of vases were regularly made in molds.)

Clay varies greatly in strength, another property vital to the potting process. Strength is influenced by many conditions. Generally, untempered clay, such as that used by the Athenians in their decorated wares, tends to be stronger than tempered clay.[5] Tempering is the addition of nonplastic material, such as sand or grog. Smallness and uniformity of grain size affect strength.[6] Clay for throwing on the wheel needs to have a high proportion of fine particles. Uniformity of grain size allows the clay to be packed more closely together, giving it strength.

Clay particles are flat and roughly hexagonal in shape; their flatness causes suction between the particles when they are lubricated with water, giving them a strongly adhesive quality. They tend to orient themselves in an overlapping, scalelike pattern.[7] A tough clay may be manipulated and twisted into tortuous shapes without breaking. It can be pulled up into fairly thin walls without collapsing. Strength is also influenced by porosity. Porosity allows both moisture to pass through the clay walls during drying and vitrification to take place during firing. It also allows a fired body to absorb moisture. A fired clay with some degree of porosity is stronger than one with no porosity, which is brittle.

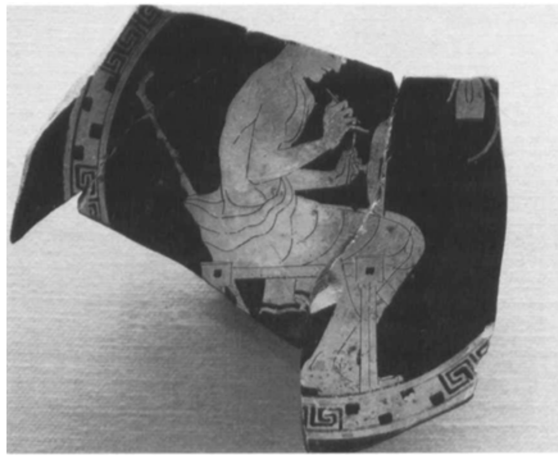


FIG. 1.1

In wet clay *water of plasticity* (lubricating water) surrounds each clay particle, enabling the particles to slide past one another. Water of plasticity evaporates from clay as it dries in the air (see also p. 27). *Pore water* (atmospheric water) is locked inside the pores of dry clay, held there by the surface tension of the water layer surrounding each particle. *Bound water* (chemically combined water) is part of the chemical structure of the kaolinite formula (see p. 3). Pore water is burned out in the early stages of firing, up to 120°C, leaving open pores, while bound water is burned out at 600°C.[8] As the temperature rises above 600°C, the alkalis cause the feldspathoids and silica to become fluid. The resulting molten silicates start to fill the air spaces, causing the ceramic piece to shrink.[9]

The temperature at which Attic potters fired their decorated ware left it adequately porous to give it ample strength, yet allowed the fired clay to absorb moisture. The toughness of Greek clay is illustrated on a kylix in Boston (FIG. 1.1), on the Caputi hydria in Milan (FIG. 1.2), and on a bell-krater in Oxford (FIG. 1.3), which all show vase-painters taking no special precautions holding unfired "green ware" or balancing it on their laps while they decorate it.

FIG. 1.1 *Vase-painter decorating kylix, holding edge of unfired cup on his lap.*

FIG. 1.2

A significant attribute of Attic clay is the luster it acquires when it is rubbed at the leather-hard stage. Illite clays tend to have a natural luster, and the presence of illite in Attic clay accounts for its ability to luster well.[10] For the pottery-shop proprietor in Attica, this attribute was important for his painted pottery. Attic clay, especially that found near Athens, is plentiful, uniformly fine-grained, strong, and plastic. It has good porosity and lusters well when rubbed—it is a superb natural clay for the vases created by ancient Attic potters.

Modern Attic potters get their clay from a variety of places both in Attica and on Euboea. In Attica red clay comes from Kalogrezas and Boyati, white clay from Iraklion.[11] Buff-colored clay comes from Halkida on Euboea.[12] Clay is also obtained from Cape Kolios on the southeastern coast of Attica. Potters often mix clays to get a better consistency.

Freshly mined clay contains foreign matter, which must be eliminated before the clay is useful to the potter. A few modern workshops still purify clay

FIG. 1.2 *Vase-painter holding edge of kantharos foot on lap. Woman vase-painter at far right.*

FIG. 1.3 *The vase-painter is taking no particular precautions to protect the unfired rim, which rests in his lap.*

FIG. 1.4

FIG. 1.5

FIG. 1.6

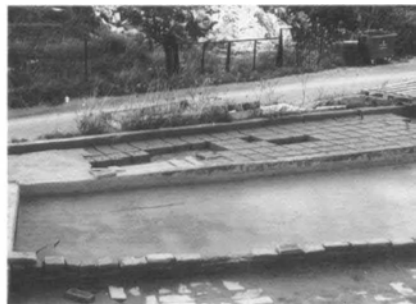


FIG. 1.7

the traditional way, although the old cleansing process is rapidly being replaced by modern machinery. In the traditional method, freshly mined raw clay is brought to the pottery shop and piled up in the pottery yard (FIG. 1.4). The clay is shoveled into a large mixing tub called a *karouta*,[13] which is below ground level. There it is mixed with enough water to make a thin, soupy mixture called slip. An impeller blends the batch (FIG. 1.5). Impurities, such as leaves and small sticks, float to the top and are removed. This process may be repeated several times.

The thin clay slip is then pumped into a deep settling basin called a *tsekouri*, where unwanted heavy clay particles sink to the bottom (FIG. 1.6). The slip is finally pumped into shallow, brick-lined basins called *aplostres*,[14] which have been sprinkled with a thin layer of ashes from the kiln to help prevent sticking.[15] In these final evaporating basins the clay settles, and the excess water collects on the surface. To facilitate the quick removal of the water, it may be drained off through several small holes at the edge of each basin.[16] The clay remains in the basins until it solidifies to a malleable stage, at which time it is cut into squares of a size convenient to handle (FIG. 1.7). It is then removed to be wedged, or pugged, and stored and aged until ready for use. Scrap clay and broken or misshapen, unfired pieces are reusable and are incorporated into the refining process along with the freshly mined clay (see FIG. 1.4).

FIG. 1.4 *Mined clay and scrap "green" (unfired) clay piled in modern Greek pottery yard.*

FIG. 1.5 *Circular pit in which clay is mixed with water by an impeller.*

FIG. 1.6 *Mixture is pumped into the first of several settling basins for purification.*

FIG. 1.7 *Clay is further purified in shallow basins, allowed to solidify, and then cut into squares for easy removal.*

2. Forming and Techniques

Most Attic vases were thrown on the potter's wheel. Throwing is a method of creating pottery in which clay is shaped on a rotating potter's wheel, which requires a highly coordinated set of movements, the fine points of which are learned through long experience. Throwing is practiced in much the same manner today as it was in ages past.

Wedging

Before Attic potters could begin throwing, they brought their clay to the proper consistency by thoroughly mixing and compressing it to expel air bubbles and to bring a homogeneous texture to the clay body. This process is called wedging.[1] Hard lumps or soft areas in the clay cause deformation in throwing. Very soft clay (clay with excessive water) is easy to center on the wheel, but the softness limits the height of the wall that the potter can shape, for it will slump. Very firm clay, by contrast, is almost impossible to manipulate on the wheel.

Clay bodies (blends of different clays) procured from modern ceramic supply houses have been through a de-airing pug mill. The de-airing, done in a vacuum, causes air pockets to explode; pugging compresses the clay. Such clay bodies are ready to be thrown on the wheel without further wedging. However, many modern potters prefer to hand wedge their pugged clay, for wedging scrambles the individual clay particles and gives "life" (responsiveness) to the clay.

In antiquity clay was wedged by hand. Air holes ranging in size from pin holes to sunflower seeds are visible in some vases and fragments (see FIGS. 6.3–6). In unbroken vases they can best be seen on X-radiographs taken by computed tomography, an advantageous method of examining details in an intact vase wall (FIGS. 2.1–3). Hand-wedged clay needs to be wetter than that wedged by machine because the potter's hands and the surface on which the wedging takes place remove some moisture. To hand wedge, the potter takes a lump of clay of a size that is comfortable to handle and pats it into a mound. There are several techniques of wedging, and the potter may use one or more for each lump. He may cut the

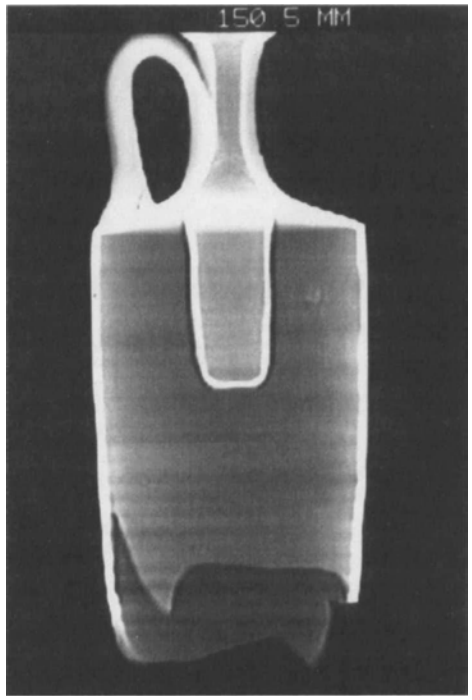


FIG. 2.1

FIG. 2.1 *Scout film (ordinary-type X-ray) for computed tomograph (CT) of lekythos with inner oil receptacle attached to lower part of neck.*

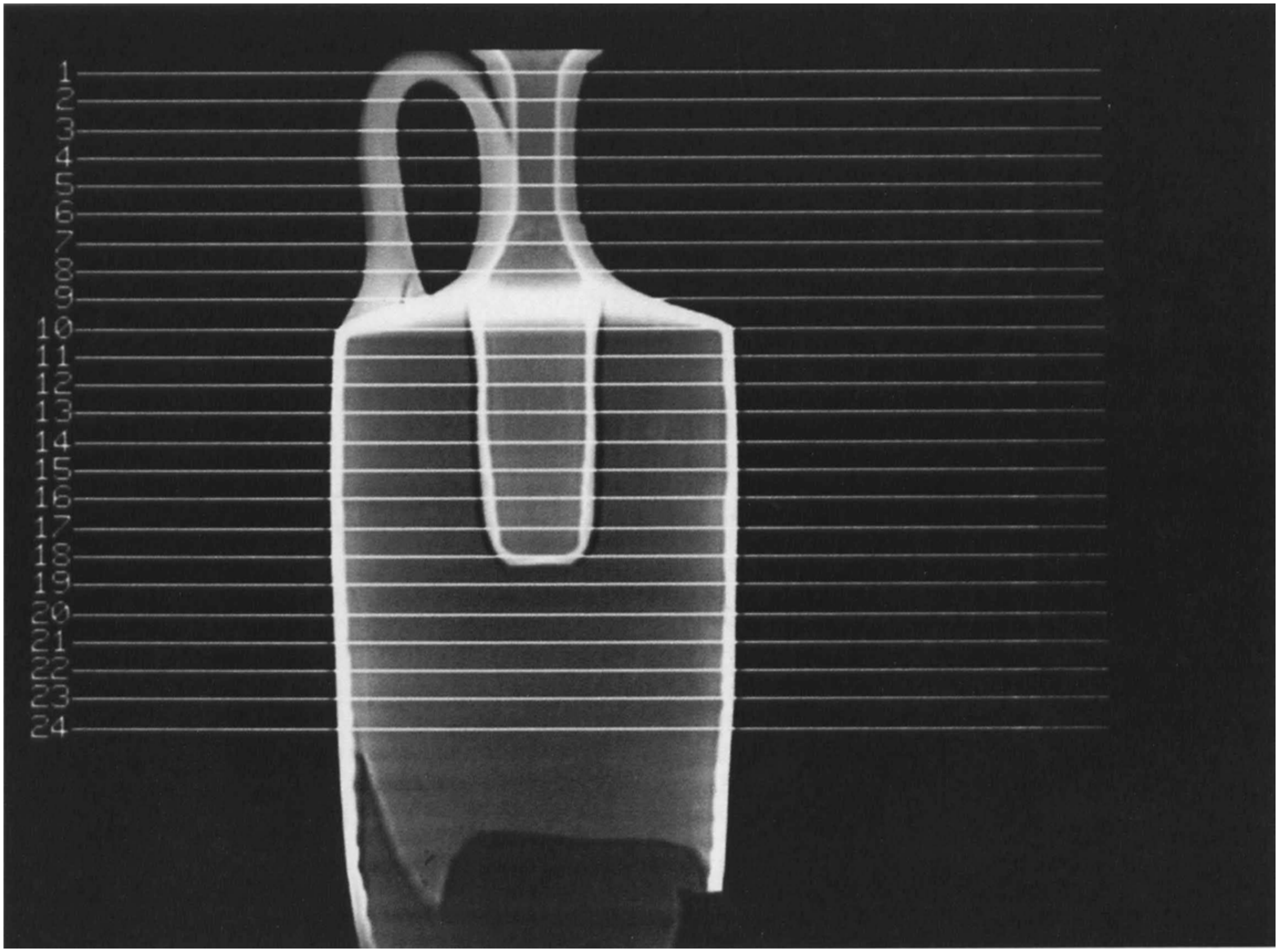


FIG. 2.2 *Computed tomographic (CT) X-ray scout film with numbered horizontal lines indicating levels of sections through same lekythos with inner oil cup.*

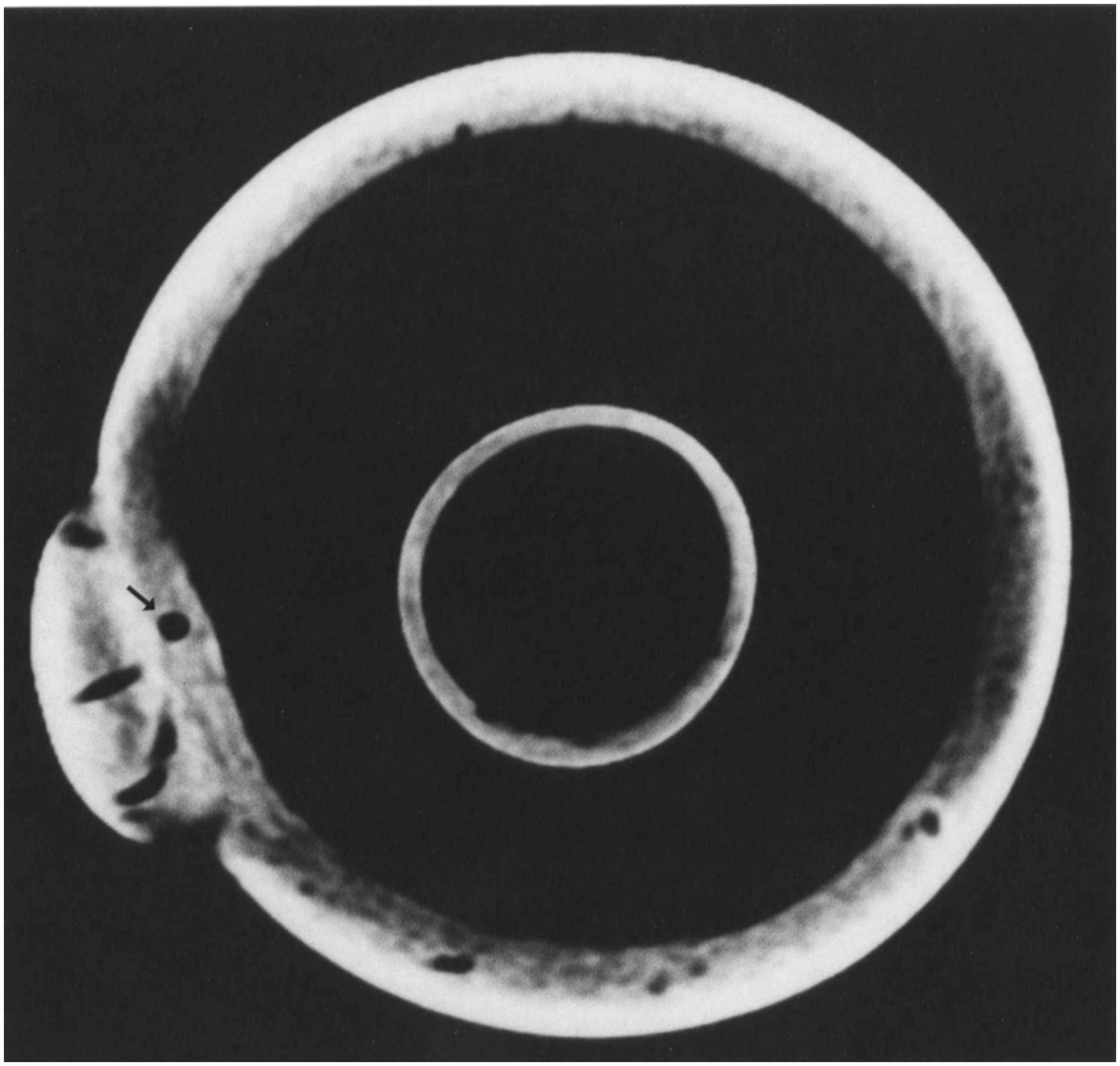


FIG. 2.3 *CT transverse section #9 through shoulder area of same lekythos shows the following: inner oil receptacle within lekythos proper, difference in thickness of walls of inner cup and shoulder of outer vase, base of handle with air spaces or defects and small air pockets at various points in the lekythos wall. (Perfectly round air hole [arrow] through body wall adjacent to handle was deliberately placed there by the potter to allow steam to escape from interior during firing.) Small irregularities are evident in part of wall of oil cup. These small air pockets shown in CT X-radiography cross-section are not evident in ordinary X-radiography, nor are defects in base of handle, demonstrating one advantage of CT in examining details in an intact vase wall. CT X-ray images also allow direct measurement of distances and wall thicknesses with no allowance for magnification.*

FIG. 2.4

clay across a stretched wire a number of times, each time slamming one half back onto the other so that the cut surfaces mesh differently. The clay may repeatedly be pushed out a little at a time onto a flat surface with the heel of the hand (FIG. 2.4). A large batch of clay can be wedged effectively by placing the clay on the floor and pushing it out sideways by repeatedly stepping on a little of it at a time with the heel and side of the foot. Clay may be kneaded in a manner similar to bread dough: It is repeatedly pushed sharply downward with the heels of both hands held side by side until it has extended out sideways, then folded into a loaf again, and the process repeated (FIG. 2.5). It may be spirally kneaded, whereby it is repeatedly pushed with the heel of one hand and lifted and partially turned with the other hand. Clay that is pushed to the right with the left hand and lifted and turned to the left with the right hand forms spirals running in a counterclockwise direction, which is highly suitable for a wheel that turns in a counterclockwise direction, as Greek wheels did (FIG. 2.6).[2] The above hand-wedging methods are fundamental, and we may assume they were known and used by Attic potters.

FIG. 2.5

FIG. 2.6

The Potter's Wheel

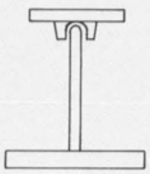
The potter's wheel is one of the oldest mechanical inventions known to man: it can be traced back to the Sumerians in about 3250 B.C.[3] The principle of the potter's wheel is the same today as it was when it was invented. The potter creates a vessel on a revolving platform called a wheel head. Wheel momentum is provided by hand, foot, or some other source of power, such as an electric motor. The potter's wheel rotates in one of two manners: (1) The wheel head rotates on a fixed shaft by means of a socket on the underside of the wheel head (*ill.* $2a_1$). This type is illustrated in a Late Minoan wheel head in the Iraklion Museum in Crete (FIG. 2.7) and in a drawing on a Corinthian black-figured pinax in the Louvre

FIG. 2.4 *Clay is pushed out onto a flat surface with heel of one hand.*

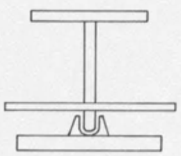
FIG. 2.5 *Clay is kneaded like bread (seen from potter's point of view).*

FIG. 2.6 *Clay is spirally kneaded (seen from potter's point of view).*

FIG. 2.7



ill. 2a.$_1$



ill. 2a.$_2$

(FIG. 2.8). It was the type used by ancient potters,[4] for whom it was turned by an assistant (FIG. 2.9). (2) The wheel head is attached firmly to the shaft rotating in a base socket (*ill. 2a*$_2$). A heavy flywheel may be inserted on the shaft above the base socket to preserve the momentum of the rotating wheel.

Tools

The potter creates mainly with his sensitive fingers and hands. The few accessory tools used today are much the same in principle as those used in ages past.[5] Potters may fashion tools to fit their own needs, or they may procure them commer-

FIG. 2.7 *Underside of Late Minoan wheel head showing a socket.*

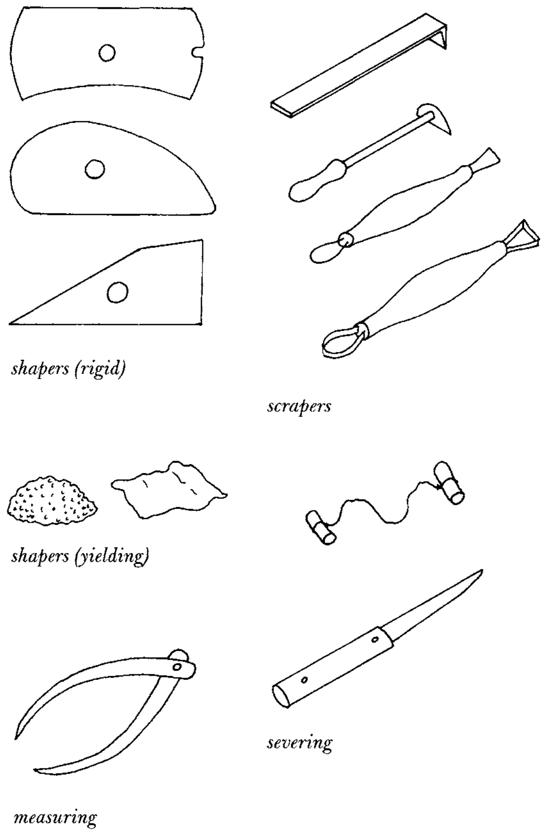
FIG. 2.8

cially today. The tool materials may differ—plastic, rubber, and some alloys are now used in addition to bone, wood, stone, and metal. Tools include shapers, an aid during forming, and scrapers, used in turning after a piece is created. Shaper tools may be rigid or yielding, while scrapers are all rigid (*ill. 2b*).

A rigid or nearly rigid shaper tool, called a rib, is made of material such as bone, wood, stone, metal, plastic, or rubber. It is flat, usually with a hole or depression in the center to make it easier to hold, and it is fashioned in a variety of shapes. Held on the outside of a forming vessel, it is particularly effective where a smooth surface is desired, as on the outside of Attic vases. It can have a "bite" carved out of an edge for creating neck, foot, or body rings. Its origin may have been the rib of an animal. A yielding shaper tool may be a sponge or a chamois that aids in shaping a vessel and in finishing the surface of a piece.

FIG. 2.8 *Potter at wheel. The Greek potter's wheel had a socket attached to the wheel head so that it rotated freely on a shaft set securely in a base.*

FIG. 2.9 *Potter throwing a pithos on a wheel turned by a seated assistant.*



ill. 2b

Scrapers are made from a flat strip of rigid metal, one end of which is at an angle. They are an aid in thinning a clay wall and in removing excess clay from a thrown vessel. Scrapers must be kept sharp, or chattering (vibration marks) will result (see FIG. 6.20). A loop tool is one type of scraper. It has a curved piece of metal or firm wire secured in the end of a dowel, which serves to peel off layers of clay in thinning the walls or in removing excess clay, as at the base of a thrown vessel. Loop tools are useful in creating clean-cut angles in articulated forms.

Ruler and calipers for measuring and a knife, wire, or cord for severing a piece from the wheel head complete the list of usual tools.

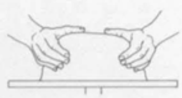
These few implements are so basic to throwing that it may be assumed that Attic potters fashioned and used similar devices. Only a few potter's tools are known from illustrations on Attic vases or fragments,[6] and some of these are not definitely identifiable. Some tools can be identified by the marks they leave on the clay. Adjacent flat planes are produced by a scraper tool (see FIGS. 8.15–16) or burnisher (see FIGS. 26.5–6), while adjacent concavities are made by a loop tool or burnisher (see FIG. 8.12).

Different textures are created by different tools, including the fingers. When a potter creates or smoothes a piece on the wheel using his fingers, very shallow striations are imprinted in the wet clay (see FIGS. 4.1, 8.15). When he draws a damp sponge across the clay, the sponge drags off the high spots and fills in the low ones (see FIGS. 4.1; 11.9–10). A rib generally produces a flat, smooth surface (see FIG. 4.2). Scrapers leave flat planes but surfaces that are not smooth.

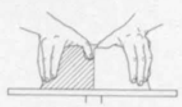
Throwing

Wheel-thrown wares have a vitality and spontaneity that cannot be achieved by any other means. While each potter develops an idiosyncratic method of manipulating his hands and fingers to create his wares, the general process is the same for all. The following descriptions assume a right-handed potter.

Attic potters threw their wares directly on the wheel head. A modern aid in wheel work is a bat, which is a removable disk made of plaster, wood, or fired clay that sits on the wheel head and on which the pottery is created. To form a vessel, the potter throws a ball of wedged clay onto the center area of a wheel head. Throwing the clay ball down hard onto a rotating wheel gives the clay a twist that helps it stick to the wheel head more firmly than if it is thrown onto a stationary wheel. Throwing the ball down hard also compresses the clay, especially at the base. A very large lump of clay will be placed on the stationary wheel and patted as nearly as possible into a center position. The potter uses water for lubrication to keep the clay slipping smoothly between his hands at all stages of throwing. With the wheel turning and his hands surrounding the ball, thumbs on top, he centers the clay by squeezing it with both hands, simultaneously manipulating it toward the center of the wheel, thus forcing it to run true (*ill. 2c*). The clay must be perfectly centered and kept centered at all times, or a wobbly piece will result. Centering takes strength and is aided by support for the arms. Some modern wheels have a bar across the front of the wheel or a pan with upturned edges surrounding the wheel head that can be used as support for the arms. Lacking these, the potter may simply press his elbows firmly against his sides. He may raise the ball of clay into a cone, then flatten it down into a ball again, repeating this action several times to give life and responsiveness to the clay and to aid in centering it.

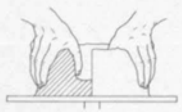


ill. 2c

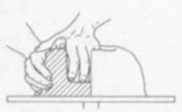


ill. 2d

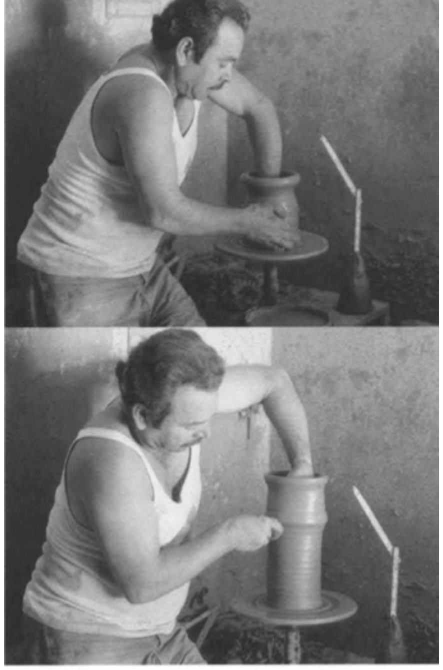
The first step in creating a piece is to make the inside bottom (floor) of the vessel. To do this, the potter "opens" the clay, a process by which he forces his thumbs down through the center of the ball to within several centimeters of the wheel head (*ill. 2d*). He widens the opening to create the floor in one of several ways. For smaller vessels he simply pulls his thumbs apart, keeping his hands around the rotating clay ball at all times (*ill. 2e*). For larger vessels he places his right hand on the outside of the clay for stability, the fingers of his left hand inside pulling toward his right hand (*ill. 2f*). This procedure forms the floor of the cylinder and creates a surrounding fat ring, or doughnut, of clay. The potter usually



ill. 2e



ill. 2f



FIGS. 2.10–11

FIGS. 2.12–13

gives the floor of the cylinder a flat or concave shape. This procedure leaves the bottom of the cylinder thicker than the walls, adding to the strength and stability of the piece (see FIG. 16.3).

All upright vessels formed on a potter's wheel start out as a cylinder, for it is an easily modified shape. Therefore, the next step in creating a vessel is to raise a cylinder from the previously formed doughnut of clay. On a slowly rotating wheel the potter presses the side of the knuckles of his flexed right index finger against the outside clay wall at the wheel head, the fingers of his left hand being inside the vessel in opposition, and brings his two hands upward, forcing the cylinder upward out of the displaced clay (*ill. 2g*). This process is repeated, thinning and raising the wall until it is about the desired height (*ill. 2h*). It is terminated with a slightly thickened rim (*ill. 2i*; FIGS. 2.10–11). For small or slender vessels the potter places his right thumb inside the fat ring of clay, with his right index finger on the outside, and raises the cylinder in this fashion, the left hand encircling the cylinder for support (*ill. 2j*).

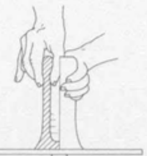
The natural tendency of a developing cylinder is to flare outward. The potter counters this by consciously angling the cylinder slightly inward (FIGS. 2.12–13). If the walls do flare, the potter slows the wheel and encircles the cylinder with both hands, gently squeezing inward and upward to bring it back to true, a process called collaring or collaring-in. If it is done too rapidly, or if the cylinder is quite thin, the clay will ripple. Upward-spiraling stress lines may develop during the process of collaring-in to form a narrow neck, a phenomenon seen on the insides of necks of some Greek vases (see FIGS. 20.13, 15).

To give a vessel shape, the potter places the fingers of his left hand inside, opposite those of his right hand on the outside, and together they maneuver the clay wall outward or inward, giving form to the cylinder. This process may be repeated several times to perfect the shape. Upward-spiraling grooves are made by pressure of the fingers and can be lessened or eliminated by the use of a rib or sponge held in one or both hands during throwing (FIGS. 2.12–14; 3.4–5).

ill. 2g

ill. 2h

ill. 2i



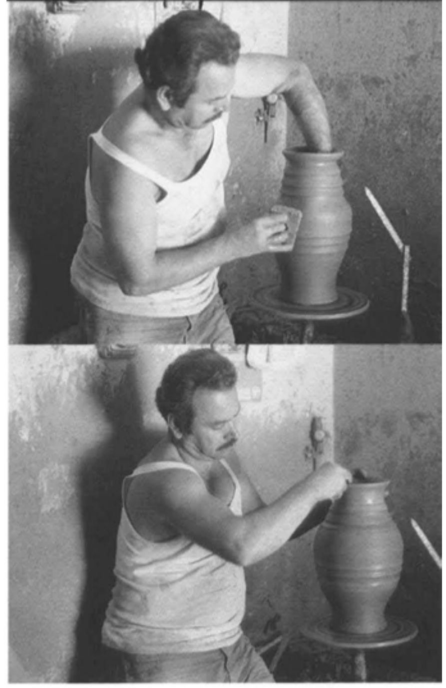
ill. 2j

FIG. 2.10 *A modern Greek potter has centered and opened a lump of clay and is starting to pull up a cylinder.*

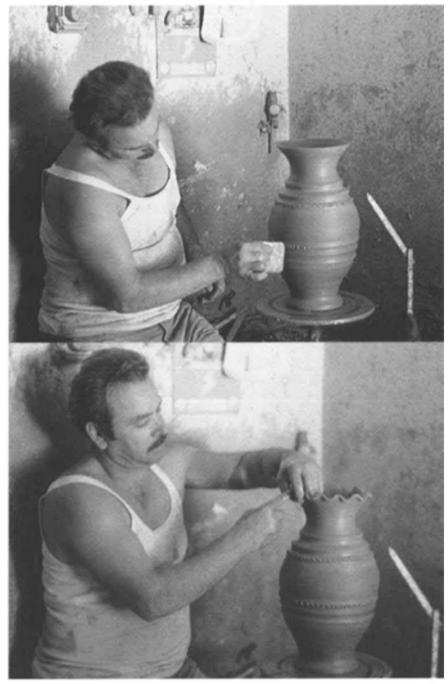
FIG. 2.11 *The potter raises the cylinder higher using knuckle from index finger of his right hand on the outside opposed to his left hand inside the cylinder. He leaves top thick for stability.*

FIG. 2.12 *The potter pulls up the cylinder to its full height. He is forming a ring with the aid of a wooden rib.*

FIG. 2.13 *With corner of rib, more rings are formed.*



FIGS. 2.14–15

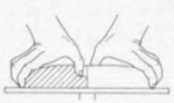


FIGS. 2.16–17

To flatten the lip, the potter holds his extended right index finger on top of the left thumb and index finger, which support the rim of the vessel (FIG. 2.15; see *ill. 8e*). He rounds the lip by holding a wet sponge or chamois folded over it (see *ill. 23d*). Throughout the shaping process the potter continues to brace his hands and arms. Decorative finishing touches may be added at this stage (FIGS. 2.16–17).

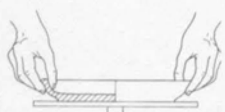
The goal of an Attic potter creating decorative ware was to fashion a functional, aesthetic piece that could be decorated. To attain a smooth surface for decorating, the potter uses a rib tool on the outside of the vessel in the final shaping (see FIG. 4.2). The rib eliminates striations as well as excess water, leaving only the finest clay particles at the surface of the vessel. This maneuver provides a very smooth surface that is ideal for decoration. It also stiffens the clay and makes removal of the vessel from the wheel less apt to distort the shape.

The throwing finished, the potter cuts the vessel from the wheel by pulling a taut cord or wire through the base of the piece close to the wheel head while the wheel rotates once, and then sets the pot aside to firm up (FIG. 2.18). If the vessel is thrown on a bat, the potter lifts the bat off the wheel head. He makes appendages, such as handles or lids, at this time and sets them aside with the vessel to firm up simultaneously.



ill. 2k

Shallow pieces, such as plates, flat lids, and shallow bowls, are created directly from the opened ball of clay, without the formation of a cylinder. To create a plate or shallow bowl, the potter opens a flattened ball of clay with his thumbs (*ill. 2k*). He creates the inner bottom diameter in the same manner as for a cylinder, though the use of a flat-sided rib here is an aid in eliminating throwing grooves. He raises, thins, and shapes the sides almost simultaneously (*ill. 2l*). If the plate or shallow bowl is extremely large, then any attempt at varying its shape once it is formed and thinned is usually disastrous. The larger the plate or bowl, the more difficult it is to control the shaping process, the difficulty increasing in peripheral and upward directions.



ill. 2l

FIG. 2.14 *The potter enlarges body of vase by pushing clay outward from inside the pot, guiding the outside with a rib.*

FIG. 2.15 *He forms and flattens lip.*

FIG. 2.16 *The potter has perfected foot and is adding decoration to rings.*

FIG. 2.17 *He flutes lip.*

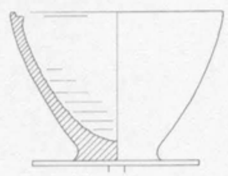
FIG. 2.18

THROWING IN SECTIONS

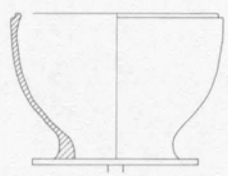
Very large, thin-walled pieces made from fine-grained, plastic clay without the addition of temper (nonplastic material such as sand or grog) cannot be pulled up much higher than 35–40 cm. There is a height beyond which untempered clay can no longer defy gravity, no matter how skilled the potter. Taller vases must therefore be thrown in several sections. This is the case for large hydriai, amphorae, kraters, and pelikai. In cases where the body must be made in two sections, the potter throws and shapes the lower section, leaving it thicker than ultimately desired, thus giving it the strength and stability to support the added upper section (*ill. 2m*). He leaves the rim slightly thickened and flat, or he may

FIG. 2.18 *Grooves on bottom of foot were created when the potter cut vessel off wheel with a cord.*

notch it to aid in the joining process (see FIG. 8.37). He cuts this lower section off the wheel and sets it aside to firm up and throws the upper section bottomless and usually upside down (*ill. 2n*). To create the upper section, the potter can begin in one of two ways. He may place a thick coil of clay in a circle on the wheel, force it to run true, and shape the piece from this; or he may center a ball of clay, open it without a bottom by forcing his thumbs clear down to the wheel head, and pull the clay outward to form a thick coil. He then draws up a cylinder and forms the upper section. He either flattens the rim or notches it to fit the lower section. The diameters of the outside perimeters to be joined must match each other.

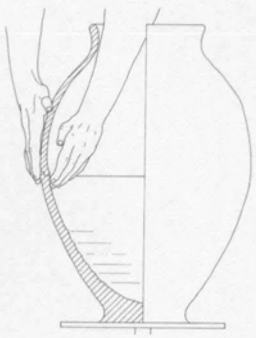

ill. 2m

When the two sections are firm enough to handle conveniently, the potter places them together, with the surfaces to be joined coated with slip (*ill. 2o*). He makes the join less visible either by working any excess slip into the two sections or by working the thickened top of the base upward into the join. He may pull up both sections together one more time to integrate them better. If a pot requires an elongated neck or a high foot, the potter may throw these separately and add them to the completed body.


ill. 2n

COIL-AND-THROW

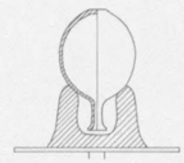
In some instances it is more prudent to use the coil-and-throw method of construction for upper sections (see FIGS. 20.13, 16). In this technique, the potter first throws the lower portion of a vessel in the usual fashion and allows it to stiffen somewhat. He then adds a coil of soft clay, working it into the top edge of the thrown section. He forces the coil to run true and then pulls it up and shapes it as if it were a part of the original ball of clay. The addition of a coil can be repeated a number of times.[7]


ill. 2o

Turning

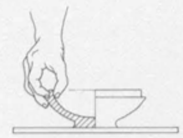
Turning is the term for shaving off excess clay from a thrown, leather-hard vessel with a tool after the vessel is centered on a revolving wheel. (One "trims" hand-built pieces but "turns" wheel-thrown vessels.) Turning provides an opportunity for the potter to shave off portions of the vessel wall that are not pleasing to the eye or that are too thick, such as the lower part of a vessel. The underside of a shallow foot is given its shape in this manner when the vase is upside down. Turning enables the potter more clearly to delineate articulated joins. Even the inside shape of the neck may be thus modified (see FIG. 8.12). Most pieces require some turning, though a potter must exercise care not to destroy the character of the thrown piece. Turning is generally done on soft-to-firm leather-hard clay.

To turn a vessel, the potter re-centers it on the wheel, usually upside down. To aid in centering, he may draw concentric circles on the wheel head, or he may center the piece by placing it as close to the middle as possible, then sharply tapping the piece down low several times until it turns true on the rotating wheel—a difficult skill that is acquired by practice. A vessel may be secured to the wheel by placing lumps of clay around its base or by trickling water under it and lightly pressing downward on it. Narrow-necked pieces are placed upside down in a previously thrown, centered and secured "chuck," a hollow cylinder that grips the shoulder of the vessel, holding it firmly during turning (*ill. 2p*). The chuck should be in the soft leather-hard state so that it can grip the pot.



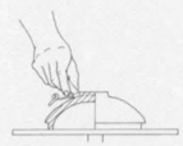
ill. 2p

Loop and scraper tools are employed in turning. A loop tool is ideal for cutting away clay from the underside of a foot. Leaving a flat area for the vessel to stand on, the potter can give the underside of the foot a variety of profiles. A scraper is good for removing excess clay from the lower body. Either of these tools may be used to sharpen the image of an articulated vessel.



ill. 2q

When thinning the wall of a piece with a small neck opening where the potter cannot reach inside, he taps the wall and listens to the hollow sound to judge the thickness of the clay wall (see *ill. 23g*). When turning is completed, the piece is ready for the addition of any appendages.



ill. 2r

Appendages

Lids, knobs, spouts, and handles are the usual appendages, and the potter forms them either on the wheel or freehand.

He throws a lid upside down if it requires either a flange to hold it in place, such as for amphorae or stamnoi, or if it fits over the outside of the mouth of a vessel (called a cap lid) as in the case of some types of pyxides and psykters.[8] In making a flanged lid, the potter opens a centered lump of clay with his thumbs, then widens the opening to form the inside of the lid, shaping the flange between his thumb and index finger, his middle finger supporting the lip (*ill. 2q*). This procedure rounds the angle between the flange and the lid rim. The potter may sharpen this angle with a tool for a more accurate placement on the vase. If the profile of the lid is to be quite rounded, he will angle the clay upward into a bowl shape in the widening process. Using calipers to get precise measurements, the potter narrows or widens the lid as needed. Some lids will shrink more than the mouths of the vessels for which they are created, and, based on experience, the potter must take this into account in his measurements. With a scraper tool he more clearly defines the angle where lip and flange meet. He then cuts the lid off the wheel and sets it aside. When it has reached the soft-to-firm leather-hard stage, he places it right side up on the wheel and shapes the top with a tool (*ill. 2r*). He either throws the knob separately and adds it to the lid with slip or throws it with the lid, the latter more likely if the lid is thrown "off the hump," that is, thrown from the top of a large cone of clay (see FIG. 3.9).

The potter makes the unflanged cap lid like a low cylinder. The outside diameter of the mouth of the vessel for which the lid is thrown determines the inside diameter of the cap lid. The potter cuts the lid off the wheel and, when it is firm, shapes the top of the lid, following the inside contour. If he has thrown the lid with a rather thick base, he can fashion a knob from that clay. If not, he throws a separate knob and adds it to the lid with slip.

Spouts may be open, like a channel, or closed, like a tube. In antiquity open spouts were made on trefoil and beak-mouthed oinochoai. The potter creates a trefoil spout by squeezing the sides of a round mouth inward at two places while the clay is wet, which results in an outward protrusion between the indentations. A beak-mouthed spout is created by cutting away a generous part of the neck and mouth of either a slender-necked vessel or a flaring round-mouthed vessel (see *ill. 23q*). Closed spouts from antiquity are found on askoi, gutti, and psykter-amphorae. They are cut to shape from a slender thrown cylinder.

ill. 2s cylindrical

Handles may be pulled, rolled, extruded, or thrown on the potter's wheel. The majority of Attic vases have pulled handles, which are particularly harmonious for thrown wares as they leave fine, elongated lines on the surface of the clay that are similar to throwing striations (see FIGS. 16.15–16). To pull a handle, the potter elongates a lump of clay into an upside-down pear shape. Holding the body of the lump with his left hand and grasping the neck with his right, which is kept wet at all times, he elongates the neck by repeatedly "pulling" or coaxing the clay downward. Gentle squeezing accompanies the pulling. Various shapes are attained, depending upon the manner in which the potter holds his hand and fingers as he is pulling.[9] He makes a cylindrical handle by curling the fingers and thumb around the developing handle during the pulling process (*ill. 2s*). He forms a concave handle when he draws the tip of his thumb down along one side of a cylindrical handle while supporting the handle with the curled index finger (*ill. 2t*). To create a handle with a center ridge, the potter places the tips of his thumb and index finger together and draws them down one side of the forming cylindrical handle, the middle finger behind the handle for support (*ill. 2u*). He shapes a ribbon or flat-strap handle by squeezing the clay between the pads of his thumb and fingers (*ill. 2v*). An oval handle is formed when he squeezes the clay between the proximal phalanges of his index finger and thumb (*ill. 2w*).

ill. 2t concave

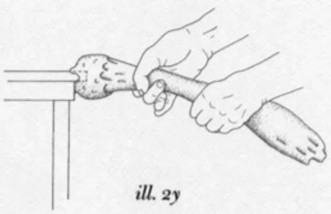
ill. 2u center-ridged

ill. 2v ribbon

After a pulled handle is made, the potter places the lump of clay upright on a flat surface, allowing the newly formed handle to bend of its own weight into


ill. 2w oblate


ill. 2x


ill. 2y


ill. 2z twisted

a loop (*ill. 2x*). When the handle is somewhat firm, he cuts it to size and attaches it to the vessel with slip. To create a large, heavy handle, the potter attaches a lump of clay to the end of a ledge or table. Using both hands alternately, he pulls and coaxes the clay outward (*ill. 2y*). He makes a twisted handle by twisting together freshly pulled cylindrical ropes of clay. Three ropes of clay generally make up a twisted handle. Grasping the ends of this multiple handle in his two hands, he gently turns them in opposite directions, giving a soft twist to the handle, molding each end into a single unit in the process (*ill. 2z*).

To produce a rolled handle, the potter rolls a lump of clay into a long "snake" on a flat surface. This leaves minute irregularities in the surface of the clay, caused by the shape of the fingers doing the rolling, even when delicately executed and when the clay is allowed to roll freely of its own momentum (see FIGS. 23.22–23).

To make an extruded handle, the potter pulls a formed metal shape through a flattened slab of clay (see FIGS. 3.10–11).

Tubular handles are thrown on the wheel, usually as a very slender tube. The potter cuts the tube off the wheel, allows it to reach the soft-to-firm leather-hard stage, then cuts it into the desired length(s) or shape(s). Several handles can usually be cut from a single, thrown tube. Tubular handles, called lugs, are found on some psykters; slip is applied along one side of each tube, which is then attached to the vase (see *ills. 26h–i*). Gutti—a type of askos that usually has a vertical neck and a ring handle—also have tubular handles.

Strip handles may be cut from a flat slab of clay or from a thrown cylinder. They can be applied either vertically or horizontally. Strip handles found on Nikosthenic amphorae are cut from a thrown cylinder, allowed to firm up somewhat, shaped, cut to size, and applied vertically.[10] The potter makes a flanged handle, found on volute-kraters and Type A amphorae, from three strips of slab clay, one wide and two narrow. He attaches one edge of each narrow strip to an edge of the wide strip, or he may create the handle by simply bending the sides of a single wide strip upward. The former process produces sharp corners, the latter more rounded ones. The potter bends and cuts the handles to shape and size and allows them to reach the leather-hard stage before attaching them to the vessel (see FIG. 8.36).

When attaching appendages, the potter must be careful to join parts of similar dryness, or drying cracks will result (see FIG. 20.11).

After attachment of appendages the vessel is ready to be decorated and fired.

Leather-hard

Technically, leather-hard is the stage in the drying process when nearly all the shrinkage in a piece of drying clay has taken place. Enough of the water of plasticity surrounding each clay particle has evaporated to allow the individual particles to touch one another, which stiffens the clay. At the leather-hard stage the clay has become rigid, although appendages can still be added to a vessel with slip, and the surface can be burnished. However, the inside of an occasional Greek vessel shows an indentation in the clay wall at the handle attachment, which indicates that the vessel was not leather-hard when the handle was attached, but rather softer (see FIG. 8.39).

For the practicing potter, "leather-hard" is a broad term encompassing several degrees of hardness. It ranges from a clay piece that is as firm yet as pliant as a chunk of cheese, all the way to a rigid piece of clay that can no longer be manipulated without breaking, but whose surface can still be burnished. Leather-hard is a good descriptive term, for a thick piece of shoe leather is firm, yet it can be bent, and it can be dented by pressure from a tool. The author has divided leather-hard into the following three basic types:

Soft leather-hard

- A piece that has dried enough to hold its shape firmly but is not yet so firm that it cannot be molded somewhat with mild pressure. There is risk of cracking, especially in thin-walled pieces.
- A small amount of clay can be added.
- Turning can take place safely without clogging the tool.
- Adding appendages may dent the piece.

Firm leather-hard

- A piece that holds its shape firmly, yielding only with difficulty to minute manipulation when pinched hard. There is some risk of breaking.
- A minute amount of clay may be added and worked into the body, but with some risk of cracking.
- Turning can take place with ease.
- Appendages can be added safely with slip.
- Burnishing can be done.

Rigid leather-hard

- A piece whose shape is rigid and can no longer be altered except by using a scraping or turning tool.
- All drying shrinkage has taken place. No clay can be added.
- Turning can be done with some difficulty—a sharp tool is needed.
- Appendages can be added with slip but must be watched for developing cracks.
- The ideal stage for burnishing a piece.

The length of time it takes a piece to dry to leather-hard depends upon several factors: humidity and temperature of the air; exposure to direct sunlight; whether the piece is in or out of a draft, in an open or closed space; its thickness; presence or absence of temper; and the amount of water of plasticity in the clay.

Slip

Slip is a general term for a liquid mixture of about equal amounts of water and clay that has the consistency of cream. Vessels can be formed from *casting slip* (see moldmade pottery, p. 30). Slip is used to lute parts of clay structures together or to create a smooth surface over a relatively rough clay. The unfired material used by Greek vase-painters is a type of slip. It is more accurately called *levigated slip*, for the coarser particles have been removed by levigation, and the slip has most likely been deflocculated.[11] It can be colored by the addition of metal oxides and used to coat a piece in order to decorate it or to change its surface; such a slip is often called *engobe*.

Slip adheres best when its rate of contraction is about the same as that of the clay body to which it is applied. If flaking occurs, it is necessary to alter either the slip formula or the clay body to ensure a proper match. A simple way to do this is to add to the slip a small amount of the clay of the piece on which the slip is to be painted. Colored slips offer few problems. However, when white slip is painted over a red body, as in the case of added-white color on Attic vases, difficulties arise. White slip may flake off after firing because the red clay body has contracted noticeably more than the white slip, or vice versa. It is not possible to add red clay to the white slip and still have a white color (it becomes cream). It would appear that the Greeks were reluctant to add any foreign material to their very satisfactory natural clay. Consequently, added-white has flaked off many Attic pieces.

Moldmade Pottery

Pottery may be made in molds, a rapid method of producing duplicate pieces. Only a few types of Attic vases were made in molds, but numerically these types are relatively plentiful. They are referred to in the literature as "plastic" vases. Vases or parts of vases that were moldmade came mostly from either one-piece or two-piece molds. If the original piece (the patrix) was made of clay, it was modeled by a potter or sculptor (the coroplast). The fewer undercuts (the results of lateral cuttings that produce overhangs) on the patrix, the simpler the mold. The patrix was fired prior to its use. Numerous molds could then be made around a single patrix, each one suitable for producing many castings.

One-piece molds are shallow. To make such a mold, clay was packed around a fired patrix. When the clay was firm, it was carefully removed from the patrix and fired. To make a casting, the craftsman pressed clay into the mold, removed it, and sprigged it onto a larger piece for added decoration. Most one-piece, Attic moldmade decorative elements are small human or animal heads attached to one end of a handle. Some Attic vases have decorative elements sprigged onto their surface.

To make a two-piece mold, a thick layer of clay was packed around first one half and then the other of the fired patrix. Where the two halves met, the clay was coated with a material such as oil to facilitate their separation. When the two halves were somewhat firm, the mold was removed from the patrix. When dry, the mold was fired. It could then be used many times to make identical castings. An alternate method of separating the mold halves that may have been used was to place a thin cord around the outside of the patrix, then pack the clay solidly around the patrix and the cord, leaving one end of the cord accessible. The two halves of the mold could then be separated by pulling the cord through the packed clay.

To make a casting, the craftsman firmly packed a thin layer of fresh, wet clay into each half of the mold, packing it thicker along the edges to be joined. He may have wetted the clay edges or applied a coat of slip, then pressed the mold halves tightly together. When the casting was somewhat firm (the result of the dry mold absorbing some of the moisture from the wet clay), the mold was removed from the casting, leaving a seam line along the outside of the casting where the mold halves came together. The potter had to remove the seam and smooth it with a tool. Any excess clay at the join was squeezed into the interior of the casting and left there, except in the case of rhyta and large moldmade head-kantharoi and oinochoai, where the potter could reach inside with his hand to smooth the interior.

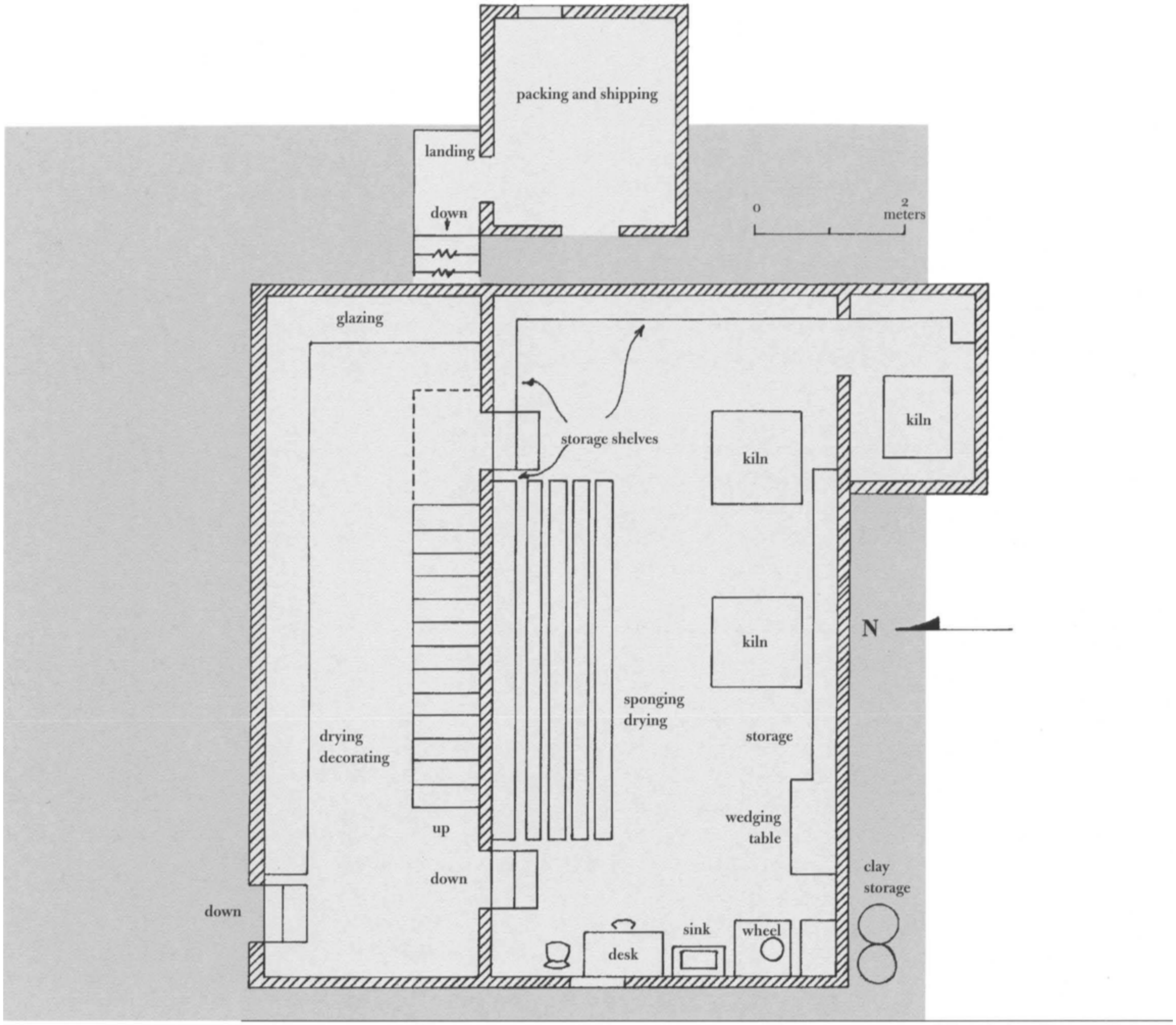
Modern craftsmen use casting slip to create moldmade wares. In this process, called slip-casting, slip is poured into the mold until it is full and allowed to remain while the mold absorbs moisture from the slip. This procedure creates a solid clay wall adjacent to the mold. The longer the slip is allowed to remain in the mold, the thicker the wall becomes. When the desired thickness is reached, the remaining slip is then poured out, and the piece is allowed to harden somewhat. As it dries, it shrinks away from the mold; the mold is then opened and the casting removed.

3. A Modern Greek Family-run Pottery Shop

Little is known of the layout and routines of Attic pottery shops.[1] The few names of fathers and sons in the pottery business that have survived on the vases themselves suggest that the business probably was passed down from generation to generation. Vase-paintings hint at the number of workers involved and the jobs assigned to them—potters and their assistants, vase-painters, the kiln master, and various helpers. They are mostly men, though at least one woman has been portrayed as a vase-painter. The size and shape of the kiln and the potter's wheel are depicted, as are some of the materials and tools used in pottery shops. These shops appear not to have been large.

Did each pottery-shop owner mine his own clay, or did he have his slaves mine it and then assign workers to wash and purify it? Might a clay pit have been controlled by a single owner, whose slaves mined the clay, selling it to pottery-shop owners? Was there some central supply house to which the raw clay was delivered after being mined, where potters could purchase it? Was clay cleaned by the miners, or did the workers at each shop clean and purify it to the degree needed for the type of pots to be created by that particular workshop?

How did Attic potters store their newly mined wet clay to age and sour it? Aging and souring take time. They must occur in a damp, closed container in which the clay remains evenly wet. Did the Greeks store clay in ceramic containers with close-fitting lids? Pithoi would seem the most logical receptacles for such storage in light of the fact that no special container has ever been identified as being just for wet clay, and pithoi are known to have been used for storage in general. Walters speaks of early pithoi as being shaped like enormous barrels with wide mouths, closed with stones or clay covers; they were used to store honey, wine, and figs, and were usually kept half buried in the ground.[2] Might potters not likewise have placed their pithos storage containers partially or fully underground to help age and keep the clay an even consistency over a long period of time? The lids and thick walls would retain moisture, and the wide mouth openings would make it easy to bring out handfuls of clay. The depth of these pithoi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down
sink
wheel
desk

ill. 3a

should not have been much more than the length of a man's arm, in order that one could reach in and scoop out the stored, wet clay.

Many questions about ancient pottery shops find no answers in vase-paintings or in texts by ancient authors, and little is known archaeologically of ancient pottery sites. Did Attic potters need to keep their newly thrown pieces in a damp closet for controlled drying until the decorator had time to work on them, or did they let each piece firm up in the open air right after creating it, then decorate it or have it decorated as soon as it reached the proper degree of hardness? Did the potter throw many pieces each day? If so, did he have available to him many decorators, thus making a damp closet unnecessary? Decorating vases would have taken no small amount of time, even if the vase-painter passed the vase on to an apprentice or subordinate to add the decorative motifs. If a wet closet was needed, might it have been lined with thin sheets of metal or have fired clay slabs placed on shelves and kept damp to curtail the drying as is done in modern pottery shops? No identifiable metal sheets or shelf clay slabs have come to light. We know ancient pottery shops had shelves, probably wooden ones, for we can reasonably assume that the lines on which pots rest above a potter's head in a drawing of a pottery shop on a vase are shelves (FIG. 3.1).[3]

FIG. 3.1

A visit to a small, modern Greek, family-operated pottery shop helps shed light on some of these questions.[4] Such a shop may well have continued many ancient traditions, for as Noble writes of primitive, or peasant, potters: "They are facing the same problems as the ancient potters, and often they preserve unchanged work patterns and techniques."[5] We can analyze the clay the contemporary potter uses and compare it to that used in antiquity. We can observe the purification process. No doubt there are similarities in the physical layout of such a shop and ancient ones, for the needs and routines today are com-

FIG. 3.1 *Ancient pottery shop with potter at wheel and pots on shelf.*

parable to those of antiquity. Except for the motorized wheel, contemporary techniques and tools used in creating wheel-thrown pottery are quite similar to those of the past to judge from the available evidence. Reduction firing today with gas as fuel, for example, results in the same surprises and uncertainties as did reduction firing with wood or charcoal in antiquity. The climate of Greece, its intense sun, the land, and the sea surrounding it are certainly much the same.

Noble made emission spectrographic analyses of six different Greek clays, three modern and three ancient ones. He found striking similarities between the modern clays, though their sources were separated by about one hundred miles.[6] He believes that the differences in color in the modern clays are probably due to a variation in the iron content and the amount of decayed vegetable matter. He also found that the modern clays correspond in mineral content to those used in antiquity, though there was greater difference between the ancient and modern clays than among any of the modern clays tested. High-quality clay is still available in Greece, and the clay pit from which some of the analyzed modern samples came has been in continuous use since antiquity.

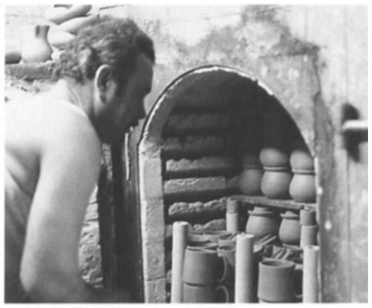


FIG. 3.2

FIG. 3.3

During the summer of 1977 I had the good fortune to work in the small, family-operated pottery shop of John and Maria Georgouli in Amarousi, near Athens, where I participated in the tasks associated with a modern Greek pottery shop and took the midday meal with the family. The home/shop was situated on a hillside. A patio plus three rooms within the house, one upstairs and two downstairs, were used for the business (*ill. 3a*). The lower level, dug into the hillside, was divided into two work areas, the smaller south room containing a kiln for bisque firing. Two electric kilns for glost firing, each with a firing chamber with a capacity of about eighteen cubic feet, were in the large north workroom directly under the living quarters. This room also housed the single potter's wheel and a large, designated space all along the north wall adjacent to the patio for drying and sponging. The wall directly above the sponging area was lined with wooden shelves. There were no closed cupboards nor any wet closets. Fine-grained clay

FIG. 3.2 *Proprietor loads kiln with squat bowls and mugs stacked on shelves and on top of one another for bisque firing.*

FIG. 3.3 *Proprietor's wife sponges morning's output. In antiquity women worked in pottery shops as decorators. See fig. 1.2.*

FIGS. 3.4–5

takes longer to dry than coarse-grained; consequently, shops doing work only with fine-grained clays may need no wet closets. One door on either side of the sponging area opened onto the patio where glazing and decorating took place. The patio was partially under a porch with stairs leading up to the living quarters. The upstairs business room was used for making inventory, packing, and shipping, for which a part-time helper was employed. The full-time workers consisted of the owner, whose main jobs were kiln tending (FIG. 3.2), glazing, and overseeing; his wife, who sponged and decorated the wares[7] (FIG. 3.3); and a hired man, who was the creative potter (FIGS. 3.4–7). Both children in the family were encouraged to help, the seven-year-old daughter with the sponging, and the eleven-year-old son with various jobs directed by his father.

FIG. 3.6

The family sold their wares locally, through a ceramic cooperative located a half mile from their home and through various other outlets. The output of this shop consisted of about a dozen different wheel-thrown shapes, mostly small pieces, up to 20 cm in height, for the tourist trade. For years the family had used a kick wheel, powered by foot, but recently they had converted it to an electric wheel, whose highest speed was slow compared to the highest speed used by many American potters. The fine-grained, red clay used by the potter came from a local pit and was purchased from a supplier, already cleaned and purified. The clay was quite plastic and extremely strong and had no added temper. It was stored in plastic bags under damp rugs outdoors against the shaded back wall of the house.

FIG. 3.7

This shop did business six days a week, Monday through Saturday, although pots were thrown on only five of those days. Usually two types of pots were made each day, both being thrown in the cool of the morning, before lunch and siesta.

A typical day started with the potter bringing several 6–7 kg lumps of clay into the workroom. He wedged them one at a time, employing a technique similar to that of kneading bread. He patted the lumps into long, fat rolls, then

FIG. 3.4 *The potter pulls up a cylinder to form a mug using a wide wooden rib as a throwing aid.*

FIG. 3.5 *To make a series of mugs of uniform height, the potter anchors gauge stick (in this case a portion of a folding wooden rule) in wad of clay next to wheel head.*

FIG. 3.6 *The potter adds finishing touches with his finger.*

FIG. 3.7 *The potter cuts off top of mug with taut wire to height of gauge stick.*

twisted off handfuls of clay of similar size from each roll, storing them conveniently nearby (FIG. 3.8).

One morning's work was to create out of each individual handful of clay a broad bowl, about 10 cm high, with a spreading mouth. The potter worked rapidly on his counterclockwise-turning wheel. From a pulled-up cylinder he rounded out the bowl with his inside hand and created the mouth by pinching the top between his right thumb and index finger. As each bowl was cut off the wheel with a wire, it was placed on a long drying board where, in the afternoon, the proprietor's wife sponged only the underside of the foot of each piece (see FIG. 3.3). The procedure was so smoothly accomplished that no turning was necessary. In large part this was due to the skill of the potter, though the fineness and strength of the clay definitely facilitated the process.

These bowls were lidded. To create the lids, the potter placed a large ball of clay on the slowly moving wheel, centered it, and drew it up into a conical shape. One after another he threw an upside-down flanged lid with a knob from the top of the clay cone, a process called "throwing off the hump" (FIG. 3.9). He cut the lid off the hump below the knob with a wire, rounded off the top of the knob with his finger, and laid it on a separate drying board. No turning or sponging was necessary on the lids.

Another morning's job consisted of making a simple mug. Like the bowls, these were created from individual balls of clay. The potter used a rib to make a smooth surface as he pulled up each cylinder. Duplication was facilitated by a gauge stick (see FIGS. 3.4–7). In making the small handle for the mug, the potter used the extrusion process, employing one of two different types of forms. He created one form by bending a firm wire into the desired handle shape and then pushing the points of the wire into the end of a wooden stick that would serve as a handle (FIGS. 3.10–11). For the other form, he drilled a hole in both ends of a strip of firm metal, from which he filed various handle shapes. To create a handle using one of these forms, the potter smoothed off the top of a slab of clay

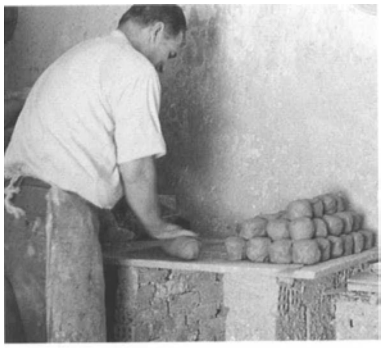


FIG. 3.8

FIG. 3.9

FIG. 3.8 *The potter wedges large clumps of clay, then twists off similar-sized chunks, which he forms into balls for the morning's work.*

FIG. 3.9 *The potter throws a flanged lid upside down "off the hump."*

several centimeters thick and forced either the wire or the metal into one end of the clay. As he drew the form through the clay, the emerging handle was extruded. Attic potters used such forms to make small handles (FIG. 3.12; see also FIG. 18.29). Slender handles are more prone to break when pulled than when extruded. The form creates a uniformly even handle, whereas the pulled handle is usually thicker where it begins. This is one way of distinguishing a pulled handle from one drawn through a form.

None of the small pieces made by this shop was turned. All trimming was done by sponging. Though it was the month of August and it was quite hot under the brilliant sun, the interior of the workshop was pleasant, and the pots did not dry out too rapidly. Several times a week the proprietor fired the kilns in the workroom. The firing was done in the evening in order not to add to the daytime heat (see FIG. 3.2).

The toughness of the natural Greek clay is shown by the following incident: This establishment made a child's bank, a completely enclosed form in the shape of a cat. The potter cut the coin slot by inserting a narrow loop tool into the clay and drawing it across the back of the cat's head. In a previous day's production, one piece had escaped having its slot cut. Though the piece was completely dry, the potter drew a nail across the hard clay several times to make the coin slot. He did this without breaking or crumbling the adjacent clay; the slot needed only to be sponged.

To show me how tall a piece could be made from this clay, the owner of the shop placed a large ball of clay on the wheel and pulled up a cylinder about 35 cm high. After shaping it into a vase, he fluted the rim and added several decorative body rings using the corner of a rib tool, rings similar to those found on Nikosthenic amphorae (see FIGS. 2.10–17).

The owner of this family-run workshop had come from the island of Kythnos, where he learned the trade as a growing boy helping his father, who had learned it from his father. His wife came from a potter's family and had relatives

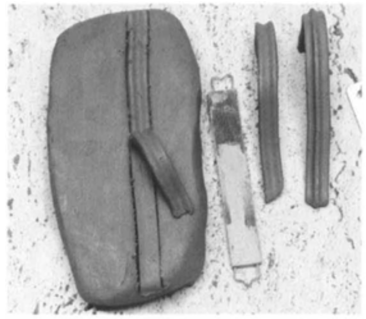


FIG. 3.10

FIG. 3.11

FIG. 3.12

FIG. 3.10 *Tools for making handles.*

FIG. 3.11 *Results of two methods of extruding small handles.*

FIG. 3.12 *Extruded handle on red-figured stamnos.*

who had emigrated to the United States and set up a pottery business on the East Coast. The owner's children were carrying on the tradition. Modern Greek potters still produce a large amount of ceramic ware for home use as well as for the tourist trade.

ADDENDUM

In 1994 I revisited the Georgouli pottery shop. A pug mill had been added to the equipment to pulverize and homogenize scrap clay along with the purified clay. The two kilns had been replaced by a single, large fiberglass kiln, whose floor moved on a track for easy loading and unloading. The parents had retired. The now-grown son was carrying on the family tradition in much the same manner as has been determined to be the case in antiquity (FIG. 3.13). Clay was still purchased from a large pottery supply shop, which cleaned and purified it.

FIG. 3.13

FIG. 3.13 *Son carries on family pottery tradition in the same workshop. He is using a rib as a throwing aid. Another rib hangs on the wall.*

4. Surface Treatment

The surface of a freshly thrown clay piece is wet. It retains the potter's finger striation marks. If the potter uses a sponge either in throwing or finishing the piece, it will have a slightly smoother but still textured surface. A damp sponge drags off the high spots and fills in the low places (FIG. 4.1). These are desirable surface finishes for many ceramic pieces but not for all.

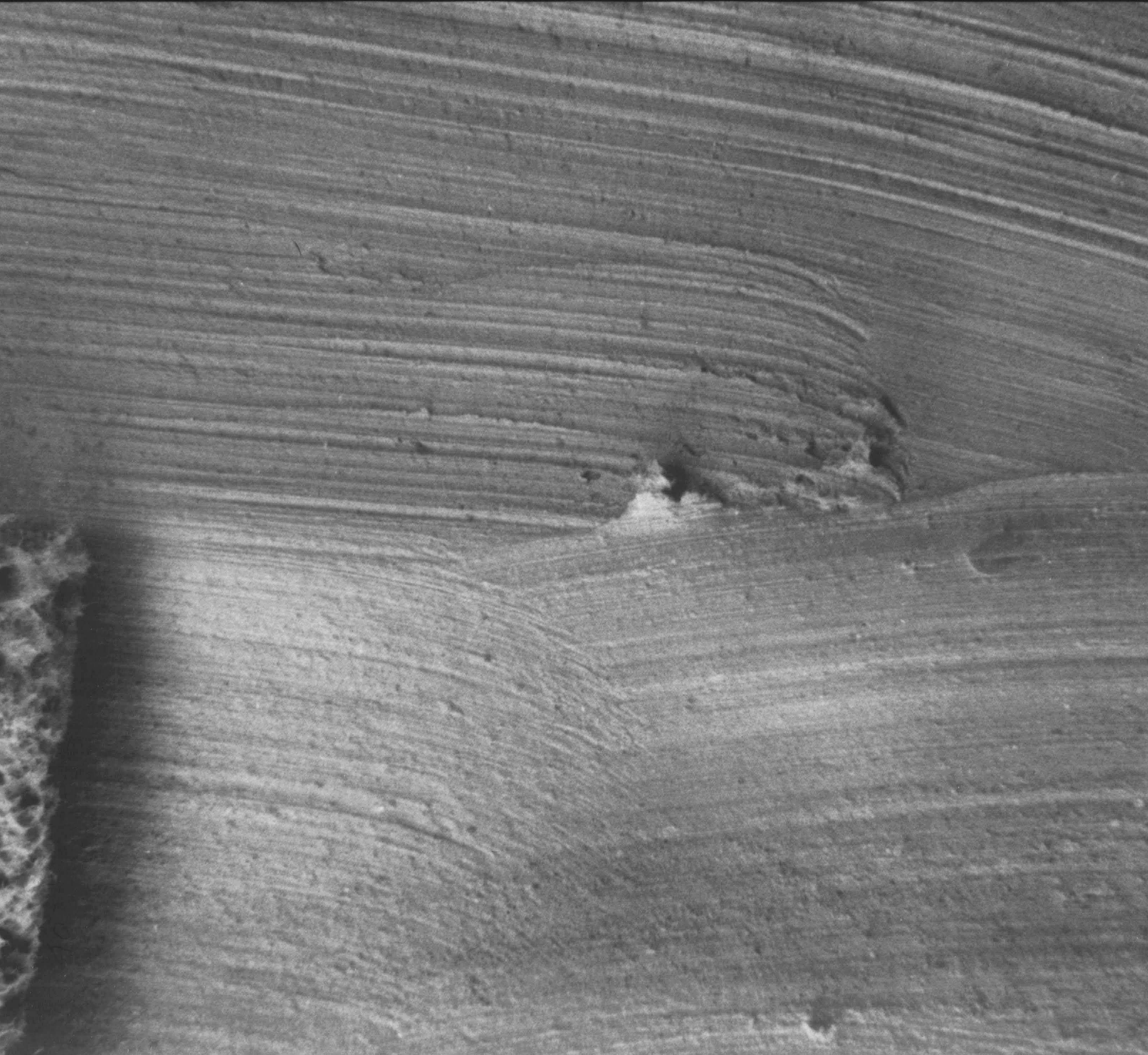
Rib Smoothing

A relatively smooth surface can be obtained by lightly holding a rib against a finished piece rotating on the wheel (FIG. 4.2). Many fine-grained clays contain the mineral illite, which tends to settle in the finest particles of a clay.[1] These fine particles are brought to the surface during the finishing stages of throwing if the potter lightly applies a rib to the vessel.[2] The rib eliminates throwing striations made by the fingers and smoothing marks made by the sponge.

Burnishing

To obtain a perfectly smooth and also shiny surface, the potter may burnish his vessel. Burnishing is the process of giving a firm-to-rigid leather-hard vessel a smooth, shiny finish by vigorously rubbing the surface with a hard, smooth object. This technique was used by Attic potters to give a very smooth exterior to a vase that was to be decorated. Burnishing also compacts the clay on the surface of a vessel, making it more resistant to abrasion.

The properties of a clay influence the shine it will take. To create a shiny surface, it is necessary to have a fine-grained clay. Crystals of clay are roughly hexagonal and flat in shape. It takes hundreds of crystals to make up a particle of clay, which is also flat and hexagonal.[3] These plate-shaped particles tend to orient themselves with their flat sides parallel to the surface of the clay.[4] Burnishing increases their parallel orientation, causing them to reflect light and leaving a shiny, smooth surface, which remains after drying and firing.[5] Large-grained clays



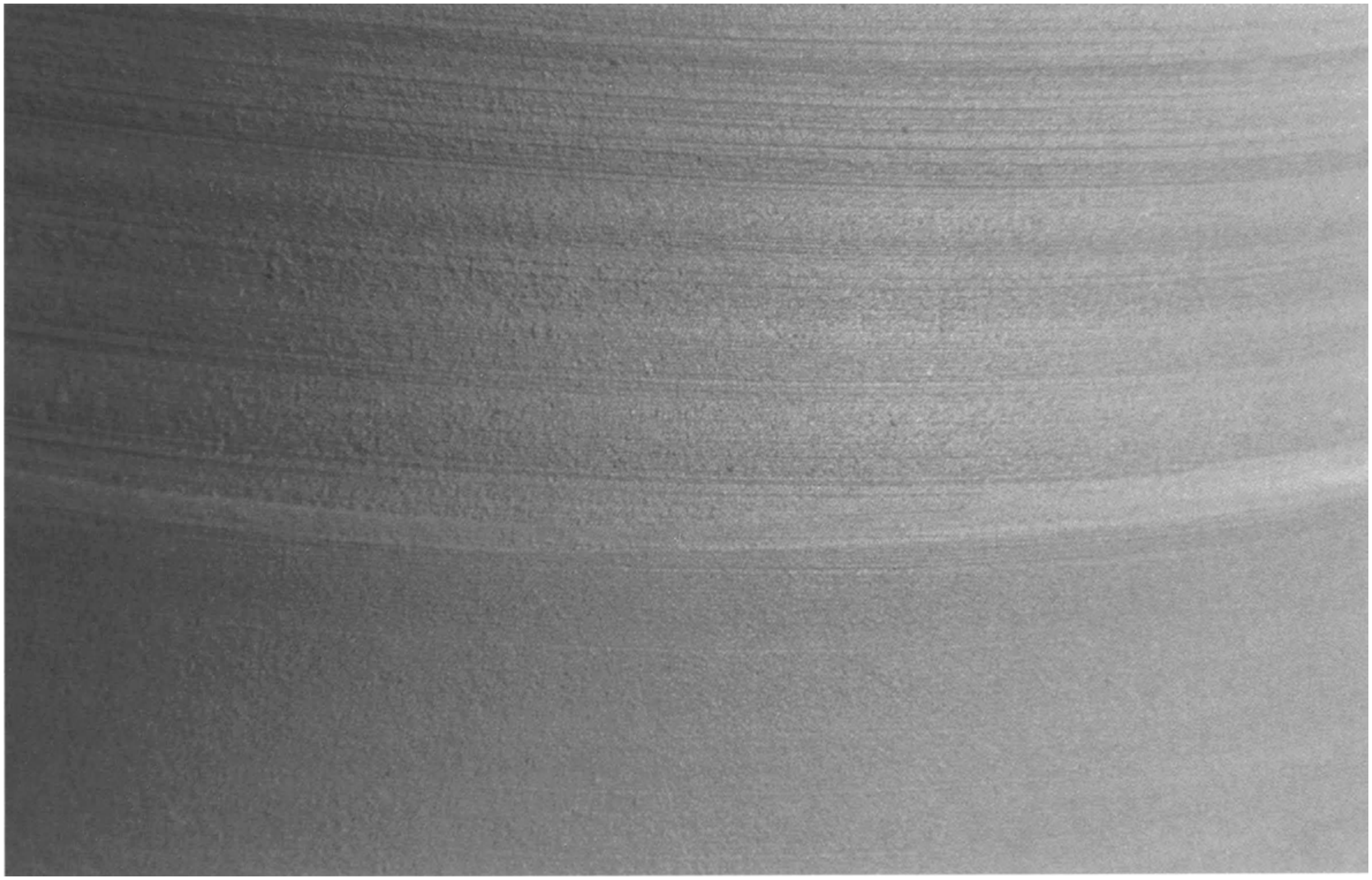


FIG. 4.1 *Upper half shows striations made by finger running over wet clay. Lower half was smoothed with a sponge. Modern clay from Amarousi. Note sponge in lower left corner.*

FIG. 4.2 *Close-up of freshly thrown vase illustrating two surface finishes. Upper half has been sponged, leaving textured surface; lower half has had rib gently applied to surface, leaving it smooth. Modern clay from Amarousi.*

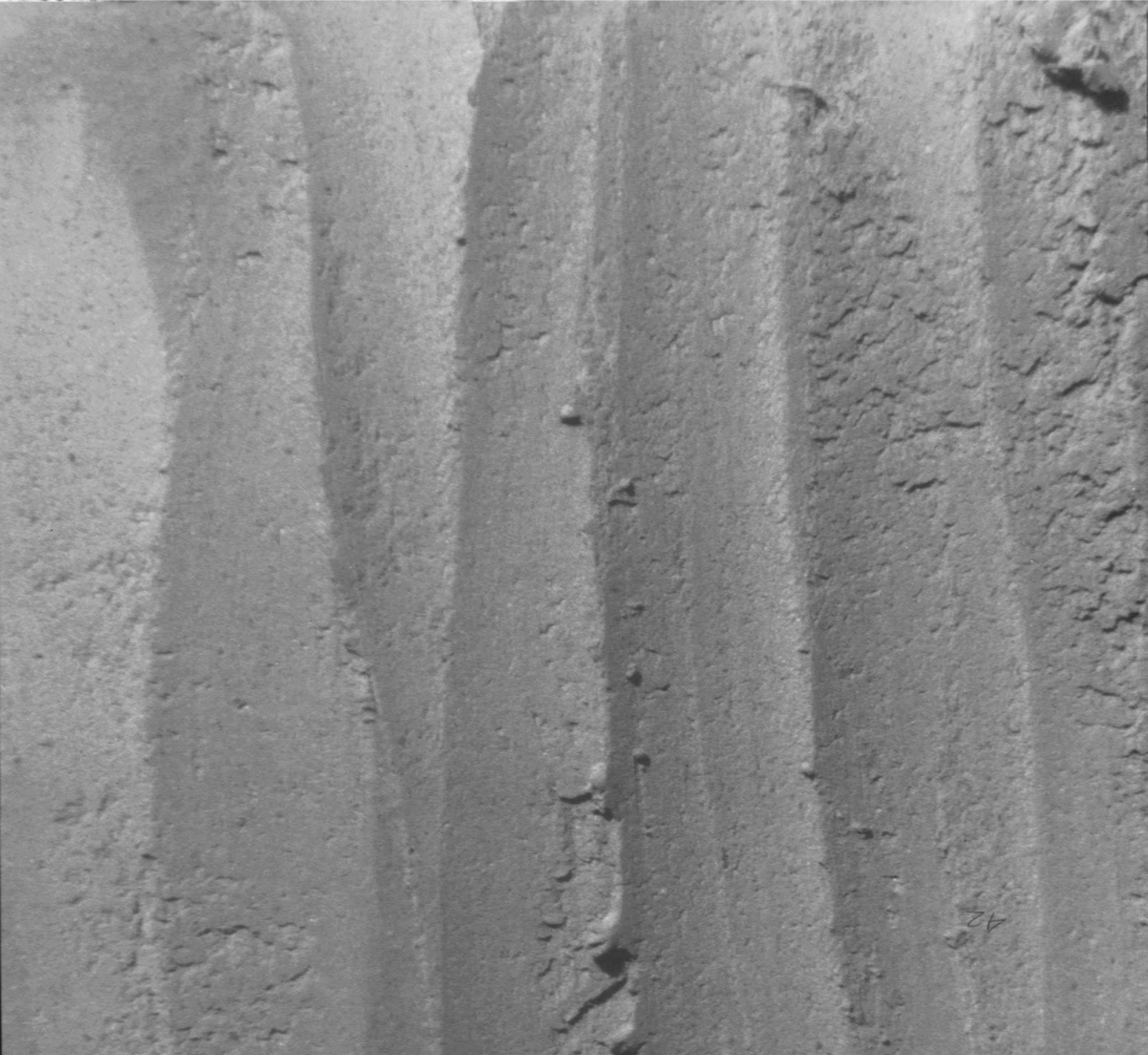


FIG. 4.4

FIG. 4.5

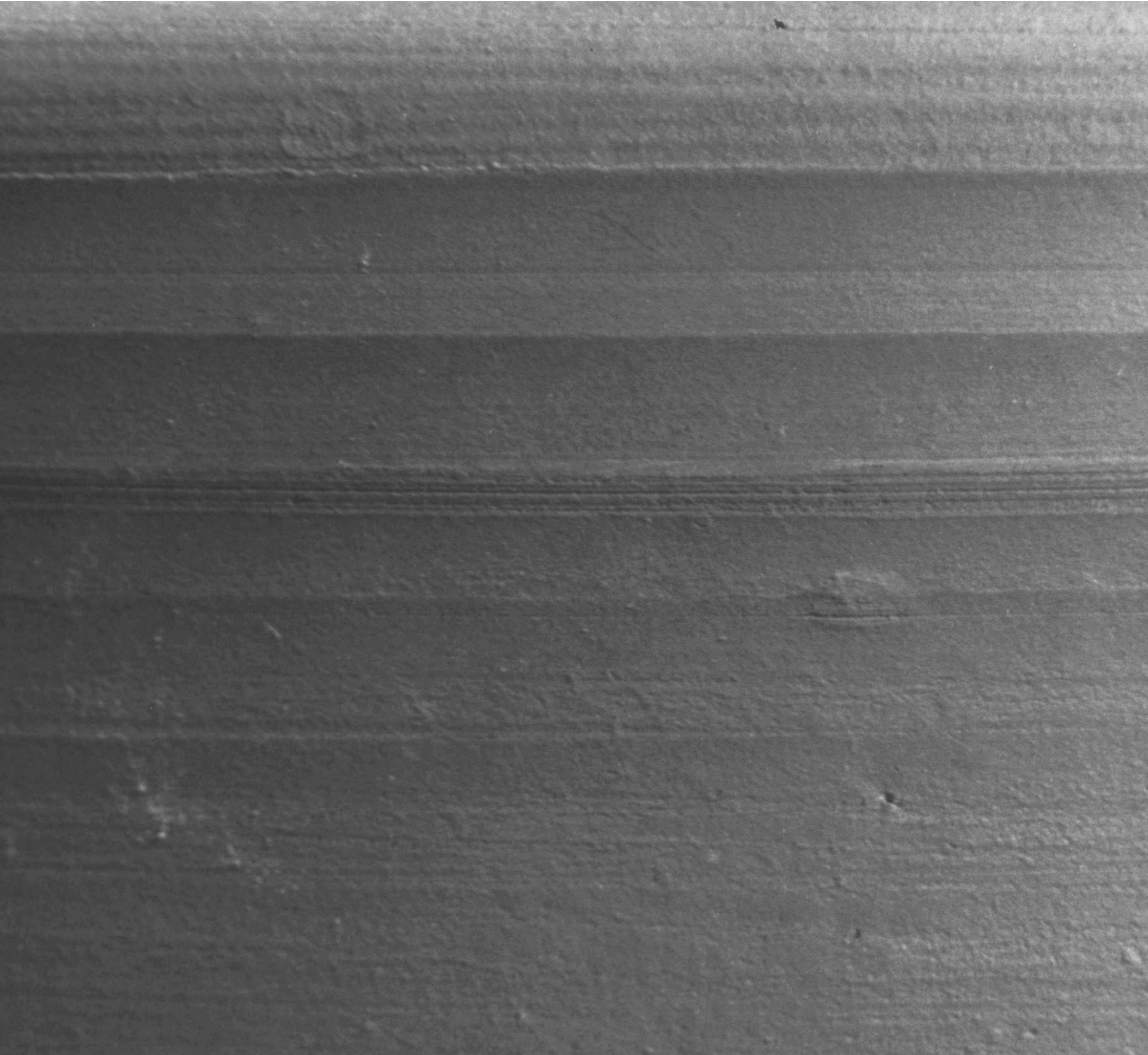
are more porous and cause diffusion of light;[6] burnishing such clay will produce a smooth surface that will tend to remain matte. The mineral illite in a clay is important in producing a shiny surface. Illite concentrates in the fines and carries more alkalies than kaolinite, causing the fines to be a bit higher in fluxing oxides. When a potter smoothes an illite-loaded clay surface with a rib, he is preparing that surface for ideal burnishing. The rib not only eliminates throwing striations and sponge marks but also removes excess water from the surface of the vessel.

The condition of the clay surface affects burnishing. Burnishing must be done on a firm-to-rigid leather-hard surface. A burnish tool used on clay that is too wet leaves shallow grooves with a burr along the edges of the grooves (FIG. 4.3). Soft clay clogs the tool, while clay that is too dry won't burnish unless

FIG. 4.3 *Burnishing Greek clay (with back of spoon) immediately after it is thrown on wheel and while it is still wet results in shallow grooves with burrs along edges. Modern clay from Amarousi.*

FIG. 4.4 *Shoulder of amphora burnished with flat blade on a rotating wheel leaving a 1.5-cm-wide plane missed by burnishing tool (arrow).*

FIG. 4.5 *The potter left obvious burnish strokes on this fragment of a moldmade kantharos.*



it is rewetted. The surface needs to be even and devoid of small bumps or depressions, for the polishing tool has difficulty with such areas (FIG. 4.4). The surface must not contain large pieces of temper or unwanted foreign matter, for the tool tends to drag these along the clay, marring it.

Burnishing produces characteristic marks in clay—short, jerky marks on a piece that is held in the hand; long, even marks on wheel-burnished ware. When a potter holds a firm-to-rigid leather-hard piece in his hand—whether thrown on the wheel, made in a mold, or hand-built—and vigorously rubs a burnishing tool back and forth over the surface, short strokes are produced, leaving a very slight depression or concavity (FIG. 4.5). Holding a tool against a firm-to-rigid leather-hard piece rotating on the potter's wheel leaves long, unbroken strokes, usually with a slight concavity (depending on the tool) (FIG. 4.6). Burnish marks will disappear when the potter, applying less pressure, repeatedly burnishes an area. The resulting surface of the hand-built piece is smooth but not necessarily even (FIG. 4.7), while that of the wheel-thrown piece produces a surface that is both smooth and even (FIGS. 4.8; 11.9–10). Greek potters burnished their fine-grained wheel-thrown vases on the wheel, producing a very smooth, even surface. They burnished their plastic pieces and handles by hand, sometimes leaving characteristic burnish marks (FIGS. 4.5, 9–10).

Noble suggests the use of a rounded agate pebble, a bone, or hard wood as a burnishing tool,[7] while Richter mentions the blade of a knife.[8] The knife is unwieldy to handle, while the rounded tool nestles snugly in the potter's hand. Greek potters had a long association with metals, and consequently a rounded piece of firm metal similar in shape to the back of a spoon may also have been used as a burnisher. Good burnishing tools gain a smooth, polished surface themselves with repeated use, making them valuable to the potter.

Attic potters burnished as a means to an end, that end being a remarkably smooth surface on which to paint. Consequently, burnish marks are rarely evident on Greek vases.[9] When signs of burnishing exist on the body of a vase,

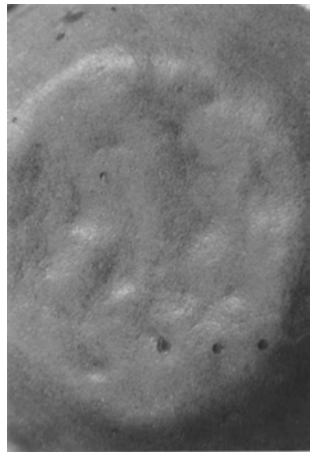


FIG. 4.7

FIG. 4.6 *Holding burnishing tool against leather-hard vase rotating on potter's wheel leaves long, unbroken strokes with slight concavity, as seen in upper half of photo; lower half shows finger striations on unburnished surface. Fine-grained clay from the Los Angeles area.*

FIG. 4.7 *Handmade piece repeatedly burnished may be smooth but may not be even. Fine-grained clay from the Los Angeles area.*

they are most likely to be found on the shoulder. In figure 4.4 a flat, knifelike burnishing tool held against the shoulder of an amphora while it rotated on the wheel left several wide, flat surfaces partially encircling the vase.[10] Between the planes is a slight depression, which is rougher in texture and very slightly lower. This is an area missed by the burnishing tool. It could be argued that such burnish planes, because they are flat, are the result of a scraper tool used in turning, but that is unlikely, for burnishing, which follows turning, eliminates turn marks.

Burnish marks are most likely to be obvious on the sharply rounded outer curves of the feet of Attic vases, especially those of amphorae, hydriai, psykters, and kraters. Such burnish marks are distinguished by their narrow, contiguous, flat surfaces (see FIGS. 26.5–6). Burnish marks are seldom left on the flat top surface of the foot. An unusual case, however, is seen on an Attic black-figured neck-amphora where a rounded burnishing tool left eight adjacent depressions (FIG. 4.11). The feet of neck-amphorae were thrown separately and added to the firmed-up body while they were still somewhat moldable. This may have been the case in the above example, the softer foot having been burnished while it was in the soft leather-hard stage, leaving the telltale marks. One might question whether they are the result of a loop tool used in turning, but that would indicate that the feet of Attic vases were not burnished—which they were. The unglossed underside of the foot of many Attic vessels is very smooth and often has a soft sheen. When the vase was hung from a wall or upturned as for pouring, the underside of the foot was visible. It may have been burnished, but more likely a rib was used in the final shaping of the underside during forming. The rib would produce a smooth finish, bringing the fine particles in the clay to the surface. Lightly rubbing the underside with a yielding tool after it had reached the leather-hard stage would produce a soft sheen. There may be a difference in the finish between the walls of the underside of a foot and the "ceiling" of a foot (the bottom of the vase that is visible under the foot) that have been created separately. In figure 4.12

FIG. 4.9

FIG. 4.10

FIG. 4.8 *Upper half of photo: repeated burnishing left wheel-thrown piece smooth and even. Lower half of photo: less extensive burnishing left bands with slight concavity.*

FIG. 4.9 *Hand-burnished calyx-krater handle fragment.*

FIG. 4.10 *Hand-burnished hydria handle.*

FIG. 4.11

FIG. 4.13

FIG. 4.12

the walls have the smooth finish produced by a rib, while the ceiling shows residual burnish marks.

Evidence of burnishing is often seen on Attic plastic pieces and on some handles. These were hand burnished as opposed to being burnished on the wheel. Figures 4.5, 9–10 show, respectively, (a) short, jerky strokes on a man's thigh on a plastic kantharos fragment, (b) longer strokes more smoothly executed on a calyx-krater handle, and (c) long strokes on a hand-burnished hydria handle.

Miltos

It is well documented that in order to enhance the natural color of their clay, the Greeks used a substance called miltos, a ferruginous red ocher, to coat the surfaces of their vases to be decorated. Experiments both by Richter[11] and by Noble[12] have shown that the Greeks painted the ocher wash over their leather-hard vases. Noble states that the ocher wash (miltos) was applied with a brush.

FIG. 4.11 *Burnish marks with their characteristic concave profile were left on top surface of foot of neck-amphora.*

FIG. 4.12 *Sides of foot of this kalpis have smooth finish indicating they were finished with a rib, while "ceiling" of foot has circular burnish marks done before addition of foot.*

FIG. 4.13 *Miltos streaking is quite obvious in reserved portion of this amphora fragment.*

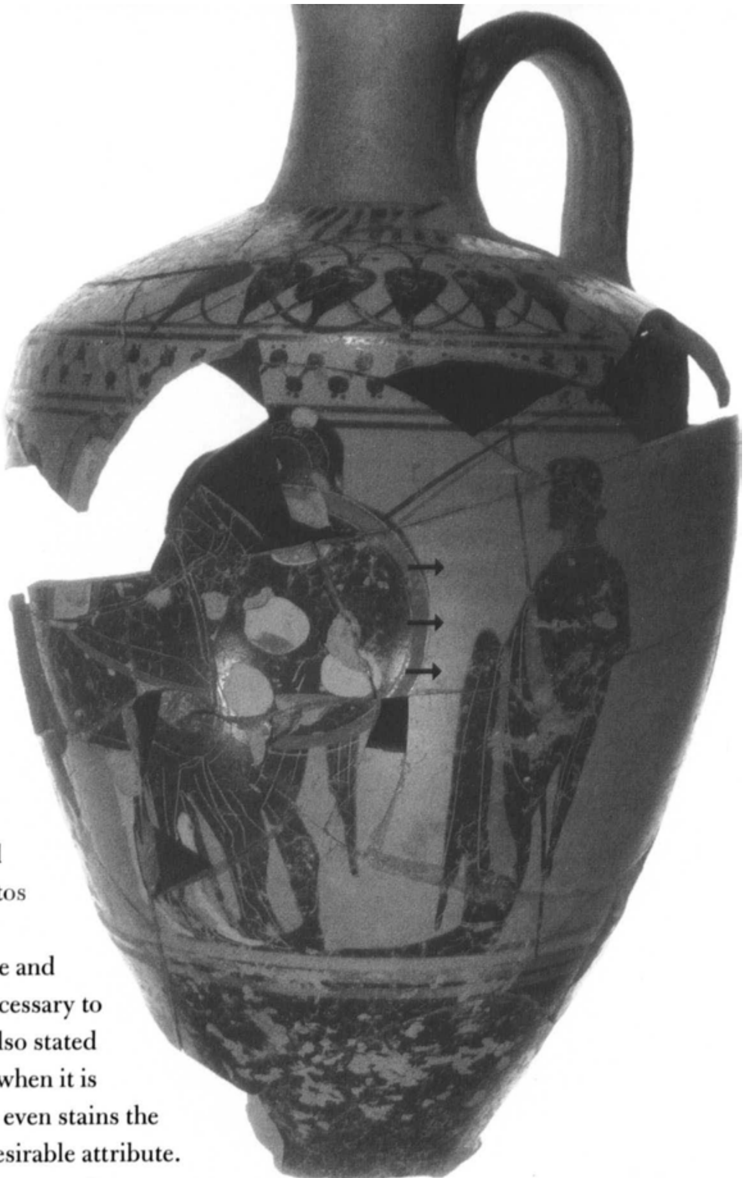


FIG. 4.14

The occasional vase or fragment where miltos streaking can be seen would support this statement (FIGS. 4.13–16). Cook[13] and Noble[14] indicated the necessity of burnishing the vase both before and after the addition of ocher, while Richter[15] implied burnishing only after its application. The author's experiments applying yellow ocher[16] on both burnished and unburnished leather-hard vessels made from modern Greek clay showed the ocher adhered adequately to either surface and took an equally good polish.[17] If the miltos used by the Greeks adhered well to the leather-hard but unburnished clay before and after its application, it would seem unnecessary to burnish before its application. Richter also stated that ocher is incorporated with the clay when it is painted on the unburnished surface and even stains the clay a deeper color after burnishing, a desirable attribute.

Miltos is not obvious on most vases or fragments since it goes on smoothly. On many vases the miltos has faded or disappeared over time. Sometimes, however, miltos was applied unevenly, which produced a streaked effect that is rarely preserved. When obvious, it can be identified by streaks in the reserved portions of painted vases. It may be necessary lightly to feel the surface of the vase to distinguish between streaking and residual burnish marks: miltos streaking feels smooth, and residual burnishing marks feel slightly irregular. Figure 4.13 illustrates a very streaked amphora

FIGS. 4.14 *Fragmentary lekythos with miltos streaking (arrows). See close-ups in figures 4.15–17.*

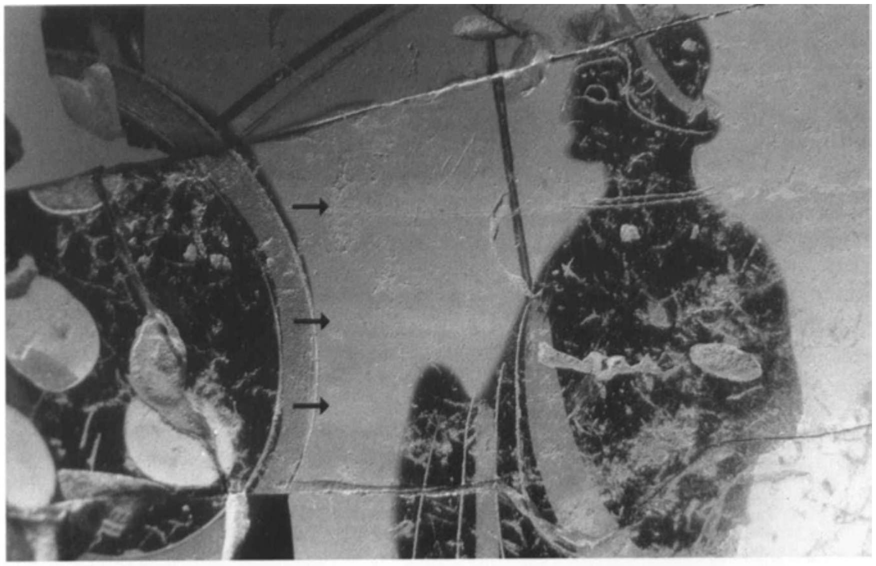


FIG. 4.15

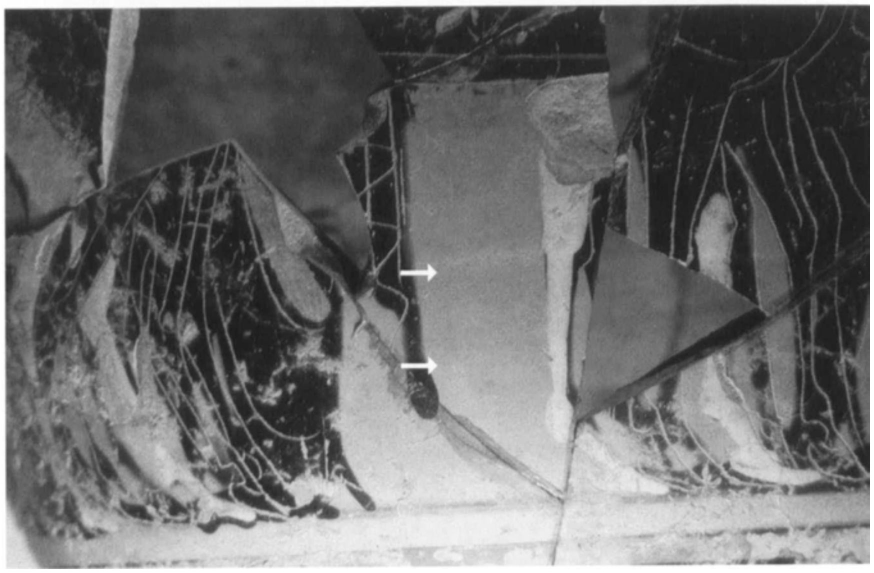


FIG. 4.16

FIGS. 4.15–16 *Miltos streaking in reserved portion of vase (arrows).*

FIG. 4.17 *Miltos streaking (black arrows) and missed burnished area (white arrow) in reserved area of vase.*

shoulder fragment. The lekythos in figure 4.17 has evidence of both miltos streaking and areas of missed burnishing.

Stroking

Gently stroking burnished clay with a yielding tool such as a soft cloth or a chamois enhances the surface shine. It also aids in the removal or softening of any residual burnish marks.[18] It must be done while the clay is still in the leather-hard stage, otherwise minute scratches are made on the surface. Stroking is done on or off the wheel. Appendages such as handles limit free access to the handle zone; therefore, both burnishing and stroking the body are done prior to the addition of handles.

5. Greek Gloss and Firing

Technically the black color on Attic pottery is not a glaze. Glaze is a layer of glass fused onto pottery, while the black gloss on Attic pottery is a mixture of alkaline water and clay, especially illite-loaded clay, that has been finely levigated and has sintered during firing. (Sintering is what happens when the edges of the tiny particles fuse together just before the melting stage.) Although referred to as a glaze in much of the literature, current authors are increasingly using the more accurate term "gloss."[1] In 1942 Theodore Schumann published a treatise describing how the Greeks produced their black glaze (gloss).[2] Highly acclaimed by archaeologists, Schumann's work, along with that of academics who preceded as well as followed him, has allowed scholars to reproduce the Greek gloss with a good degree of accuracy.

The ancient Greeks made gloss out of their very fine-grained clay. Authorities do not fully agree on the issues, but the general feeling seems to be that the clay was both finely levigated and deflocculated.[3] The process was generally as follows: A small amount of Attic clay was vigorously stirred into a large amount of alkaline water (water that is basic, that is, having a pH greater than 7). The proportions were about 20% clay to 80% alkaline water. The Greeks fired their kilns with wood, and we may conjecture that they soaked wood ashes, which are high in potash, in water to give the water the proper alkalinity. Clay particles naturally cling together (flocculate), but in order to create the gloss (at this stage finely levigated slip), it was necessary to make the clay particles repel one another. The potter calls this deflocculating the clay. Potash in the water exchanges ions (charged atoms) with those of the clay particles, giving each clay particle an identical electrostatic charge, causing it to repel the others. Consequently, the clay particles don't aggregate but remain separate.[4] This mixture was left standing for several days to allow the unwanted coarser particles of clay to sink to the bottom. The top, containing the deflocculated colloidal particles of clay, was then siphoned off. This liquid, which looked like muddy water, was the levigated slip.

Vase-painters used levigated slip in this thin state, which when fired became a light brown color called "dilute gloss."[5] In order to attain the rich black of the fired gloss, however, the slip had to be thickened, either by evaporation or by being boiled down to a consistency between regular milk and heavy cream. It was then painted on the vase and fired in the proper manner. Vase-painters used thicker levigated slip to outline figures ("contour lines") and thinner slip to fill in the background in red-figured ware. When the slip was painted on the miltos-coated vase, it was the same orange-red color as the clay, but it had a sheen to it that was lacking in the clay. After application of the slip the vase was probably rubbed with a soft cloth or chamois to bring out the luster of the levigated slip. After the vase had dried, it was ready for firing.

FIG. 5.1

FIG. 5.1 *Domed kiln with firebox at left and flames emerging from vent at top. The kiln master with hooked implement is attending the firing kiln.*

The research of many scholars culminated in the work of Richter,[6] and of Binns and Fraser,[7] who established that the technique used to attain the ancient Greek gloss was a single firing done in three stages: oxidation, reduction, reoxidation. Greek kilns were beehive-shaped with a vent at the top and a tunnel-shaped firebox at the base (FIG. 5.1). Fully formed and decorated vases were stacked in the chamber (FIG. 5.2), and the kiln master ignited the fuel (wood or charcoal) in the firebox. When combustion occurred, an atom of carbon given off from the burning wood united with two atoms of oxygen from the air to produce carbon dioxide (CO_2) inside the kiln. The draft that was created drew heat into the kiln chamber. As the heat built up, the inside of the chamber turned cherry-red, near the maturing temperature of Greek clay, but the gloss was still the orange-red color of the clay. (If the kiln were turned off at this time and allowed to cool down slowly, the gloss would be red in color.)

At this stage the kiln master reduced the oxygen in the kiln by obstructing the air flow. He covered the vent on top and placed in the firebox material such as green wood or wet sawdust, which burned incompletely and gave off water vapor.[8] With less oxygen available the carbon atom from the burning wood could unite with only one atom of oxygen, producing carbon monoxide (CO) inside the kiln. The carbon was still hungry for oxygen; it couldn't get it from the obstructed flow of air or from the firebox full of green wood, so it went to the pieces firing in the kiln, made of Greek clay rich in iron. Tests have shown that the iron content of Greek clay is in the form of ferric oxide (Fe_2O_3), which is red. The carbon, which will unite with oxygen wherever it can find it, therefore drew oxygen out of the clay and gloss of the pieces firing in the kiln. In doing so, the iron both in the unglossed clay and in the gloss of the decoration turned into ferrous oxide (FeO), which is black. Water vapor from the green wood or wet sawdust also produced black magnetic oxide of iron (Fe_3O_4), which is even blacker than ferrous oxide.[9] The gloss, made with the tiniest colloidal particles of clay, remained shiny, while the unglossed clay retained its more matte appearance since it had the coarser

FIG. 5.2

FIG. 5.2 *Pinax fragment showing schematic drawing of interior of loaded kiln with portion of firebox at lower left.*

particles of clay in it. If the kiln were turned off at this time and allowed to cool down slowly, the gloss would be shiny black, and the clay would be matte and grayish in color.

The kiln master maintained reduced oxygen in the kiln until the temperature reached about 950°C.[10] He then reoxidized the kiln and cooled it by partially opening the vent on top and possibly removing any unburnt green wood in the firebox. Once again ample oxygen flowed into the kiln. The unglossed portions of each vase, being more porous than the finer-grained gloss, united with enough oxygen to turn them back to the red ferric oxide stage. The gloss sintered during the reduction firing, so insufficient oxygen penetrated it to change it back to red; it remained black. This single firing, done in three stages (oxidation, reduction, reoxidation), produced the rich, black gloss on Greek vases that we see in our museums today.[11] The same firing procedure was used for both red-figured and black-figured wares.

The vases described in the present work are those that were decorated with paintings. Decorated Athenian vases were painted with finely levigated slip, which, when fired in an oxidation-reduction-reoxidation kiln, became the Greek black gloss. As a general rule, wide-mouthed vessels (such as kraters and stamnoi) were decorated on the outside and coated on the inside. Wide-mouthed cups (kylikes) were usually decorated on both the inside and the outside. Narrow-mouthed containers (such as oinochoai and amphorae) were decorated on the outside but were not coated on the inside except for the neck. In black-figure the figures are painted with the finely levigated slip and much of the background is left in the natural red color of the clay, whereas in red-figure the figures are left in the natural red color of the clay, and the background around the figures is painted with the levigated slip.

6. Flaws and Defects

Air Pockets

Attic potters did not have the benefit of modern de-airing pug mills, which mix, de-air, and compress clay. Instead they relied upon hand wedging and/or kneading, which leaves air pockets in the clay, some only pinhead size, others larger.

Air pockets can be seen in fragments where the break runs through the bubble. They show up in vessel walls, rims, feet, joins, and in handles. They may be found in the center of twisted handles. The many air pockets that cannot be detected by visual inspection can best be observed as black areas in fragments or vases that have been imaged using X-rays, either conventional or computed tomography (see FIG. 2.3). Air pockets are undesirable because they contain gasses that may be unable to escape through the pores of the clay walls rapidly enough during drying and firing, resulting in cracks, breakage, or explosions in the kiln. They are more likely to cause problems in very fine-grained clay, where the clay particles are closer together and the clay therefore less porous than coarse-grained clay.

Air pockets in hand-wedged clay will be evident in the surface during throwing, either when the potter draws up the cylinder or when the piece is thinned during the shaping process. They are easily detected by the potter, for they feel like a bump in the clay wall, under the potter's fingers. As the potter pulls up the clay wall, air bubbles near the surface collapse by themselves. In those cases the hollow created by the bubble is filled in by the surrounding clay in succeeding upward pulls. However, if as the piece nears the final shaping, a new air pocket appears, it must be ruptured by the potter. Once popped, it will leave a thin spot in the vessel wall unless the potter fills it with clay. Figure 6.1 illustrates the outer surface of a kylix with a tiny, collapsed air bubble that either popped during the final shaping or was ruptured by the potter who didn't fill it in. The flaw was missed or ignored when the kylix was brushed with miltos, burnished, and glossed. Figure 6.2, on the other hand, depicts an amphora fragment that has a filled-in air bubble. The potter did not smooth it over, presumably because it was on the inside of the vase.

FIG. 6.1

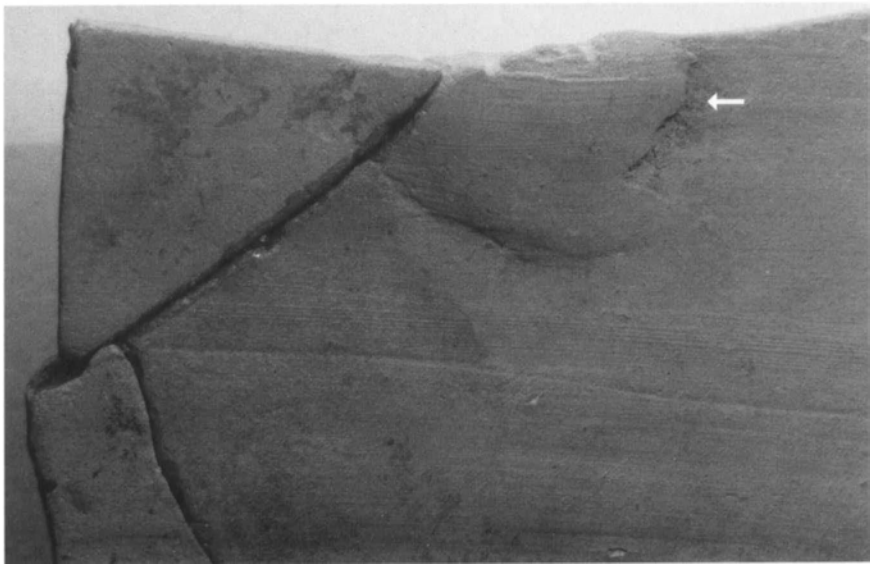


FIG. 6.2

FIG. 6.1 *A 6-mm-long ruptured, depressed air bubble was either not spotted or ignored by the potter and therefore not filled with clay. The decorator painted over it with gloss.*

FIG. 6.2 *Ruptured air bubble (arrow) was filled in with small piece of clay that was not worked into surrounding clay because it was on interior of vase.*

FIG. 6.3

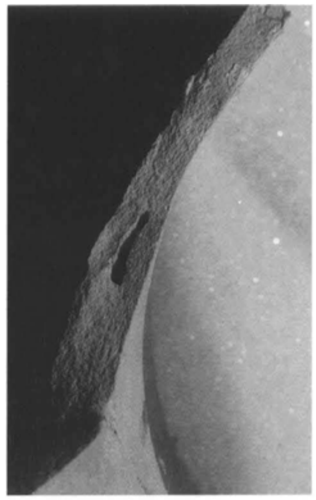


FIG. 6.4

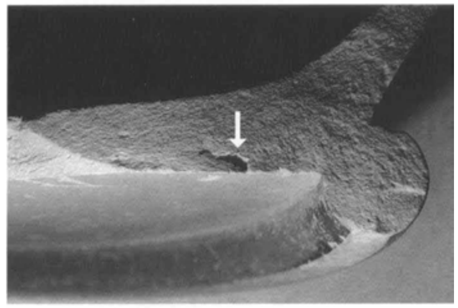


FIG. 6.5

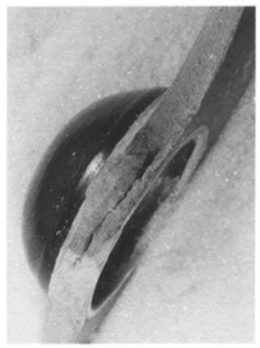


FIG. 6.6

Examples of typical air pockets found in hand-wedged pieces are shown in figures 6.3–6. Twisted handles may have an air space where the ropes of clay come together as they entwine (see FIG. 8.23).

Cracks

All pots experience stress; when the stress is greater than the pot can endure, it cracks. Cracks can occur during all phases of the creative process. Though there are many reasons for a crack, it is sometimes possible to identify the cause and pinpoint when it occurred just by looking at the shape, characteristics, and location of the crack.[1] Cracks that happen during the construction phase are caused by physical stress, such as expansion and contraction, and manipulation by the

FIG. 6.3 *Example of numerous intact air bubbles (black arrows) and one that has ruptured (white arrow).*

FIG. 6.4 *Large air pocket in lower neck wall of amphora fragment.*

FIG. 6.5 *Air pocket in base of skyphos foot fragment (arrow).*

FIG. 6.6 *Long air bubble in phiale fragment exposes edge of omphalos.*

potter. Cracking during firing and cooling of the kiln is called dunting, and the crack itself is called a dunt.

In general, if the edges and faces of the two sides of a crack are frayed and rough, the crack probably formed during the drying phase of construction, even though it may not have become apparent until after the firing. A horizontal hairline crack without sideways displacement, seen in figure 6.7 on a calyx-krater fragment, is likely one that developed during construction but was not obvious until after the firing. Sideways displacement here means that one side sticks out more.

If the edges are sharp and the face of the crack is somewhat smooth or there is sideways displacement between the edges, it is probably a dunt that developed during the cooling phase of the firing. A main ingredient of clay is silica, which is found in quartz, sand, and flint.[2] When clay is subjected to heat in the kiln, the silica passes through various phases. The quartz phase of silica found in clay is subdivided into alpha quartz, below 573°C, and beta quartz, above this temperature. The volume of the quartz increases up to 3% as it changes from alpha to beta quartz at the inversion point (573°C) and decreases by the same amount when the change from beta to alpha quartz occurs with cooling. These changes in size result in stresses, which cause dunts, most often during cooling. Cooling is critical. Dunts may occur if a kiln is cooled down too rapidly, or if a draft strikes a piece in the fire.[3] A pelike in the Getty Museum has several long, horizontal fractures with sideways displacement on part of its lower belly near the foot. They run approximately one-third of the way around the vase and are opposite a thin spot in the clay on the inside of the vase. The base of the pelike is notably thicker than the body walls. This fact coupled with the thin spot quite possibly led to uneven temperatures in the vase during the cooling phase of firing (beta to alpha inversion) and the consequent dunting (FIG. 6.8).

A difference in wall thickness between one part of a piece and another can result in unequal expansion and contraction, causing cracking. This is evident in a neck-and-shoulder fragment of a third-century-B.C. Panathenaic

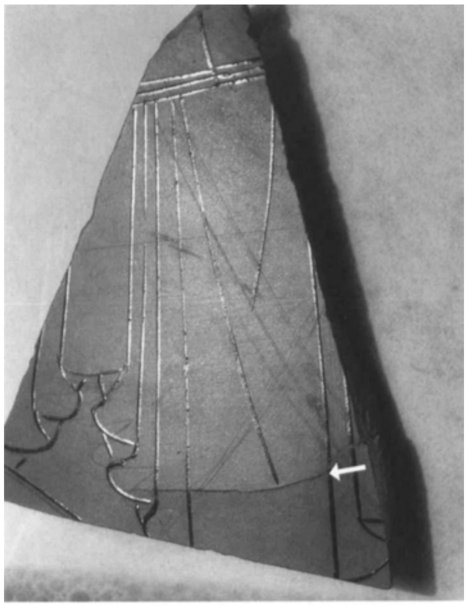


FIG. 6.7

FIG. 6.7 *Horizontal hairline crack (arrow) without sideways displacement on this calyx-krater fragment likely developed during construction.*

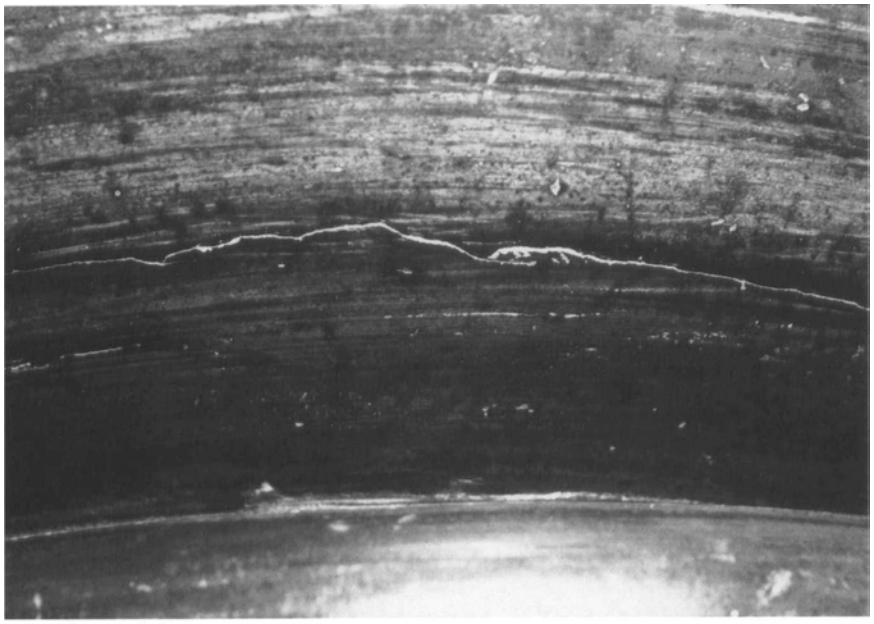


FIG. 6.8

FIG. 6.9

amphora with deep cracks in the lower portion of the neck (FIG. 6.9). They were caused by the lower neck being considerably thicker than the upper neck and the shoulder to which it was attached. The lower neck is 3.1 cm thick, while the upper neck is 1.5 cm. The resulting stress was too great and led to the cracks. Such cracks are seen more often in fairly dense clay, such as that found in Attica, than in more porous clay.

A vessel thrown from "tired" clay may crack at stress points. Overworked clay that has not been aged between uses becomes "tired" and loses its strength. The clay particles still slide past one another, giving the clay plasticity, but tired clay particles can be separated more easily, causing cracks in a developing piece (see FIGS. 30.1–5).

FIG. 6.8 *Long horizontal fracture. Sideways displacement on lower belly of this pelike suggests crack was a dunt.*

FIG. 6.9 *Lower neck of Panathenaic amphora cracked due to excessive thickness relative to adjacent structures.*

Adding fresh clay to a considerably drier piece will result in cracking. The outline of a small original foot is apparent in a red-figured skyphos fragment in the Getty Museum (FIG. 6.10). It appears that the potter added an extra coil of clay to fatten the original foot, leaving an air space between the two. He worked clay from the new coil around the original foot. The crack was caused by adding damp clay to clay that was too dry, preventing the two clays from melding together securely. The air pocket may have abetted the cracking. In another example the potter either added extra slip or spread wet slip from the join of the foot to a rigid leather-hard vase, causing a 4-cm-long crack on the ceiling of the foot of a kalpis in the Getty Museum (see FIG. 4.12).

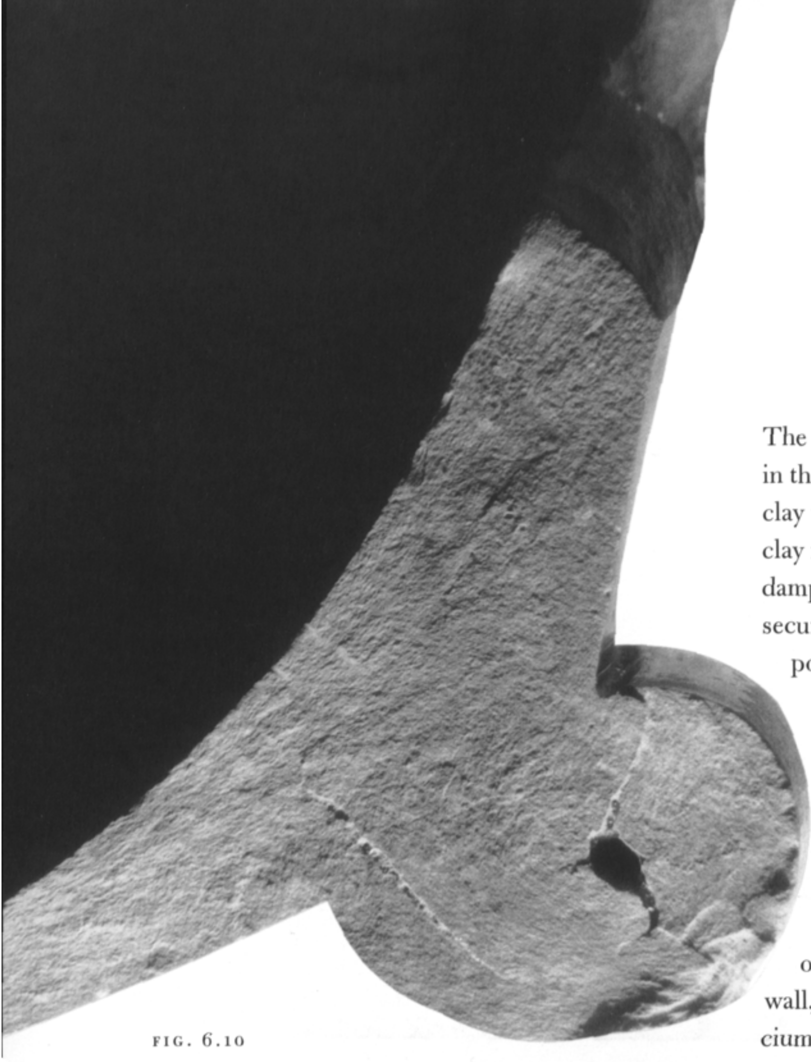


FIG. 6.10

Spalls

A spall is a conically shaped chip of clay that breaks away from the wall of a fired vessel due to excessive pressure from within the wall. The point of the cone is at the point of origin of the spall. The spall is caused by foreign matter in the clay wall, usually lime (FIG. 6.11). When limestone is fired, it changes from calcium carbonate to calcium oxide, becoming unslaked lime. The white, powdery unslaked lime subsequently takes on moisture from its surroundings, changing it into calcium hydroxide, or slaked lime.[4] Even a tiny piece of lime buried in the wall of a fired clay vessel slowly hydrates, causing it to swell. This puts pressure on the clay surrounding the bit of lime and may cause a chip of the clay wall to pop out, exposing the culprit, especially if the lime is near the surface of the clay. The spall usually does not pop out until several days, or even months, after the firing, depending on the porosity of the clay and the humidity to which it is exposed.[5]

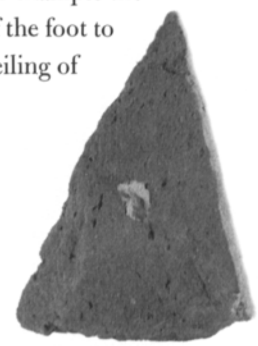


FIG. 6.11

A white-ground lekythos in the Museo Arqueológico Nacional in Madrid illustrates a typical conical pit, exposing the lime at the bottom of the pit (FIG. 6.12). In the body wall of a red-figured amphora in Madrid the spall broke in two, with half remaining in situ but with cracks around it (FIG. 6.13).

FIG. 6.12

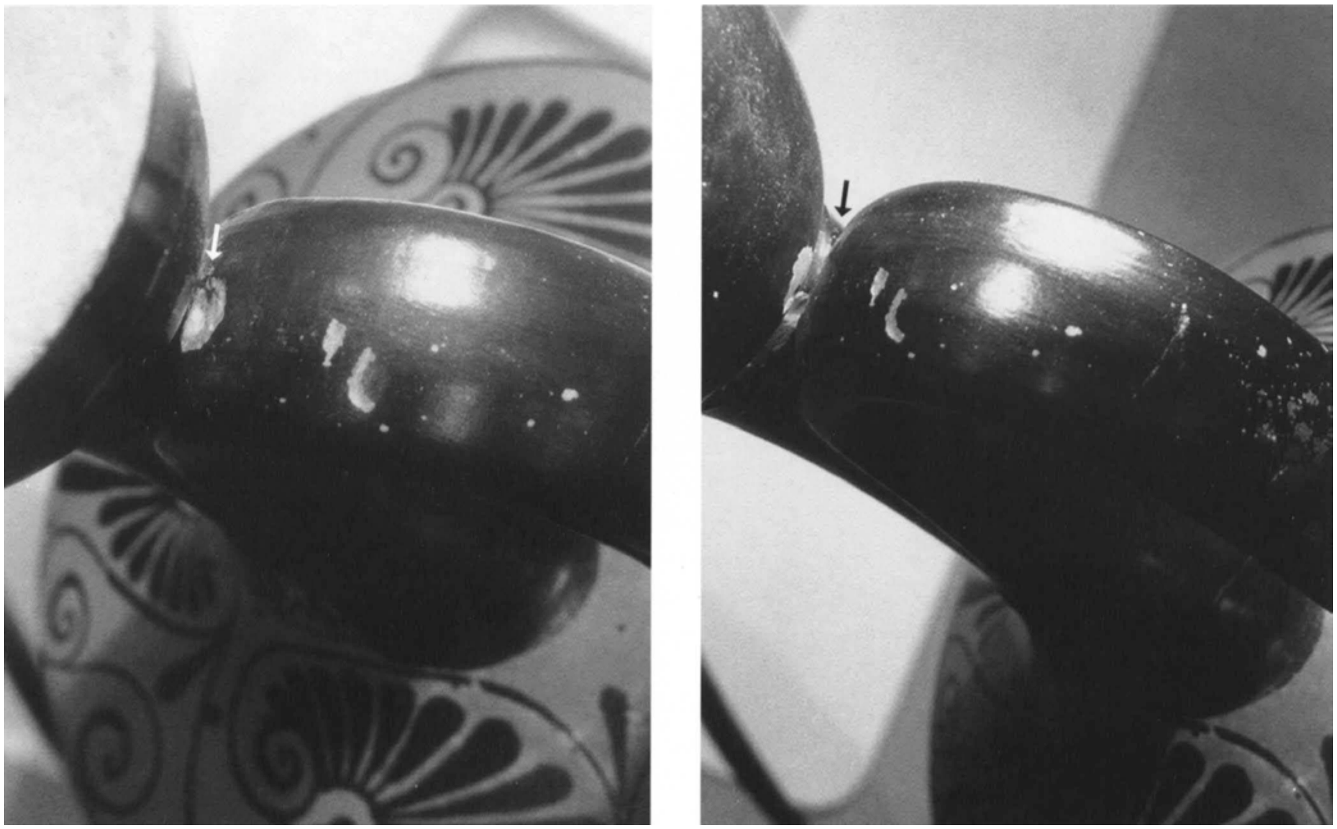
FIG. 6.13

FIG. 6.10 *Clay was added around existing foot of this skyphos. Too great difference in moisture content of the two clays caused separation.*

FIG. 6.11 *Typical, conically shaped spall with lime adhering to tip of chip, seen end on.*

FIG. 6.12 *Typical spall pit exposing a bit of hydrated lime at bottom of depression in body of this white-ground lekythos.*

FIG. 6.13 *Partial spall; probably remaining half is still hiding bit of lime culprit in body of this amphora.*



FIGS. 6.14–15 *Large piece of lime embedded at bottom of handle where it joins base of mouth of lekythos caused spall to pop out (arrows).*

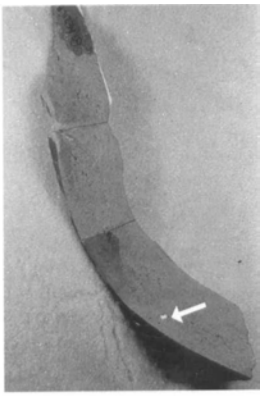


FIG. 6.16

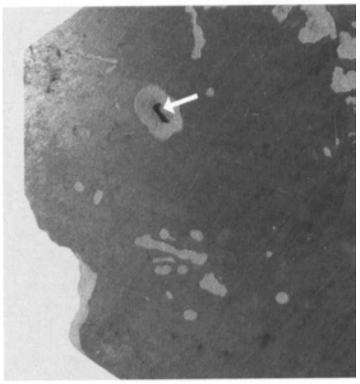


FIG. 6.17

Were the remaining half of the spall to be flicked out, it is likely one would find a bit of lime at the bottom of the pit. In figures 6.14–15 the spall came from the handle of a lekythos; the defect caused the handle to separate from its attachment to the mouth. In figure 6.16 a piece of lime, while not causing a spall, is embedded in the wall and may have contributed to the breakage of the vase. In figure 6.17 the foreign matter that once filled the bottom of the empty space left by a spall is missing.

Dents

Occasionally a dent or depression is visible in the surface of a vase. Dents occur when an object falls upon or leans against a newly formed vessel that is still pliable because it has not reached the rigid leather-hard stage. Dents cannot happen in the kiln during firing when the piece is dry and hard. A dent that occurred during throwing or immediately after would have been repaired by the potter had he noticed it. If he missed it then, he would have noticed it when he burnished the vase. If the dent was small and shallow, the potter could fill it with clay. Burnishing would work the clay into the vase with only minimal risk of subsequent cracking. Large, deep dents cannot be filled with wet clay after the ware has reached the rigid leather-hard stage.

A Panathenaic amphora in the Royal Ontario Museum (FIG. 6.18) received rough treatment while it was in the potter's workshop in antiquity. The set of curved parallel dents on the reverse side was made after the vase was painted when a circular object—something like the curved foot of a vase—fell on the shoulder area of the amphora. The amphora was still plastic enough for the wall to be dented but not dry enough to be cracked. On the obverse side of the same vase (FIG. 6.19) a round dent was made by what probably was a thumb pressing into the vase at the shoulder, about where the thumb would be placed as the potter grasped the large amphora to remove it from the wheel. The depres-

FIG. 6.16 *Piece of lime embedded in wall of vase (arrow), while not causing a spall, may have contributed to breakage of vase.*

FIG. 6.17 *Spall defect in exterior wall of vase (arrow).*

FIG. 6.18

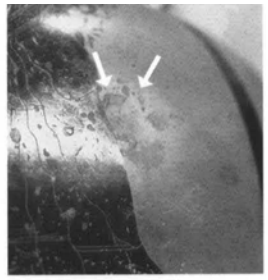


FIG. 6.19

FIG. 6.20

FIG. 6.21

FIG. 6.18 *Curved parallel dents (arrows) cross nose, mouth, chin, right wrist, and left upper arm of runner on left, and right forearm of runner on right. Dents were made by sharp object, such as foot of a vase, falling on leather-hard vase.*

FIG. 6.19 *Round dent (arrows) in reserved shoulder next to Athena's peplos on same vase was likely made by thumb pressing into newly thrown vessel.*

FIG. 6.20 *Series of parallel indentations, called chattering, on underside of this rim was caused by dull turning tool, which bounced along instead of cutting smoothly into surface of clay.*

FIG. 6.21 *Single hair from brush came loose and lodged in this fragment while decorator was applying gloss (arrow). The hair burned out in the fire, leaving slender, hollow line with slightly raised edges.*

sion could have been missed or ignored by both the potter and the painter as it is located in the reserved background area at the edge of Athena's peplos.

Miscellaneous

Chattering is a series of parallel indentations, or fine ridges, caused by the vibration of a turning tool that is dull or held incorrectly while a leather-hard piece is being turned. The tool jumps along the surface of the clay instead of cutting it smoothly. Chattering can be seen almost half the way around the underside of the rim of a black-figured kalpis in the Getty Museum (FIG. 6.20).[6]

A large fragment in the Getty Museum shows a single bristle that came loose from a vase-painter's brush and became imbedded in the gloss. The bristle burned out in the firing. What remains is a slender, hollow line in the gloss with slightly raised edges that still can be felt (FIG. 6.21).

Figure 6.22 shows the underside of a fish plate with a thin spot along the edge of the lip, which is likely the result of a small, soft spot in the forming clay. As the potter pulled the clay ever thinner to form the lip, the soft spot widened. As it did so, it left a notably thin area in the lip but not one to mar the contour of the plate.

Despite care in the preparation of clay, a piece of foreign matter occasionally mixes with the clay. This appears to have been the case on the underside of the foot of a Getty olpe (FIG. 6.23). The piece of foreign matter was caught in the tool used by the potter when he shaped the underside of the foot and dragged along, leaving a square-shaped gash.

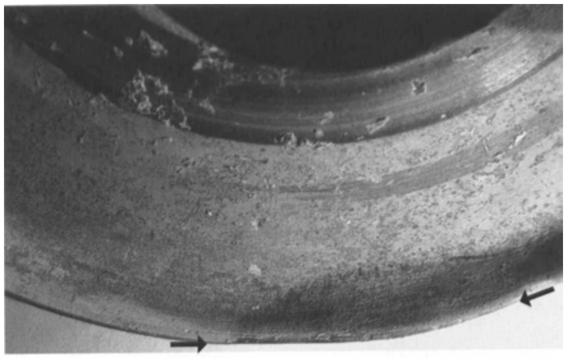


FIG. 6.22

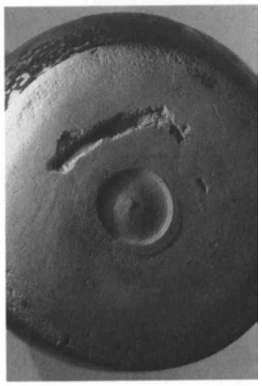


FIG. 6.23

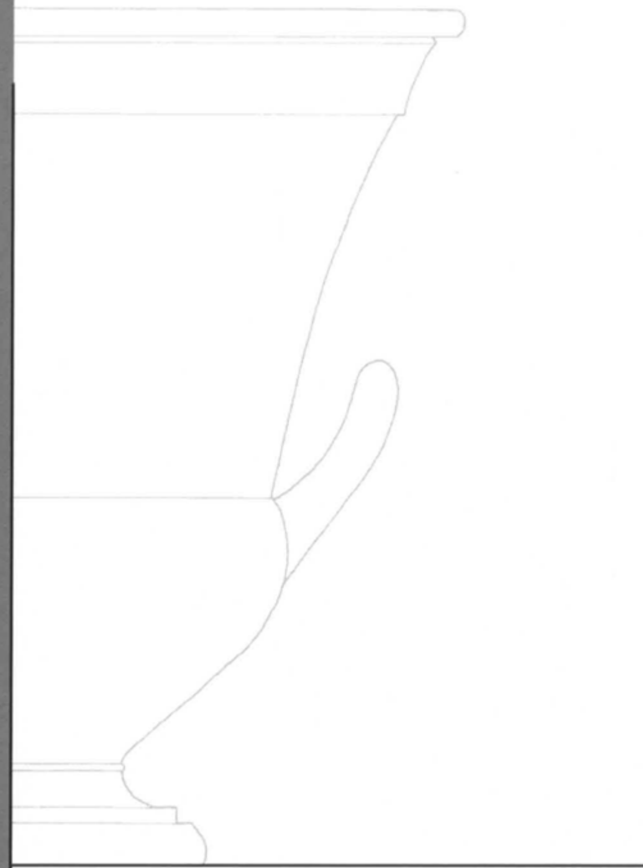
FIG. 6.22 *Thin area (arrows) in underside of South Italian fish-plate rim, likely the result of soft spot in the forming clay.*

FIG. 6.23 *Piece of foreign matter lodged in underside of foot of this olpe was dragged along in the turning process, leaving deep gouge.*

Part Two

Almost no written or pictorial account has come down to us from antiquity describing how Attic potters made their vases. Careful scrutiny of whole vases and sherds, coupled with common sense and familiarity with modern and historical pottery methods, are the tools we have to work with to gain such knowledge.

Part 2 describes, in alphabetical order, how twenty-four major types of Attic vases, many with subtypes and variations, would have been produced. Each vase shape is presented through photographs of intact vases followed by description of their construction techniques. Step-by-step drawings and photo documentation accompany the text.



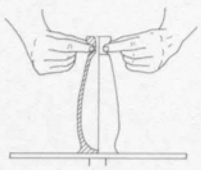
The Vases


08.258.27

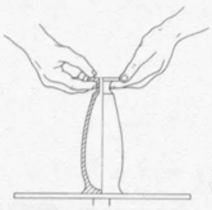
7. Alabastron

The Attic alabastron is a small, vertically elongated vase, usually with a round bottom. It has a short, narrow neck with a small orifice terminating in a broad, flat, thin rim. It is usually handleless, but when handles do occur, they are in the form of two small lugs that are sometimes hollow so that a thong can be passed through them for carrying or suspending the vase.[1] A thong may also have been tied around the narrow neck of handleless alabastra. They are often covered with a white ground, perhaps recalling their original material, alabaster.[2] The vases range from approximately 10 cm to 20 cm in height. They held oil[3] or perfume,[4] and they were used primarily by women at their bath,[5] and sometimes as a votive gift on a funeral pyre.[6] The name is probably of Egyptian origin.[7] The Attic shape varied little throughout its production, from the late sixth to the early fourth century B.C.[8]

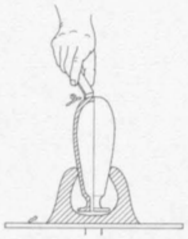
ill. 7a



ill. 7b



ill. 7c



ill. 7d

Round-bottomed Alabastron

The potter created the vase on the wheel in one piece. He centered a ball of clay on the rotating wheel and opened it by pushing his thumbs down into the clay. Placing his left hand on the outside of the opened ball of clay for support, he drew up a slender cylinder with his right hand, tapering it gently toward the top (*ill. 7a*). He formed the narrow neck by pressing the clay at the shoulder level inward with his thumbs and index fingers, a process called collaring-in (*ill. 7b*), which considerably narrows the neck (FIG. 7.1). The potter angled the remaining clay sharply outward between the thumb and finger of his right hand to form the broad, flat rim, while the underside of the emerging rim was supported with a finger of the other hand (*ill. 7c*; FIG. 7.2). He then cut the alabastron off the wheel and set it aside.

When the vessel was firm, the potter inverted it and placed it into a chuck for turning (*ill. 7d*). The rim would be too delicate and too narrow to support the alabastron during the turning process. The wide chuck grasped the tapered body and held it firmly in place. He gave the bottom of the alabastron a

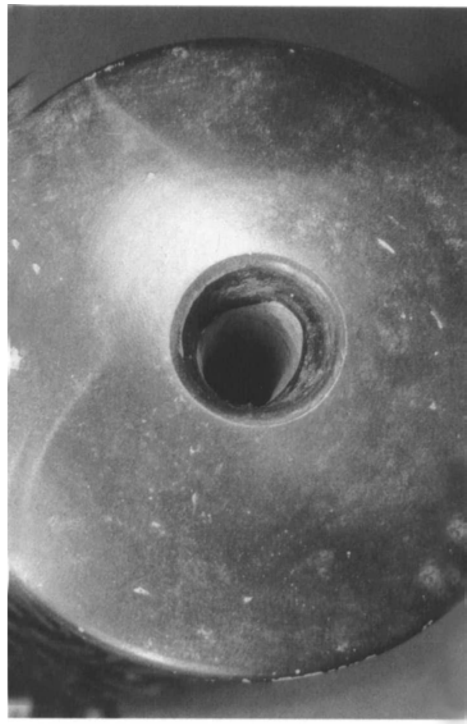


FIG. 7.1

PLATE I
Round-bottomed alabastron
Footed Apulian alabastron

FIG. 7.1 *The narrow mouth opening of an alabastron is due to collaring-in.*

rounded, teardrop shape, and then sponged it smooth. If the design required handles, the potter formed them freehand (some with a vertical hole through each) and attached one on each side below the shoulder.

Footed Alabastron

A few alabastra have a foot. In such cases the mouth, body, and foot were created in one piece. When the vase was upside down in the chuck, the potter formed the foot. He first shaped the outside profile, then, leaving a resting surface, cut away clay under the foot with a scraper or loop tool in much the same manner as for lekythoi (FIG.7.3). When the vessel was leather-hard, he added miltos and burnished the vase.

The vase was now ready for the vase-painter.

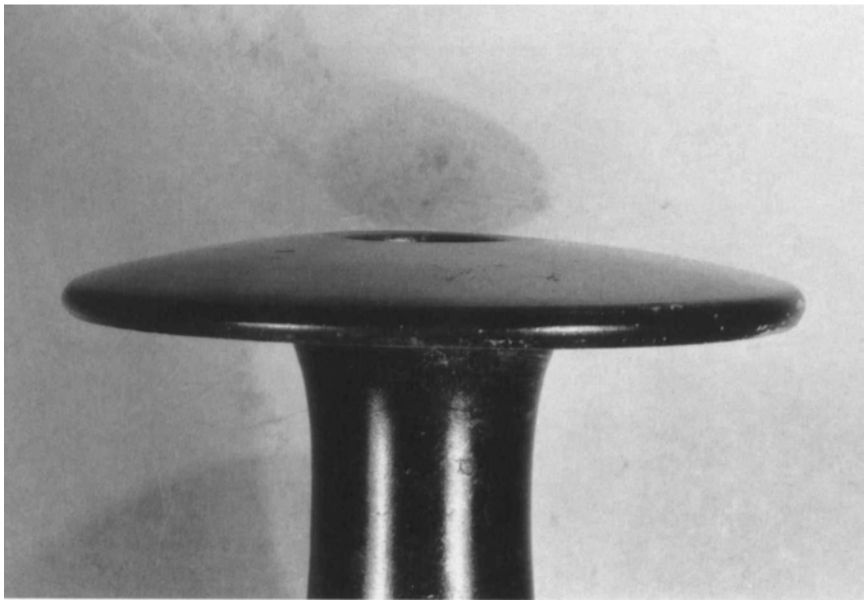
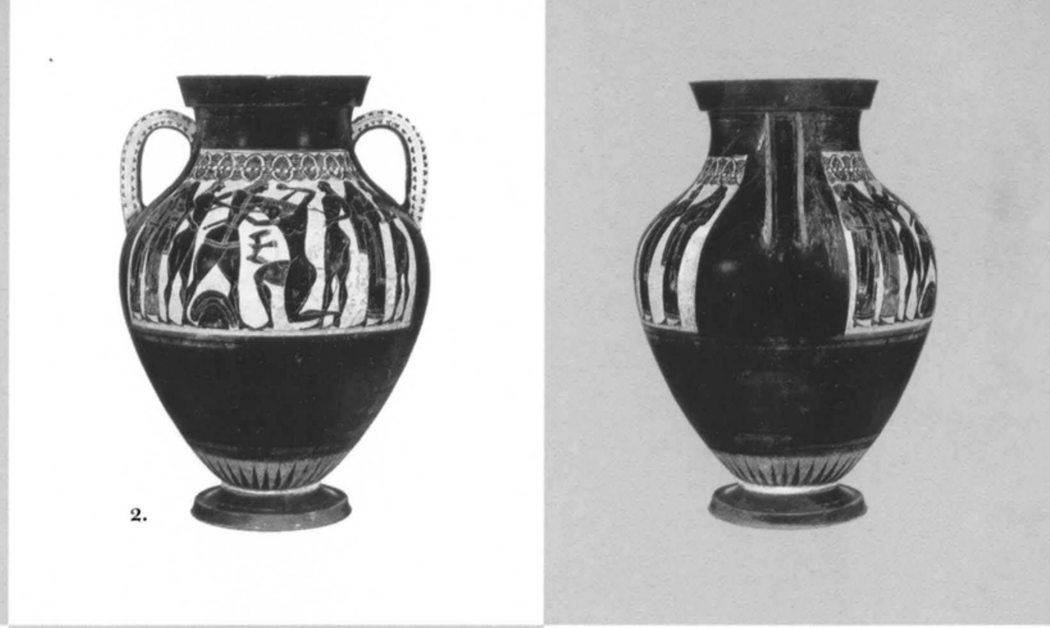


FIG. 7.2

FIG. 7.2 *The broad rim of an alabastron may be flat on the underside and somewhat rounded on the top.*

FIG. 7.3 *Typical underfoot shape of a footed alabastron.*


1.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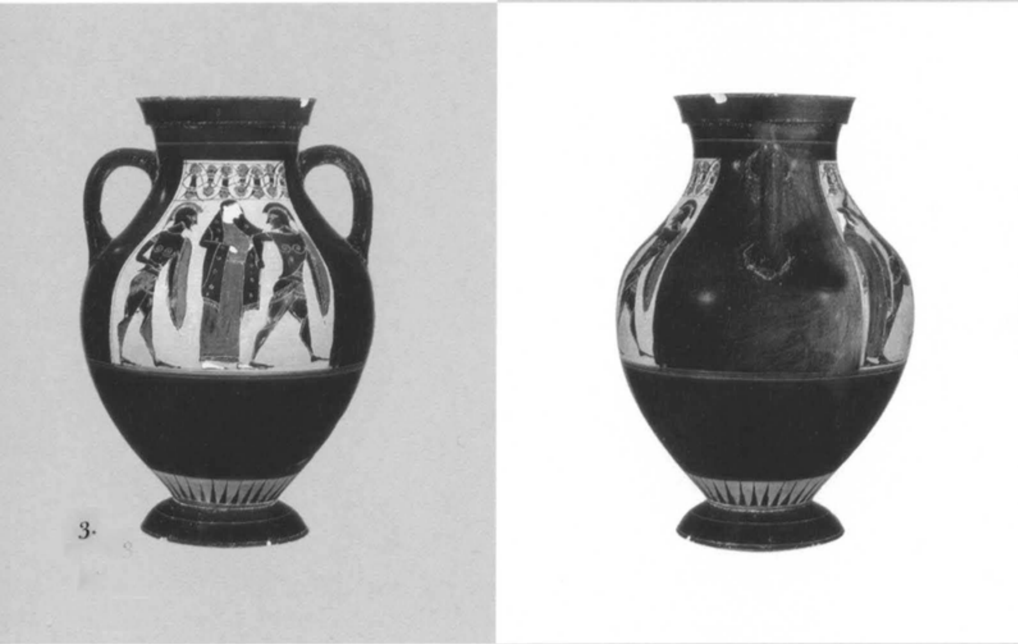
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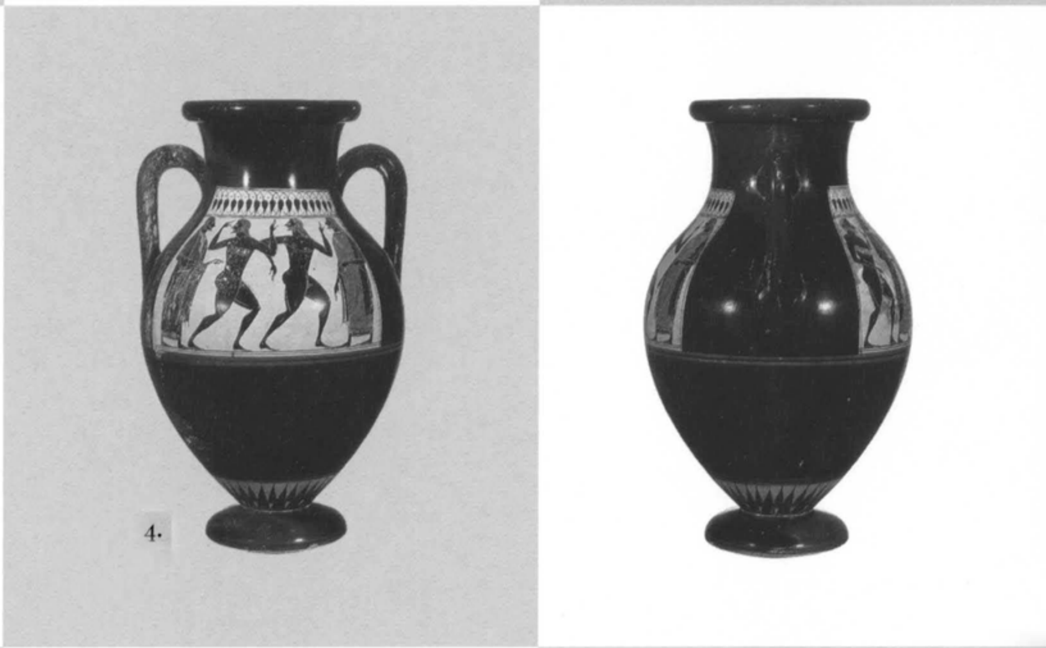
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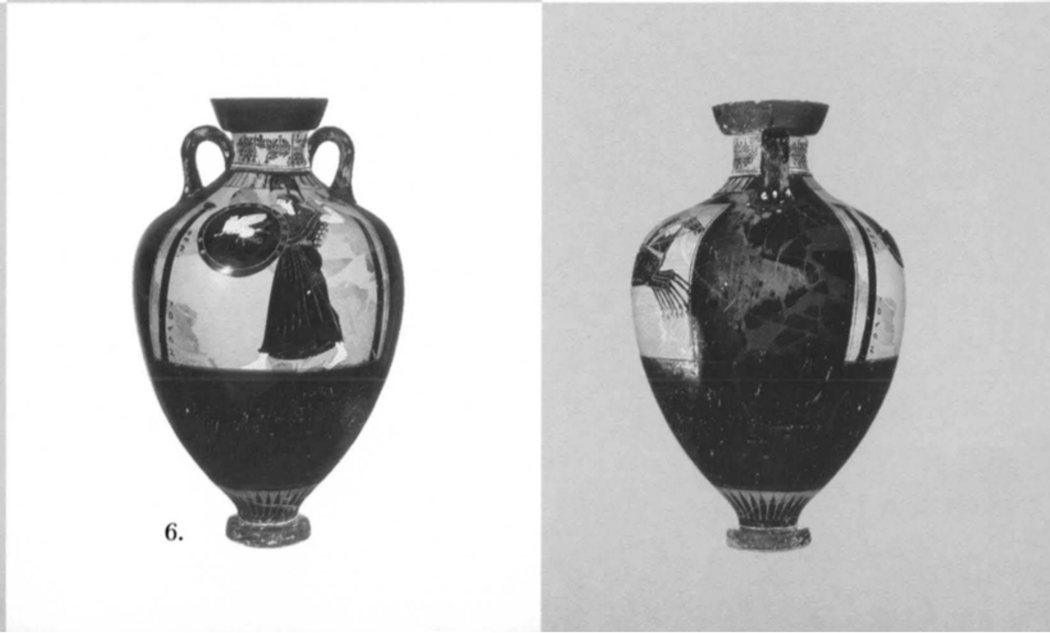
6.

8. Amphora

The canonical amphora is a tall, broad vase with a medium-wide neck and two vertical handles attached opposite each other on the neck and shoulder. Many were created with a mouth and rim meant to be lidded.[1] Decorated amphorae were not glossed on the inside except for the neck and mouth. From the point of view of construction, amphorae can be divided into two types—the neck-amphora, which has an articulated shoulder/neck join, and the amphora with a continuous curve from mouth to foot, also referred to as a belly-, one-piece, or continuous-curve amphora. The handles of different types of amphorae vary greatly. Amphorae range in height from about 30 cm to 45 cm. The amphora[2] was one of the most abundant and useful vases in antiquity, from the Geometric period through Roman times.[3] It was used as a storage vessel for dry materials and liquids, though it was best known for its use as a wine container and decanter.[4]

Neck-Amphora

The earliest form is the neck-amphora in which the neck and body are offset—that is, the curve of the shape changes radically where the neck meets the shoulder. The typical black-figured neck-amphora has a broad, horizontal shoulder, a pair of triple handles (see p. 265), an echinus mouth, and a torus foot. It appeared in the mid-sixth century B.C. and lasted until the first quarter of the fifth century B.C.[5] Neck-amphorae produced from the late seventh through the first half of the sixth century B.C. had a more ovoid body. Red-figured neck-amphorae, which appeared with the invention of that technique at the end of the sixth century B.C.,[6] are generally more slender, with twisted or triple handles, echinus mouth, and a two-degree foot.

Neck-amphorae were thrown in sections, the joins being at the neck/shoulder and at the body/foot. The neck was created separately to prevent sagging of the nearly horizontal shoulder. In creating a neck-amphora, the potter

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PLATE II
1. Neck-Amphora, front and side 2. Type A amphora, front and side 3. Type B amphora, front and side 4. Type C amphora, front and side 5. Nikosthenic amphora, front and side 6. Panathenaic amphora, front and side

FIG. 8.1

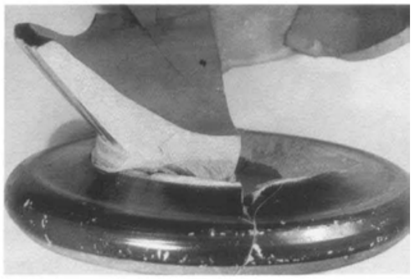


FIG. 8.2

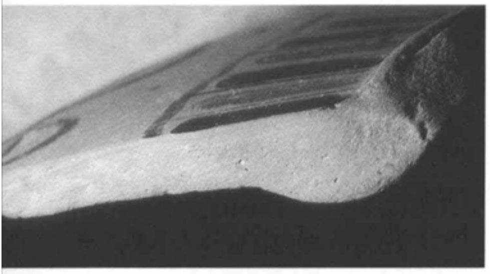


FIG. 8.3

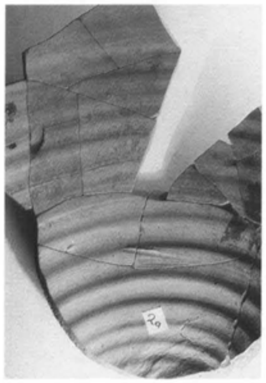


FIG. 8.4

FIG. 8.5

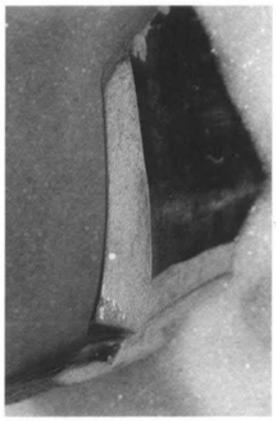
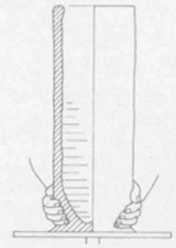


FIG. 8.6

pulled up a cylinder. Spreading the cylinder out to form the body thins the clay wall. Guiding the clay back inward from the widest part of the body to form a nearly horizontal shoulder allows gravity to pull downward on the shoulder clay. This downward pull is critical because the untempered clay in the shoulder must sustain the weight of the neck and generous mouth. If an Attic potter used "tired" (overworked) clay, this became even more critical.[7] Belly-amphorae do not have this problem, for the shoulder slants upward at nearly a 45° angle, and therefore the body, neck, and mouth can all be created from one piece of clay.



ill. 8a

BODY

To throw the body of a typical black-figured or red-figured neck-amphora, the potter centered a ball of clay on the wheel and opened it by pushing his thumbs down into the rotating clay ball to within a few centimeters of the wheel head. To form the floor of the vase, he spread his thumbs apart a short distance, then upward, giving the floor a concave shape. A small mound of clay may have been created in the center of the bottom. This occurred when the potter pushed downward as he spread his thumbs apart, which may have forced the clay up in the center (FIG. 8.1).[8] From the fat ring of clay created after opening, the potter pulled up a tall cylinder a bit higher than the intended shoulder height. Because of the fineness of the clay grains he left the base of the cylinder thicker for support (*ill. 8a*; FIG. 8.2). To shape the body, he angled the cylinder outward and upward, incorporating some of the thickened clay at the base into the body shape (*ill. 8b*). At the shoulder he turned the body inward, terminating the cylinder in a thicker ring of clay at the neck edge to support the neck section (*ill. 8c*; FIG. 8.3). He used a rib tool on the outside in the final shaping to create a smooth surface while his inside hand left throwing grooves, which he may or may not have eradicated in succeeding upward pulls (FIG. 8.4). Having completed the body of the amphora, he cut it off the wheel and set it aside to firm up.

ill. 8b

ill. 8c

FIG. 8.1 *Looking down into the interior of a neck-amphora fragment. The mound of clay in the center was formed when the potter pushed downward and then outward in creating the floor of the amphora.*

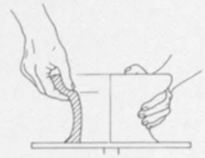
FIG. 8.2 *For support the lower part of a neck-amphora body is left thicker than the body wall.*

FIG. 8.3 *The thickened shoulder edge of a neck-amphora fragment.*

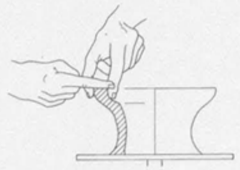
FIG. 8.4 *Throwing grooves inside a neck-amphora body fragment.*

FIG. 8.5 *Inside contour of echinus mouth fragment follows that of the outside. The potter made a notch between lip and neck.*

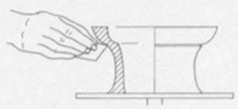
FIG. 8.6 *Tapered thickness of neck shown in cross-section of neck wall of a neck-amphora.*



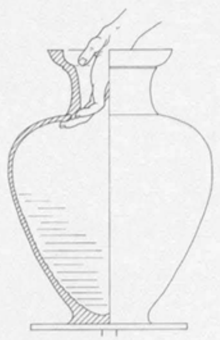
ill. 8d



ill. 8e



ill. 8f



ill. 8g

NECK/MOUTH/LIP

The potter threw the neck right side up. He opened the ball of clay clear down to the wheel head, then widened the opening with his thumbs so that the inside diameter was a bit smaller than that of the shoulder opening. With the thumb and fingers of his right hand he pulled up a short cylinder, terminating it in an echinus mouth, the inside of which followed the contour of the outside (*ill. 8d*; FIG. 8.5). For lidded amphorae this mouth conformation lends itself nicely to receiving the flange of a lid. The potter flattened the rim either with a rib tool or by pressing down on the clay with a finger of his right hand braced against the thumb and index finger of his left (*ill. 8e*). He accented the conjunction of lip and neck on the outside by making a shallow notch in the clay with the corner of a rib or scraper tool, creating a sideways V (*ill. 8f*; see FIG. 8.5). This may have been a drip ledge to prevent liquid from running down the side of the vase.

In pulling up the neck, the potter left the base thicker than the rest of the cylinder, for support. This is a clue that helps determine that the neck was thrown separately. The cross-section of such a wall in a fragment will show up as a slightly tapered shape (FIG. 8.6). Collaring will also thicken a clay wall.

JOINING

The potter cut the completed neck off the wheel with a knife, cord, or wire, and when it was sufficiently firm to be handled without altering its shape but still soft enough to be worked into the body clay (soft leather-hard), he set it upon the slip-coated shoulder edge. Since the amphora neck is wide enough for the potter to insert his hand into the vase, he could work the lower neck clay downward into the shoulder edge (*ill. 8g*). He curled one or two fingertips around the join to round and smooth it on a slowly revolving wheel. This method appears to have been the standard technique as attested by many sherds and whole amphorae (FIGS. 8.7–10). The melding was not always thorough, however, and sometimes all or portions of the neck edge were not completely worked into the underside of

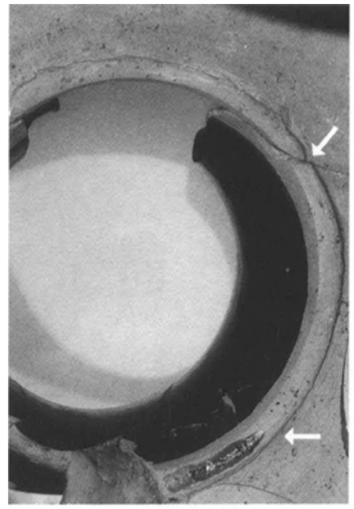


FIG. 8.7

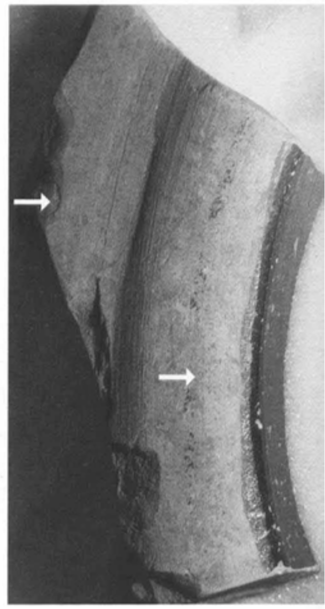


FIG. 8.8

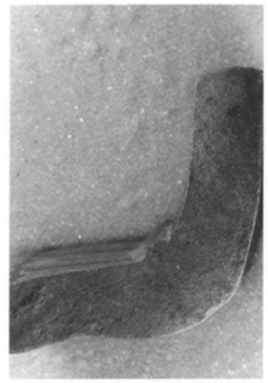


FIG. 8.9

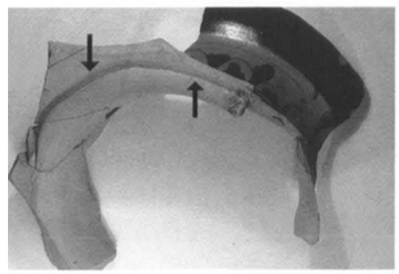


FIG. 8.10

FIG. 8.7 *Join line of neck (top arrow) to shoulder (bottom arrow), viewed from inside looking up through neck opening of a neck-amphora fragment.*

FIGS. 8.8–9 [.8] *Clay from lower neck (bottom arrow) melded into shoulder (top arrow) at neck/shoulder join.* [.9] *Cross-section showing neck/shoulder join.*

FIG. 8.10 *Neck/shoulder fragment illustrating lower neck clay (right arrow) folded downward into shoulder (left arrow) at neck/body join. Clay was not completely melded into shoulder.*

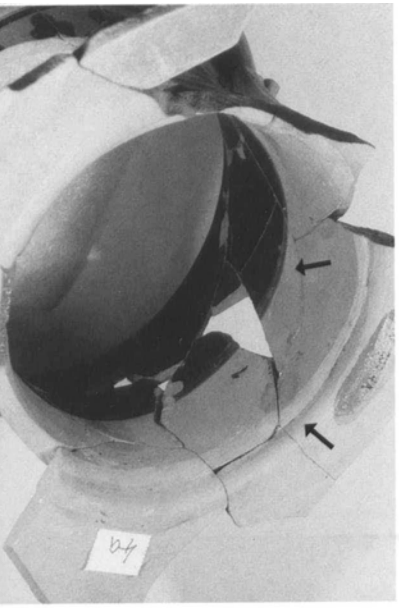


FIG. 8.11

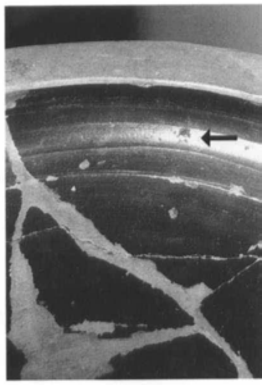


FIG. 8.12

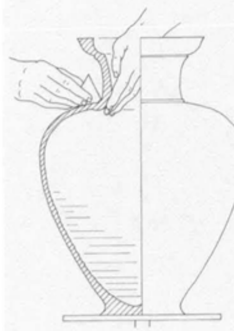
FIG. 8.13

the shoulder. This irregularity can be seen in each of the above examples, but it is especially noticeable in the last one. Smaller amphorae with narrower necks, as in the above examples, more often display this feature than larger vases, probably because it was more difficult for the potter to maneuver his hands in the confines of a narrower neck. An exception to the typical attachment is evident in a fragment where the potter placed the neck atop the slip-covered shoulder in the usual manner but did not work the neck edge down into the shoulder, leaving a rough join (FIG. 8.11). The neck may have been so firm by the time the potter joined it to the body that he was unable to alter its shape, which would account for his cutting away excess clay from the lower neck with a knife. The unsponged cutting left a wide, smooth swath just above the join and below the gloss to create a pleasing finish inside the neck.

Most neck joins were completed with the creation of a neck ring or ridge (*ill. 8h*), which the potter formed either between his thumb and forefinger or by pressing a notched rib against the outside of the neck/shoulder join while supporting the inside with his other hand. The ring helped mask the join on the exterior.

TURNING

Greek vases were given their final shape by turning, that is, by trimming off excess, unwanted clay. Turning was done to the outside of the vase and sometimes to the inside of the neck. Except for joins, little or no turning was done on the vase interior, which accounts for the throwing grooves made by the potter's fingers being visible only on the inside of many vases. While the amphora was still upright on the wheel, the potter trued up any irregularities of the neck and shoulder. Tool marks, either rounded grooves (FIG. 8.12) or flat planes (FIG. 8.13),[9] the results of burnishers, may be evident inside the mouth and upper neck of amphorae. Such areas were not decorated (but they were glossed) and therefore may not have received the same careful surface attention as the outside of the vase.

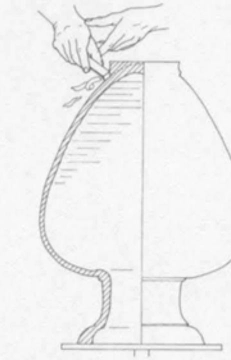


ill. 8h

FIG. 8.11 *View from inside looking up through neck at a neck/shoulder join. Lower part of neck (top arrow) was cut away with a knife, leaving a wide, smooth section between join (bottom arrow) and gloss inside neck. Lower neck clay was not melded into shoulder.*

FIG. 8.12 *Turning- or burnishing-tool grooves (arrow) inside neck of a neck-amphora.*

FIG. 8.13 *Contiguous planes inside the neck (arrow) were likely caused by a burnishing tool or a scraper tool.*



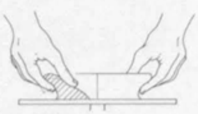
ill. 8i

The potter inverted the vase and turned the lower part of the body (*ill. 8i*). This was carefully executed to provide a continuous, smooth curve from shoulder to foot. A neck-amphora sherd (FIG. 8.14) may represent the width of the scraper tool used in turning the lower body. There are two flat surfaces visible in profile in the area of the rays made by the scraper tool.

FIG. 8.14

FOOT

It has long been known that Attic potters threw the foot of some vase types separately from the body. This is true of the neck-amphora, as various points of evidence attest. One is the difference in the finish of the bottom of the body under the foot (ceiling of the foot) and the sloping side walls of the underside of the foot. In the example in figure 8.15[10] the ceiling has been turned with a scraper tool, leaving a series of irregular planes, while the walls have striation marks from having been formed by the potter's thumb. The opposite is true in figure 8.16,[11] where the wall of the foot has scraper-tool marks, while the ceiling appears to have been either burnished or rubbed smooth.



ill. 8j

The potter threw the foot upside down. To make a foot, he opened a small ball of clay with his thumbs clear down to the wheel head. He pulled his thumbs apart a short distance while simultaneously rounding the edge of the foot with his fingers, then angled his thumbs outward, giving the underside of the foot a convex, concave, or ogival contour (*ill. 8j*).[12] He may have used a shaped rib for this purpose to achieve a smooth surface, or he may have used a scraper tool during turning, leaving evident tool marks (see FIG. 8.16). He flattened the foot's resting surface by pressing down on it with the flat side of either a rib or of one of the fingers of his right hand braced against the thumb and index finger of his left.

FIG. 8.15

The potter did not shape the top side of the foot at this time. He cut the piece off the wheel with a wire or cord, and when it was sufficiently firm, he added it to the upside-down-turned bottom of the vase, using slip as a cement (*ill. 8k*). The join on the underside of the foot did not receive as careful attention in the

ill. 8k

FIG. 8.14 *Two planes visible in profile in the area of the rays of the lower body of this neck-amphora fragment, each about 2 cm wide, may be the result of a turning tool.*

FIG. 8.15 *Amphora foot thrown separately from the body with striations from the potter's thumb (right arrow). Bottom of vase has been turned with a scraper tool, leaving a series of irregular planes (left arrow).*

FIG. 8.16 *Marks from a scraper tool left a number of small parallel planes in the wall of the foot. The ceiling is smooth. (Hour-glass graffito scratched into foot.)*

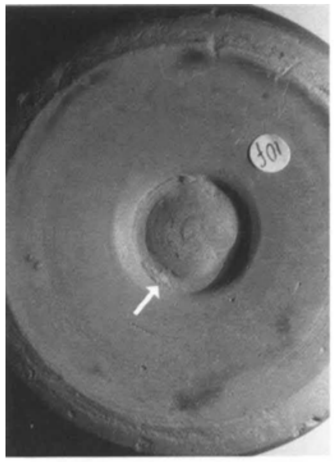


FIG. 8.17

finishing process as that of the outside. The potter may not have cleaned off the slip that occasionally oozed out (FIG. 8.17). Placing the vase right side up, he then proceeded to give the top of the foot its final form (*ill. 81*). Using his tools, he either flattened the foot or gave it a concave shape. He also turned a fillet between the body and foot. The outside edge of the two-degree foot found on later, more slender red-figured neck-amphorae (and on some black-figured ones) was also shaped with a tool.

The potter applied miltos to the vase and burnished it on the rotating wheel, unencumbered by handles. Narrow, contiguous, flattish surfaces caused by the burnishing tool may be seen on the rounded outer curves of the feet of some amphorae. Rarely are burnish marks evident on other parts of the thrown vase.

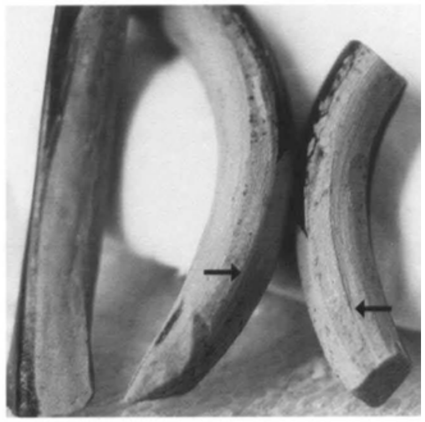
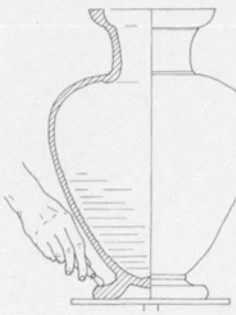


FIG. 8.18

HANDLES

Black-figured neck-amphorae typically have a pair of pulled triple handles. Each rope of clay making up a part of a triple handle was pulled separately. To pull an individual rope, the potter grasped the large end of a pear-shaped lump of clay in his left hand. With his right index finger curled under the thumb, he encircled the narrow end and repeatedly but gently pulled and elongated it, keeping his hand wet at all times. The diameter of each rope of clay depended on how tight a circle the potter made with his curved index finger. The potter sometimes made the side, or lateral, sections of each triple handle somewhat thicker than the middle one. When each rope of clay was of sufficient length, the potter pinched it off the lump and attached it to a ledge to dry until the shine, or stickiness, disappeared. When it reached this stage, he removed one of the sections, bent it to shape, and laid it down. He then placed the second rope of clay on top of the first and added the third rope in like manner. The ropes of clay may have been soft enough to adhere to one another without the addition of slip (FIG. 8.18). The potter repeated this process for the second handle. Each multiple handle was allowed to dry to a soft leather-hard stage before the potter cut it to the proper length.



ill. 81

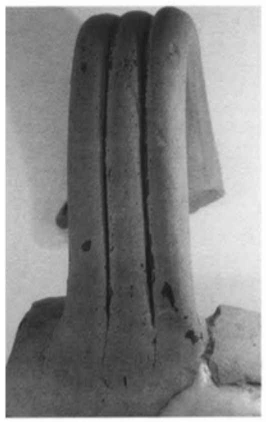


FIG. 8.19

FIG. 8.17 *The potter did not sponge off slip (arrow) that oozed out at join of foot and bottom of vase.*

FIG. 8.18 *Individual ropes of clay comprising a triple handle have separated. Interruption of pull lines is visible on the sides where the ropes were joined (arrows).*

FIG. 8.19 *Outside join of triple handle attached to a shoulder fragment. The potter pinched the end of the joined handle front to back to broaden and taper it.*

FIG. 8.20

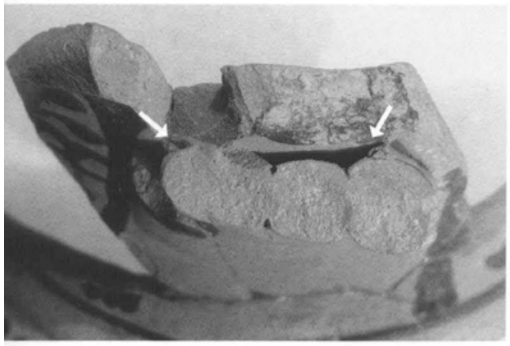


FIG. 8.21

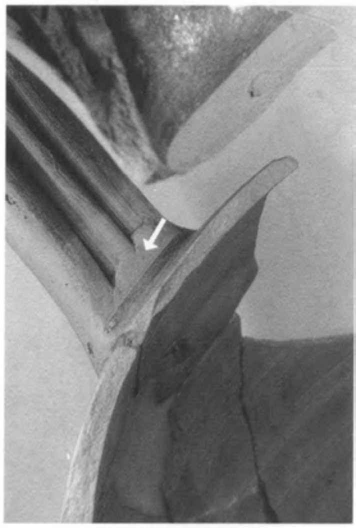
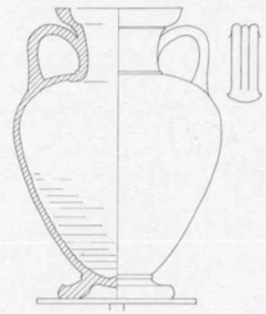


FIG. 8.22

He tapered both ends of the handle by pinching them, front to back. This action somewhat broadened the base of the handle (FIG. 8.19). They were then rooted to the neck of the vase (FIGS. 8.20–21) and cemented to the shoulder with slip (FIG. 8.22). Illustration 8m shows a half-section view of such a vase at this stage and an end-on view of a triple handle. Some potters melded the inside of their triple handles, giving them a solid appearance. Neck-amphora handles that are reserved on the inside do not appear to have received a coat of miltos, although it may have worn off with use, nor are there signs of their having been burnished.

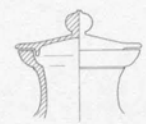
The more slender red-figured neck-amphora of the fifth and fourth centuries B.C. may have twisted handles, which were made by joining contiguously three freshly pulled cylindrical ropes of clay. Grasping the ends of this multiple handle in his two hands, the potter gently turned the ropes of clay in opposite directions (FIG. 8.23). He curved the handle to shape, cut it to size, and melded each end into a single unit, repeating the process for the second handle. When the clay was firm enough, he applied slip and secured the handles to the neck and shoulder of the vase. The wide strap handles of Nikosthenic amphorae were cut from a thrown cylinder.[13] They were curved to shape and cut to size. When firm, they were rooted to the flaring lip and attached to the shoulder, curving outward beyond the greatest diameter of the vase. After gloss was applied, the handles were probably stroked with a yielding tool to enhance the gloss.



ill. 8m

LID

Some amphorae had lids. The mouth of the neck-amphora, with its flat rim and inside concave shape, is particularly well suited to receive a flanged lid (*ill. 8n*). The broad lip of the lid rests snugly atop the flat rim of the vase, while the downward-projecting flange nestles into the concave hollow on the inside of the lip for a secure fit (see Appendages, p. 23). In general, if the rim of the vase was reserved, it had a lid; if glossed, it may have had no lid.[14]



ill. 8n

The neck-amphora was now ready for the vase-painter.

FIGS. 8.20–21 [.20] *Join of triple handle rooted to neck of a neck-amphora with slip. The potter ran the rounded tip of a tool between handle and neck to seal the join.* [.21] *Looking down on top of fragment of triple handle at neck join. Slip has secured the outer ropes of clay to the neck (arrows).*

FIG. 8.22 *Inside join of handle attached to the shoulder of neck-amphora. The potter has added clay and partially worked it up into the handle (arrow).*

FIG. 8.23 *Twisted handle fragment showing pull lines on the inside of top rope of clay.*

FIG. 8.24

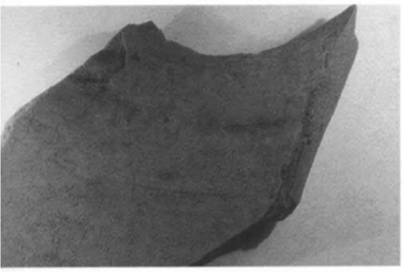


FIG. 8.25

FIG. 8.26

Types A, B, or C Amphora

An amphora with a continuous, smooth curve from lip to foot is variously called "continuous-curve amphora," "belly-amphora," "one-piece amphora," or just plain "amphora." These amphorae have been classified by scholars as Types A, B, and C, based on differences in the shape of lips, feet, and handles.[15]

Type A has a flaring lip with concave sides, a two-degree foot—the upper stepped, the lower echinus or torus—and flanged handles. It was produced from the mid-sixth to the mid-fifth century B.C.[16]

Type B has a flaring lip with straight or slightly concave sides, an echinus foot, and cylindrical handles. It is by far the oldest shape, having been potted from the late seventh to the third quarter of the fifth century B.C.[17]

Type C has a rounded lip and torus or echinus foot. Its handles vary in shape. It was fabricated in black-figure, especially in the Affecter's workshop, in the second quarter of the sixth century B.C., and it was potted in red-figure from about 520 to 470 B.C.[18]

The amphora body and neck were formed in one piece out of a cylinder from which the potter angled the lower two-thirds outward to shape the body, angled the clay back inward at about a 45° angle to form the shoulder (*ill. 8o*), and created the neck and mouth from the top of the cylinder without having to concern himself with a sagging shoulder (*ill. 8p*). There is usually an uninterrupted spiral of throwing grooves on the inside of these amphorae, flowing from the lower body into the shoulder. Throwing grooves in the shoulder and upward into the neck were obliterated when the potter continued to refine the shape (FIGS. 8.24–30). The neck wall may be thicker than the body wall because the neck has retained the thickness of the original cylinder, or the potter collared it in, but it will not have a truncated shape in cross-section, which is more typical of neck-amphorae, nor will it have a bulge at the inside neck/shoulder join.

The Affecter Potter paid as careful attention to the interior of his amphorae, including the lower neck and shoulder, as he did to the exterior

ill. 8o

ill. 8p

FIG. 8.24 *Inside throwing grooves are obliterated in the neck and body area, although a few remain under the shoulder.*

FIGS. 8.25–26 [.25] *No throwing grooves are evident on the inside of this belly-amphora neck/shoulder fragment.* [.26] *Outside.*

(FIGS. 8.31–32).[19] He appears to have used a sponge on the interior either in creating the vase or for a final smoothing effect on the finished vase. He burnished both the inside of the neck and down under the shoulder.

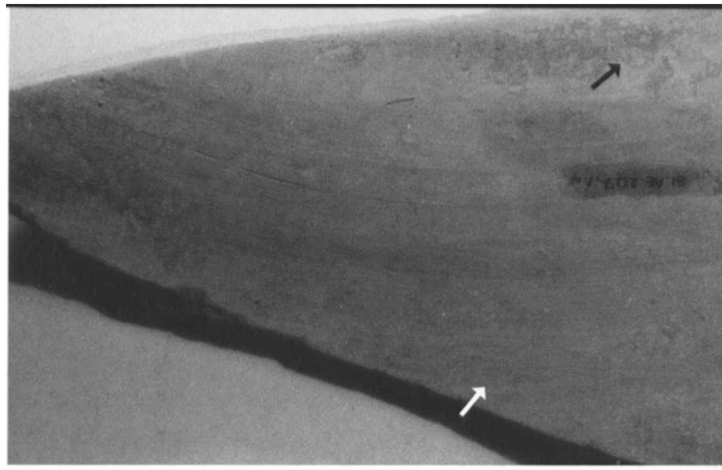
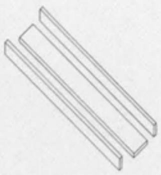


FIG. 8.27

FIG. 8.28

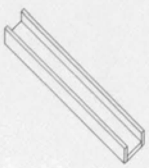
Potters creating Type A and Type B mouths squared off the rim and the lip, which they created from the top of the cylinder left thickened for that purpose. The fine shaping was tooled during the turning process, leaving a sturdy, solid rim. An exception to this technique is evident in a lip sherd of a Type A amphora illustrating the top of a cylinder, which the potter had not left thickened. Instead he folded the lip over onto itself, producing a large air space, which encircled the amphora lip and remained there even after he squared off the rim and lip (FIGS. 8.33–34).[20] Dietrich von Bothmer has kindly provided a photograph of another neck-amphora with a hollow rim/lip (FIG. 8.35). Potters of Type C amphorae angled the thickened top of the cylinder outward and completed the rim and lip by rounding them, probably with the aid of a sponge.



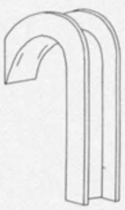
ill. 8q

The foot of the amphora was thrown separately and finished in the same manner as for the neck-amphora (cf. p. 77).

Flanged handles of Type A amphorae were created from three flat strips of clay, one wide and two narrow. One side of each narrow strip was joined with slip to an edge of the wide strip to create a broad-based U shape. They were carefully bent to shape, and the ends of the flanges were cut to fit the curve of the neck and shoulder to which they were to be joined (*ills. 8q–s*; FIG. 8.36). When firm, they were joined to the vase with slip. Handles of Type B and Type C amphorae were pulled, shaped, cut to size, and added to the vase with slip.



ill. 8r



ill. 8s

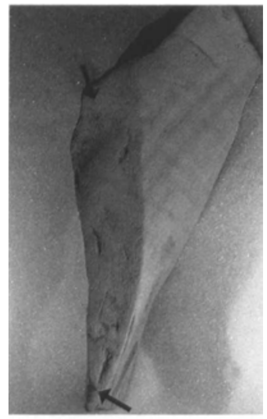


FIG. 8.29

Panathenaic Amphora

Panathenaic amphorae are big, ovoid, lidded vases, which were presented as prizes to winners in the Panathenaic games, which were held once every four years in Athens in

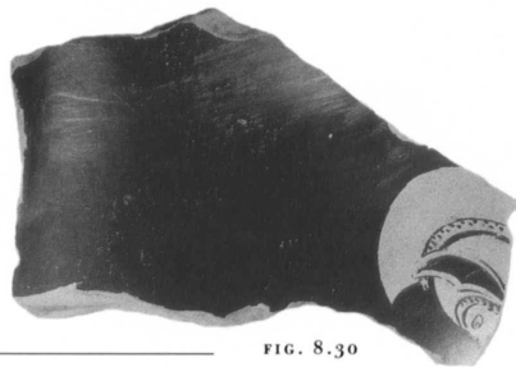


FIG. 8.30

FIGS. 8.27–28 [.27] *Smooth transition from shoulder (bottom arrow) to neck (top arrow) with no throwing grooves or join bulge evident.* [.28] *Outside.*

FIGS. 8.29–30 [.29] *Smooth transition from shoulder (bottom arrow) to neck (top arrow). Thickened neck reflects either thickness of original cylinder or thickening caused by the potter collaring-in the neck.* [.30] *Outside.*

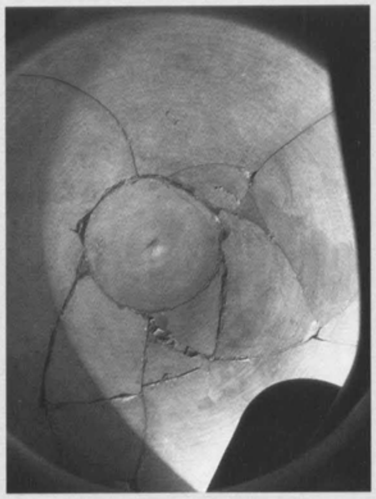


FIG. 8.31

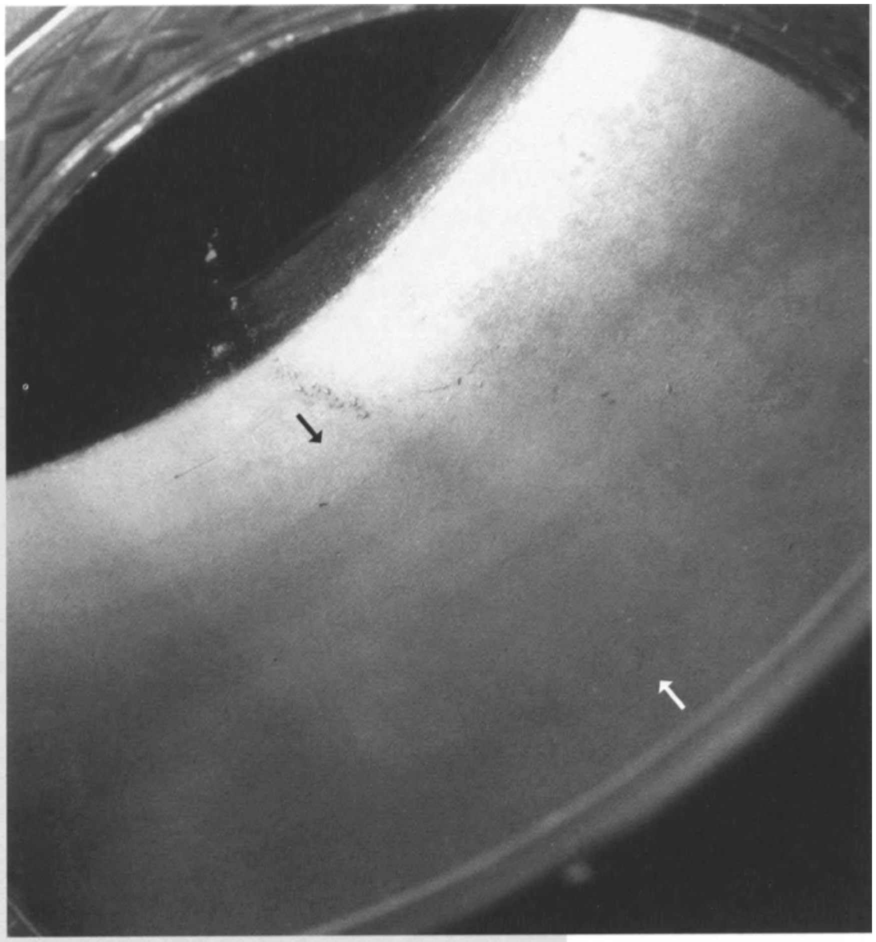


FIG. 8.32

FIG. 8.33

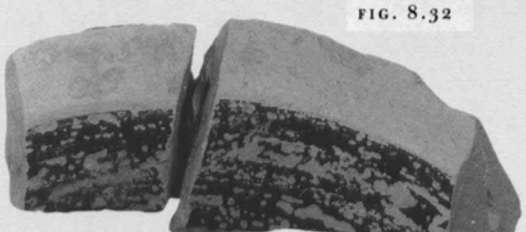


FIG. 8.34

FIG. 8.31 *The potter probably used a sponge on the inside of this amphora, giving it a very smooth interior.*

FIG. 8.32 *Underside of shoulder. The potter burnished inside neck (black arrow) and down under shoulder (white arrow).*

FIGS. 8.33–34 [.33] *Long, narrow hollow developed as the potter folded clay back onto itself in constructing this amphora rim.* [.34] *View of rim and inside neck.*

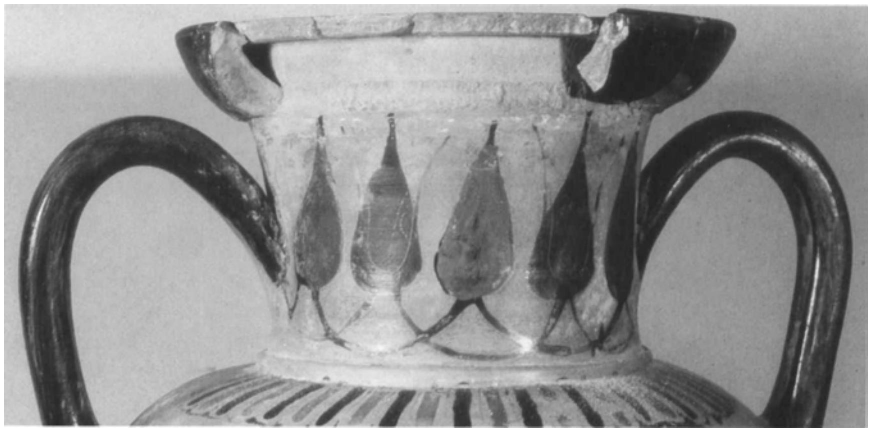


FIG. 8.35

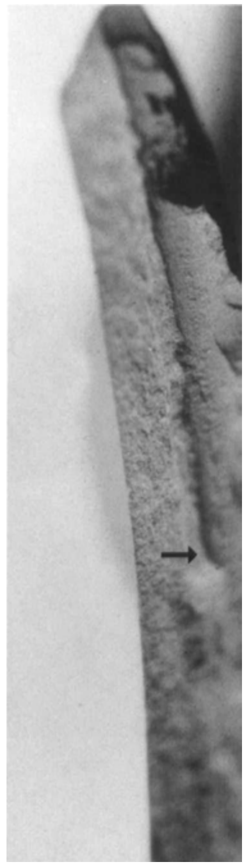


FIG. 8.37

honor of Athena, patroness of the city.[21] They were filled with precious olive oil from Athena's sacred trees. The series, presumed to date from the reorganization of the games about 566 B.C., was produced through the Hellenistic period[22] and beyond. The Panathenaic amphorae of the Classical period are of the finest quality construction.

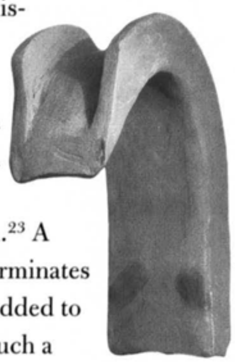


FIG. 8.36

Early Panathenaic amphorae (from the sixth and fifth centuries B.C.) have a large, swelling body that tapers to a small echinus foot. They range in height from 62 cm to 67 cm; later ones (fourth century B.C.) are taller, between 68 cm and 82 cm.[23] A neck ring separates the shoulder from the short neck, which terminates in an echinus mouth. Fragments indicate that no temper was added to stiffen the clay, which would have made it difficult to pull up such a tall vase in one piece. An occasional fragment indicates that the bodies of Panathenaic amphorae were thrown in sections. One such is a sherd from a Panathenaic amphora in a private collection in Athens, showing at the

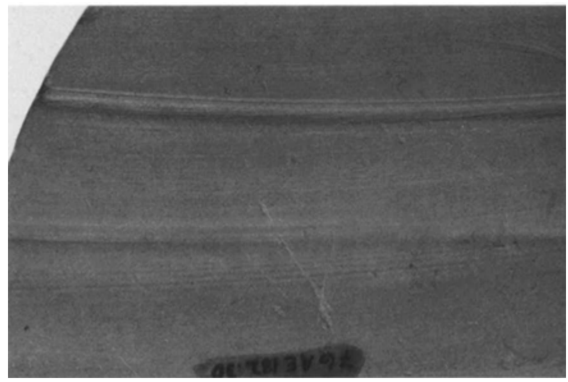


FIG. 8.38

FIG. 8.35 *Neck-amphora with hollow lip.*

FIG. 8.36 *Modern replica of flanged handle typical of Type A amphorae.*

FIG. 8.37 *Notched body wall (arrow) of a Panathenaic amphora illustrating join area of lower and upper body sections.*

FIG. 8.38 *Using a rib, the potter smoothed the interior of this Panathenaic amphora, leaving shallow depressions in the remains of the center of each throwing groove.*

FIG. 8.39

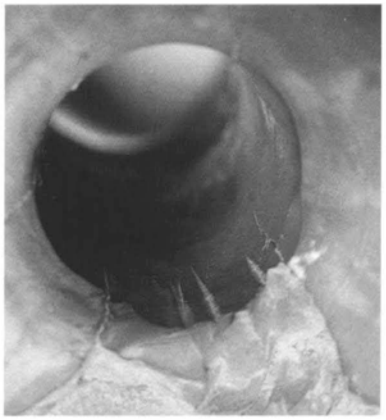


FIG. 8.40

IG. 8.41

midsection join a portion of the upper body, which has been notched so as to fit a reciprocal notch on the lower body (FIG. 8.37). Body joins are not often seen as they were fairly easy to eradicate through the shoulder opening, which was wide enough to allow the potter free access to the interior (FIG. 8.38).

The cylinder from which the potter created the lower body was carefully pulled outward and upward, leaving a thickened but more sharply tapered lower-body shape than for a neck-amphora or continuous-curve amphora. The potter threw the upper body upside down. The outside perimeters of each section were carefully measured and matched, and the two were joined with slip. Using a rib, the potter blended the lower body clay with that of the upper body. He may have made several upward pulls in order better to integrate the two body parts, the upper part having been added while it was still pliable.

The neck/mouth was created as a separate piece and added to the body in a manner similar to that of the neck-amphora (see p. 75). However, the inside of the echinus mouth may not follow the contour of the outside. A neck ring was added at the join on the outside.

The potter rooted a pair of sturdy cylindrical handles to the neck and attached them high up on the shoulder, giving them a tight appearance. Each handle was pulled from a large, pear-shaped lump of clay in a manner similar to that described for one rope of a triple handle of the neck-amphora (see pp. 79–80). The potter pulled each handle to a sufficient length, then turned the lump of clay upright, allowing the sturdy handle to bend into a smooth, pleasing curve by its own weight. Pulled handles tend to taper slightly, the narrower end usually being rooted to the neck, the larger end (the originating lump end) being attached to the shoulder. In figure 8.39 a thumb imprint is visible on the inside wall of the neck opposite the handle where the potter supported the clay during the attachment, an indication the clay was at the soft leather-hard stage when assemblage took place.

The foot was created in a manner similar to that of the neck-amphora (see pp. 77, 79).

IG. 8.39 *Thumbprint indentation is visible on inside wall of neck opposite handle attachment.*

FIGS. 8.40–41 [.40] *Deep cracks developed in the lower portion of this very thick neck.* [.41] *Outside.*

Hellenistic Panathenaics were made with the shoulder stretching upward into a long, narrow neck that culminates in a flaring mouth with an everted edge. A neck ring is located about midway on the neck. The lower body tapers to a narrow cylinder where it meets the torus or disk foot, artistically mirroring the elongated neck. In forming the shoulder, the potter extended the shoulder clay upward into the neck area, terminating it in the neck ring. Using a separate ball of clay, he created the mouth and long neck right side up. When it was somewhat firm but still moldable, he inserted the lower end of the neck down inside the extended shoulder, joining the two with slip.

Potting technique deteriorated during the Hellenistic period. In figures 8.40–41 the lower portion of the neck, inserted into the extended shoulder, is considerably thicker (3.1 cm) than the upper neck (1.5 cm). The potter must have had some concern about this, for he carved out large, irregular chunks of clay from the lower neck in an attempt to thin it. The difference was still too stressful for the clay, and deep cracks developed while it was drying.

Potters made little attempt to meld the heavy neck into the shoulder clay in late Hellenistic Panathenaic amphorae (FIG. 8.42). Although some potters scraped the neck clay with a knife to thin it, the neck/shoulder join remained heavy and clumsy. The potter Serapion created a short neck section in a Panathenaic amphora from 98/97 B.C. and crudely inserted it between the high shoulder and a separately thrown mouth section, not blending any of the three sections together (FIG. 8.43).

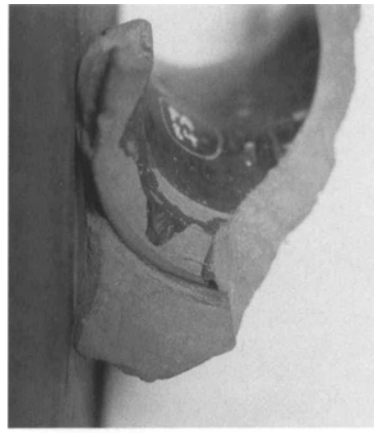


FIG. 8.42

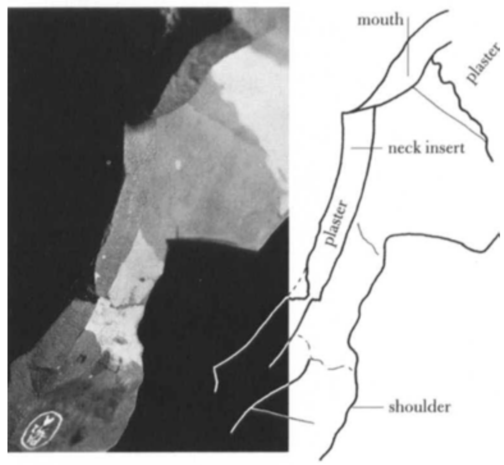


FIG. 8.43

FIG. 8.42 *Little attempt was made to meld the heavy neck into the shoulder of this Hellenistic Panathenaic amphora fragment.*

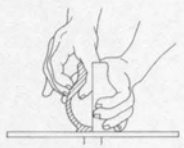
FIG. 8.43 *The potter inserted a short neck section between shoulder and mouth.*

2.

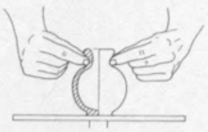
1.

3.

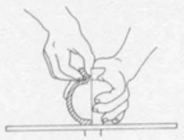
9. Aryballos



ill. 9a



ill. 9b



ill. 9c

ill. 9d

ill. 9e

The Attic aryballos is a small, spherical, narrow-necked oil flask with a flat or rounded bottom. There are two types. The Corinthian model has a broad, circular disk mouth with one wide handle (FIG. 9.1). The Attic model has a hemispherical mouth, similar to that of the early lekythos, with a pair of thin handles.[1] Aryballoi also were made in a mold in the shape of a human head, or of an animal, or in the form of male genitalia. They are only about 6–7 cm in height and usually a little less in width, making them easy to grasp in the palm of the hand. They held oil that was used by both men and women at the bath[2] and by athletes to anoint their bodies.[3] The vessel is often represented in vase-paintings with a looped cord tied around the neck of the vase and suspended either around an athlete's wrist or from a wall.[4] The aryballos had its origin in Corinth.[5] The Attic aryballos was produced from the last quarter of the sixth century until the early fourth century B.C.[6]

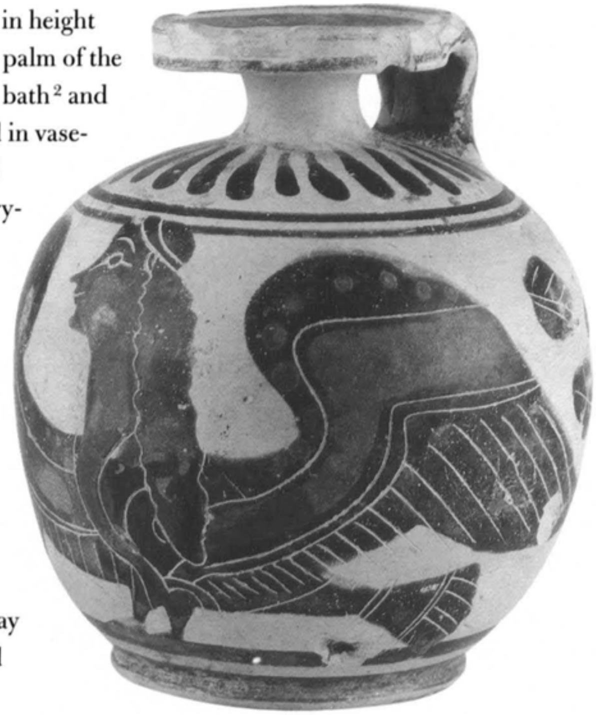


FIG. 9.1

Wheel-made Aryballos

The round aryballos was thrown on the wheel in one piece in much the same manner as a squat lekythos. The potter pulled up a low cylinder from which he shaped the rounded body (*ill. 9a*). He gently collared-in the neck to form a very narrow opening (*ill. 9b*). For the Attic shape the potter formed the small, bowl-shaped mouth between his index finger and thumb from the remaining clay at the top of the cylinder (*ill. 9c*). He cut the vase off the wheel and set it aside. When it had firmed up, he placed it upside down in a chuck for turning. He rounded off the underside or left a narrow, flat base (*ill. 9d*). When the vase was leather-hard, and before adding any handles, the potter reinserted it in the chuck and burnished it. He cut a pair of L-shaped handles from a thin slab of clay, attaching the upright arm of the L to the mouth and the base to the shoulder of the burnished vase (*ill. 9e*). The aryballos was then ready for the vase-painter.

PLATE III
1. Attic aryballos
2. Corinthian aryballos
3. Cockleshell aryballos

FIG. 9.1 *Corinthian-style aryballos.*

The body of the Corinthian model was made in the same way as that of the Attic. To create the Corinthian mouth, the potter turned the clay outward, squeezing it between his thumb and middle finger, his forefinger pressing against the edge of the broad lip. His thumb produced a slight depression in the top (*ill. 9f*). The bottom was left flat. The single box-shaped or strap handle was hand molded and then rooted to the broad rim and attached to the shoulder (*ill. 9g*).

Moldmade Aryballos

All or parts of animal and head aryballoi were made in molds. The Getty Museum has a moldmade Attic tripartite cockleshell aryballos in its collection (FIGS. 9.2–5). A real cockleshell may have been the patrix for the two-piece mold from which the three ceramic shells were made. The potter cut away a small portion of one side of each of the three clay replicas of the bivalve just below where the shell normally hinges. He then joined the cut edges to each other, leaving an opening at the top for the neck/mouth (FIGS. 9.2–4). He threw the upper section with a small, hemispherical, bowl-shaped mouth and a narrow neck. When it was firm, he joined the neck to the vase over the opening. The potter then cut three short, stubby handles from a thin slab of clay, attaching one end of each handle to the side of the mouth and the other end to the valley between each pair of shells. The aryballos rests on the lowest edge of each shell.

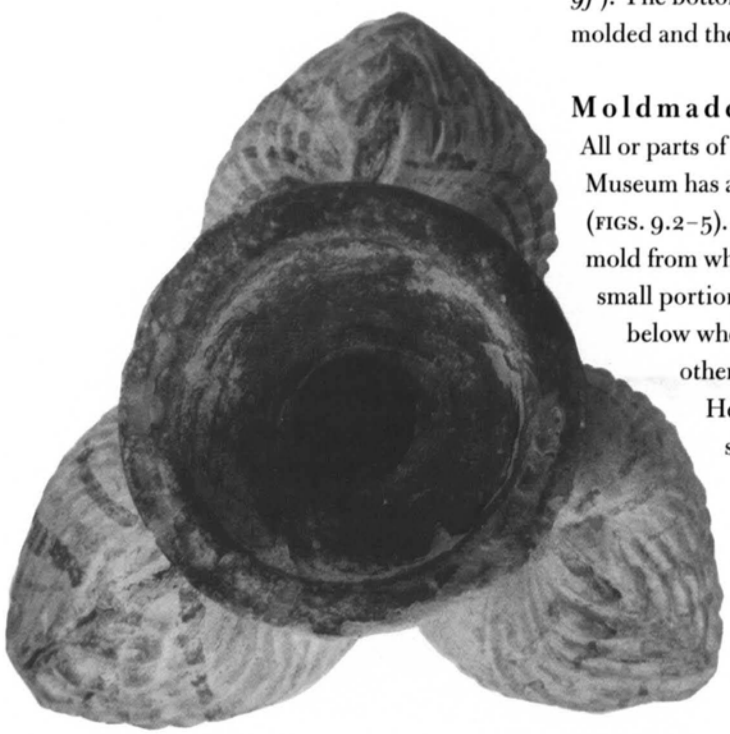
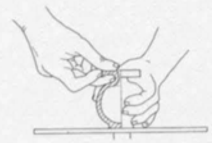


FIG. 9.2



ill. 9f

ill. 9g

FIG. 9.2 *Top view of tripartite cockleshell aryballos.*

FIG. 9.3

FIG. 9.4

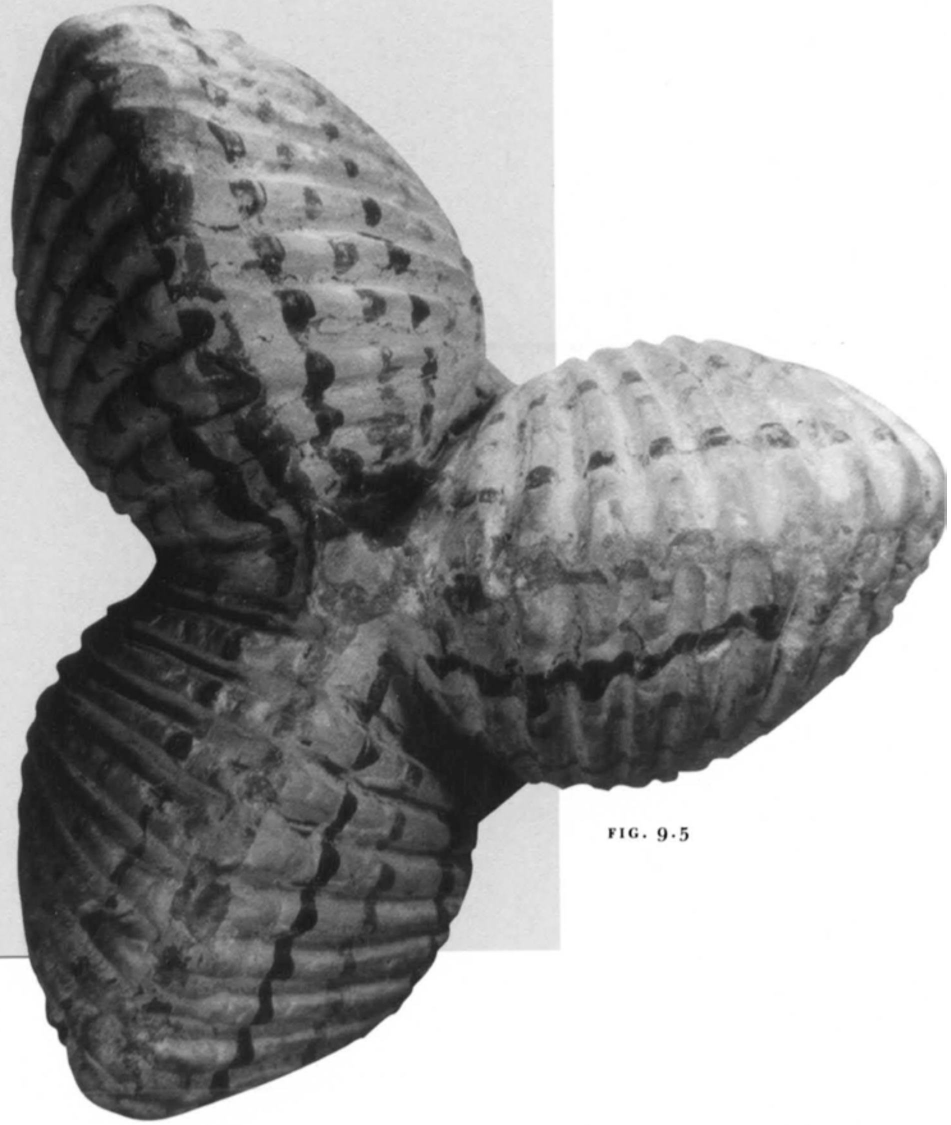
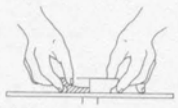


FIG. 9.5

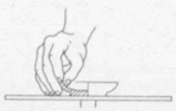
FIG. 9.3–5 [.3] *The shells of the aryballos cracked at the join during drying or firing.* [.4] *Seam shows where two halves of cockleshell mold came together (bottom arrow). Only one handle remains (top arrow).* [.5] *Underside. One edge of each shell was cut off and joined each to the other to form the single aryballos.*

10. Askos

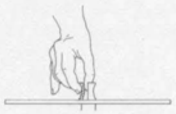
The Attic askos is a small, shallow, round-bodied vessel with a low, domed top, a short spout angled obliquely upward from one side of the top, and an overarching handle.[1] The body averages about 9 cm in width. It is well adapted for pouring oil, drop by drop or in a thin stream.[2] Some modifications of the shape may have been used for perfume, oil, or honey.[3] It has been suggested that the askos could contain vinegar and be used at the table together with a lekythos as vinegar and oil containers.[4] It may have been used for pouring a libation of wine to the dead at a burial[5] or for filling lamps with oil.[6] It was a red-figured vase produced in Attica from the early fifth century into the fourth century B.C.[7]



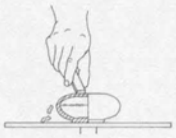
ill. 10a



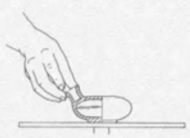
ill. 10b



ill. 10c



ill. 10d



ill. 10e

Wheel-made Askos

The body was thrown in two sections and the spout in a third. The handle was pulled. To create the lower body, which was thrown right side up, the potter opened a small lump of clay with his thumbs, supporting the outside with his forefingers and, spreading his thumbs apart, created a flat floor (*ill. 10a*). Because the clay between his thumbs and forefingers created a low wall, he did not need to pull up the sides for this vase. From another lump of clay he threw the top of the askos upside down in the same manner as the lower body, the clay between his thumbs and forefingers creating just the hint of a wall (*ill. 10b*; FIGS. 10.1–2). Using calipers, he matched the diameters of the two sections, flattened the rims to be joined, and set them aside to firm up. He then threw a small spout with a short neck and flaring mouth (*ill. 10c*). When all three components reached the soft leather-hard stage, the potter joined the top and bottom sections with slip, creating a hollow interior with no opening (*ill. 10d*). In turning the askos body, the potter smoothed the joined sections, gave the top a flattened dome shape, and formed the ring foot from excess clay left on the lower body. He positioned the spout to one side of the top and angled it obliquely upward and outward (*ill. 10e*), then secured it to the body with slip (FIGS. 10.3–4) and smoothed the exterior join (FIG. 10.5). He then thrust the point of a slender knife down into the

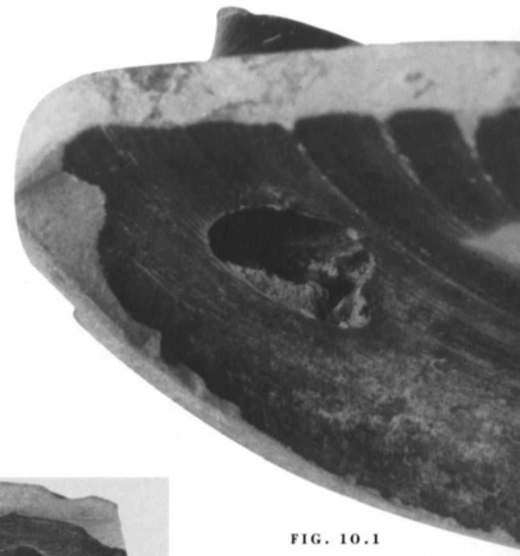


FIG. 10.1

FIG. 10.2

PLATE IV
Askos, side and top

FIGS. 10.1–2 [.1] *Interior of fragment of top half of askos showing throwing grooves. Hole was cut through one side, over which spout fits.* [.2] *Gloss dribbled in through hole when inside of spout was glossed.*

FIG. 10.3

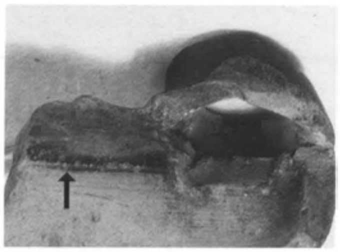


FIG. 10.4

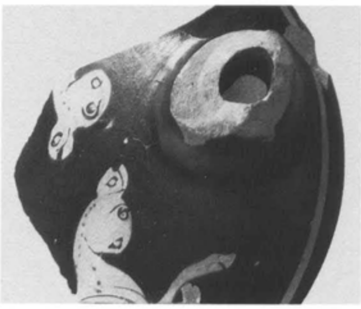


FIG. 10.5

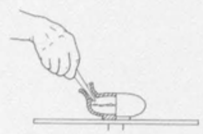
spout to cut an opening through the body wall into the interior of the askos (*ill. 10f*). Some potters may have cut the hole prior to the addition of the spout. Finally he pulled a ribbon handle, looped it to shape, and, when it was firm, rooted it to the upper side of the neck with slip, arched it across the top of the vessel, and attached it to the opposite side of the top (*ill. 10g*).

Moldmade Askos

Duck askoi, rare in Attic ceramics prior to the second half of the fifth century B.C., were made either entirely or partially in a mold (so-called plastic ware). The Getty Museum has a small, fragmentary, standing-duck askos with a pouring spout at the end of the duck's bill and a filling spout between the rear handle attachment and the tail, both spouts partially preserved.[8] The askos was made in a two-piece mold, each half containing one side of the head, neck, body, and foot. The spouts were probably thrown on the wheel and added to the joined halves of the duck (FIGS. 10.6–7).

In creating the askos, the potter left striations from his finger or thumb on the inside of the body of the bird where he pressed and rubbed the clay into both halves of the mold. He added extra clay along the edges and extended it a bit beyond the edges of the mold to secure a snug fit and then pressed the mold parts together with slip. Excess clay at the join was forced to the hollow inside of the duck, as seen inside the fragmented body and head (FIGS. 10.8–9).

When a mold is separated and the moldmade product removed, a seam remains on the outside of the piece where the two parts of the mold joined. The potter must smooth this seam. This is usually done by scraping with a knife before sponging. Seams are often evident in fired mold pieces, especially in corners where, for example, a handle joins a vase. Such a seam is visible on the duck's back adjacent to where the now-missing handle was attached (see FIG. 10.7). However, on top of the duck's head where the black gloss has worn off, the potter did a thorough job of eradicating the seam (FIG. 10.10).



ill. 10f

ill. 10g

FIGS. 10.3–4 [.3] *View through fragmented spout at join of spout to askos body.* [.4] *Join (arrow) of top to bottom section at spout, viewed from the inside.*

FIG. 10.5 *Fragmentary top half and spout of askos. Join of spout to body is visible, though the potter smoothed it.*

FIG. 10.6

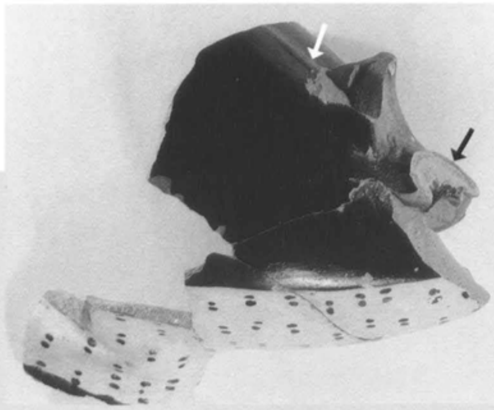


FIG. 10.7

FIG. 10.8

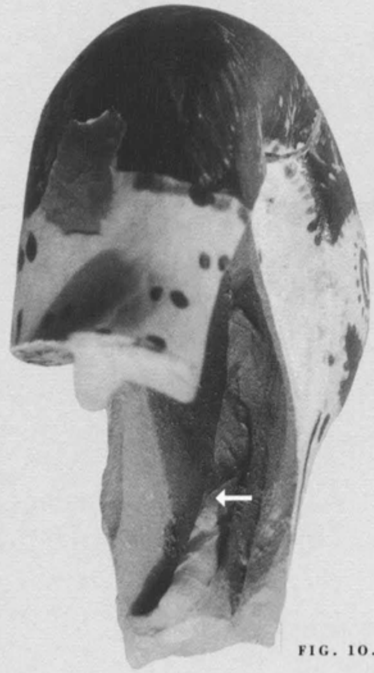


FIG. 10.9

FIG. 10.10

FIGS. 10.6–10 [.6] *Head and neck of moldmade duck askos with pouring spout fragment at tip of bill.* [.7] *Outside showing filling spout fragment (right arrow). Seam (left arrow) where the two halves of the mold came together is visible adjacent to fragmentary handle.* [.8] *Inside. Finger striations are visible where the potter pressed and rubbed the clay into the mold and added extra strips of clay at join.* [.9] *Inside of head fragment. Excess clay was squeezed into hollow interior of askos when the two sides of the mold were pressed together (arrow).* [.10] *No seam is visible on outside of head where gloss has chipped off.*

FIG. 10.12

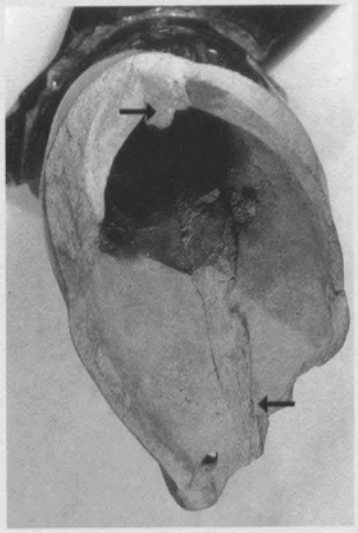


FIG. 10.13

FIG. 10.15

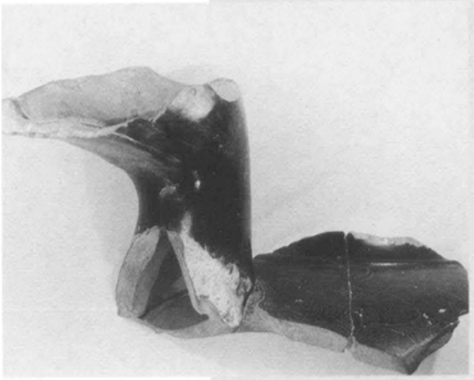


FIG. 10.11

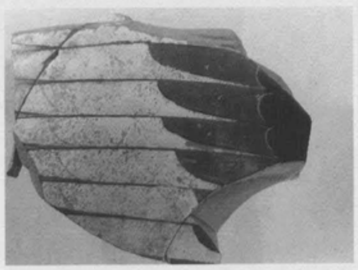


FIG. 10.14

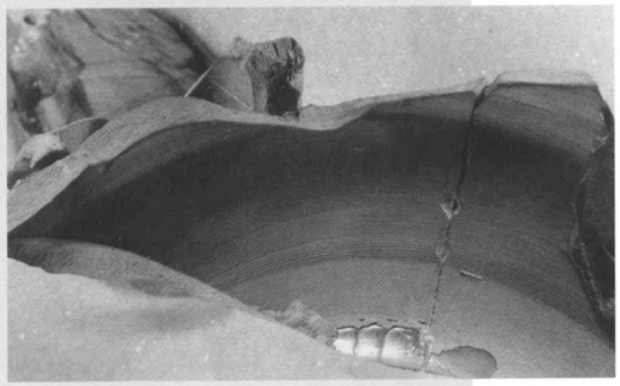


FIG. 10.16

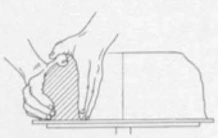
FIGS. 10.11–16 [.11] *Fragment of moldmade head and neck, and wheel-thrown body of a duck askos.* [.12] *Top of head and neck with large opening in center of duck's back.* [.13] *The potter added a roll of clay (arrows) to reinforce the moldmade seam. Small hole near tip of duck's bill allowed steam to escape during firing.* [.14] *Fragment of wheel-thrown and shaped wing.* [.15] *Fragment of wheel-thrown wing, (on the right, white arrow) cut wedge-shape at its attachment to wheel-thrown body (black arrow). Note join line.* [.16] *Inside of fragment of body. The potter glossed the interior except just under opening in duck's back.*

Fragments of a larger, swimming-duck askos in the Getty Museum indicate that the potter threw that duck's body on the wheel. He terminated it in a low neck with a generous double-torus mouth located in the center of the duck's back (FIGS. 10.11–12).[9] The rim of the mouth is reserved, indicating the askos probably was lidded. The potter made the head and neck of the duck in a two-piece mold. When the two halves of the mold were pressed together, excess clay was forced inside the head and neck (FIG. 10.13). The potter attached the protome to the leather-hard body, creating an enclosed hollow inside the neck and head. He made a very small hole into the hollow under the duck's lower bill to allow moisture to escape during firing (see FIG. 10.13). This askos probably had a moldmade tail created in much the same fashion as the protome.[10] The added wings have a very smooth surface. They may have been cut from a separate, wheel-made bowl approximately the same size and shape as the duck's body. The potter cut them to the shape of a wing and appears to have carved them to wedge shape, as seen in cross-section, and added them with slip to the curved sides of the duck's body (FIGS. 10.14–15). He glossed the inside of the body except just under the opening on the duck's back (FIG. 10.16).

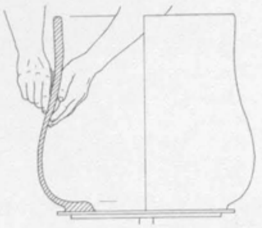
11. Dinos

The dinos (sometimes called a lebes) is a big, rotund, wide-mouthed bowl with a round bottom that was meant to rest on a stand.[1] It has no foot and no handles.[2] Early dinoi have no neck, only a low, flat rim nestled into the high shoulder, while later ones have a very short neck from which emerges a flat or slightly convex rim with an overhanging lip, similar to that of a column-krater (FIG. 11.1). Dinoi are glossed on the inside. Early dinoi (mostly black-figured) range in height from about 33 cm to 44 cm and are about one-third again as wide as they are tall. Late dinoi (mostly red-figured) range in height from about 23 cm to 27 cm, and height and width are more nearly equal. Like kraters, dinoi were used to mix wine and water. It is recorded that (along with tripods) they were used for prizes at games, including the funeral games for Patroklos and Pelias.[3] The dinos was made during the sixth and fifth centuries B.C.

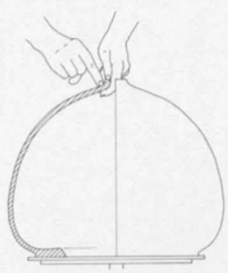
Because of the rotundity of the dinos, the floor spreads more quickly outward than upward, making it more likely that the potter threw the dinos upside down from one lump of clay in a manner similar to fabricating *tsoukali* (casseroles) today on the island of Siphnos.[4] The broad, flat rim also lends credence to the idea that the vase was thrown upside down. To create the bowl, the potter placed a hefty roll of clay in a wide circle on the wheel, forced it to run true (*ill. 11a*), and then drew up a broad



ill. 11a



ill. 11b



ill. 11c

FIG. 11.1

PLATE V
Early dinos and stand

FIG. 11.1 *Late black-figured dinos.*

FIG. 11.2

cylinder. With early dinoi the potter simply bellied out the part of the cylinder nearest the wheel to create the shoulder (*ill. 11b*), then angled the cylinder inward toward the center, narrowing the opening until it became a closed form (*ill. 11c*). This process rounded the bottom. By the pot being thrown upside down, the wide, flat rim was automatically created by the smooth wheel head.

The dinos was cut off the wheel and set aside upside down to stiffen. When the vase had become firm enough for the potter to handle without altering its shape, he righted the dinos and placed it in a wide chuck for turning. With a scraper tool he removed any excess clay from the inside of the mouth (*ill. 11d*) and from the outside edge of the rim. The rim of the early dinos is about twice as thick as the rest of the vessel walls, giving solidity to the opening (PLATE V; FIGS. 11.2–3). The potter smoothed the interior, especially the inside floor of the dinos, using a rib or other turning tool (*ill. 11e*). He sponged the entire vase inside and out in preparation for applying miltos and burnishing the outside.

The rim and overhanging lip of later dinoi were created upside down in the same manner as those for the column-krater. With his left hand inside the cylinder for support, the potter created an outer ring of clay (the overhanging lip) (*ill. 11f*) by pushing his right forefinger downward and inward into the outside base of the cylinder (FIGS. 11.4–6). This procedure also formed the short neck. From the base of the neck the potter angled the cylinder wall outward, shaping the shoulder (*ill. 11g*), then guided it back inward in the same manner as for early dinoi, until the clay came together in the center (*ill. 11h*). Because of the overhanging lip, the shoulders of later dinoi slope more than those of early dinoi.

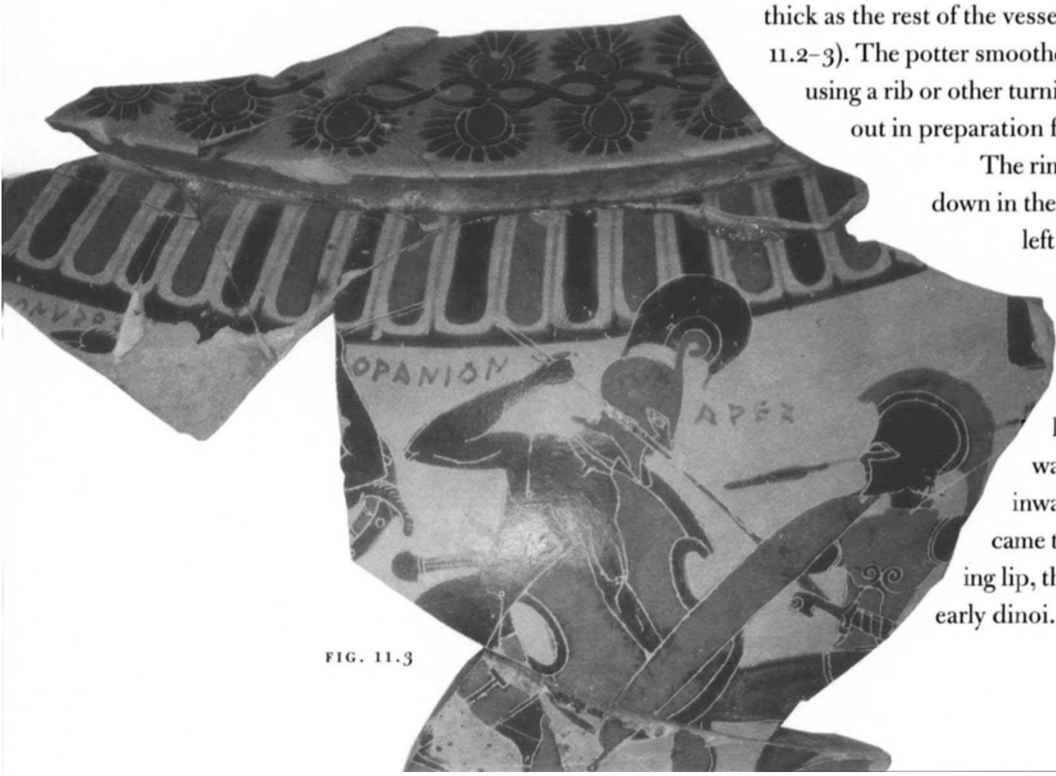
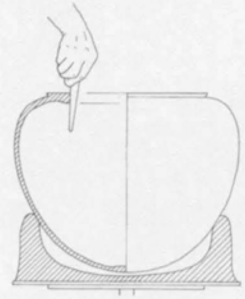
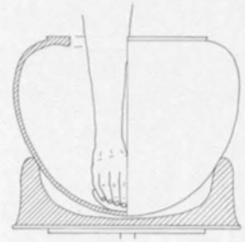


FIG. 11.3

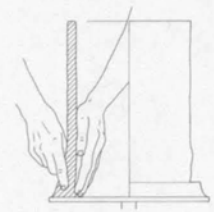
FIGS. 11.2–3 [.2] *Cross-section of rim and part of body of dinos fragment.* [.3] *Top of rim and part of body.*



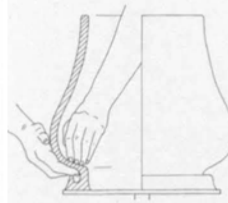
ill. 11d



ill. 11e



ill. 11f



ill. 11g

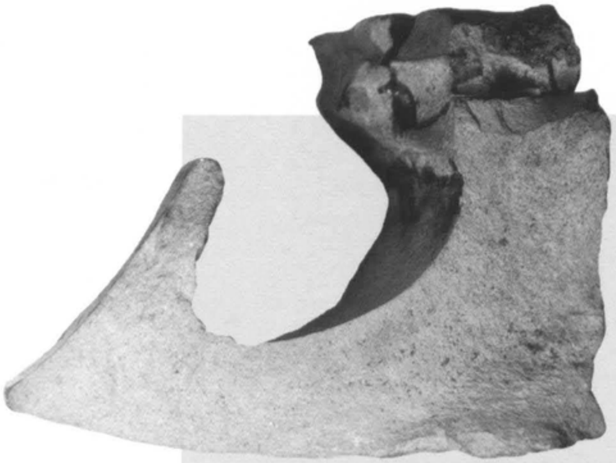


FIG. 11.4

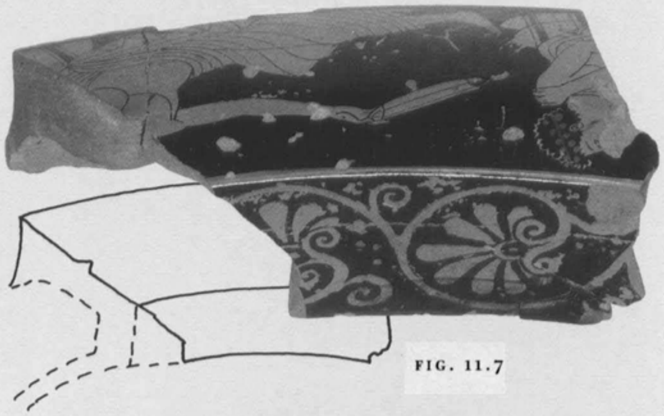


FIG. 11.7

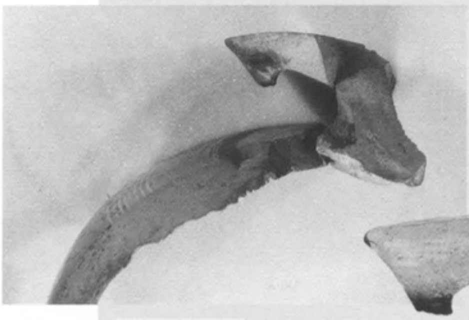


FIG. 11.5

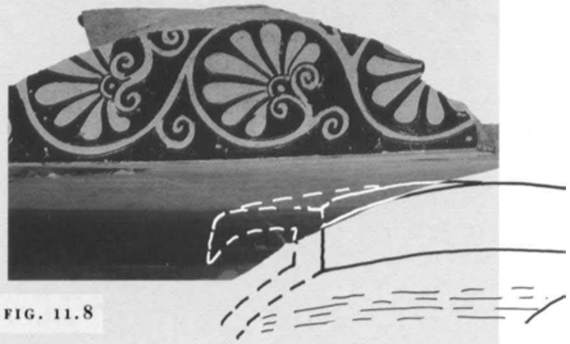


FIG. 11.8

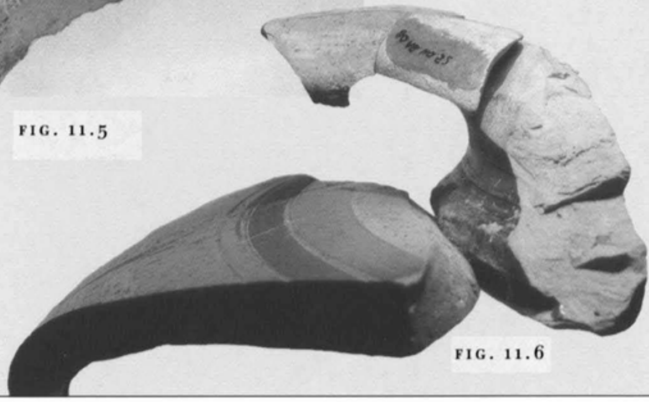
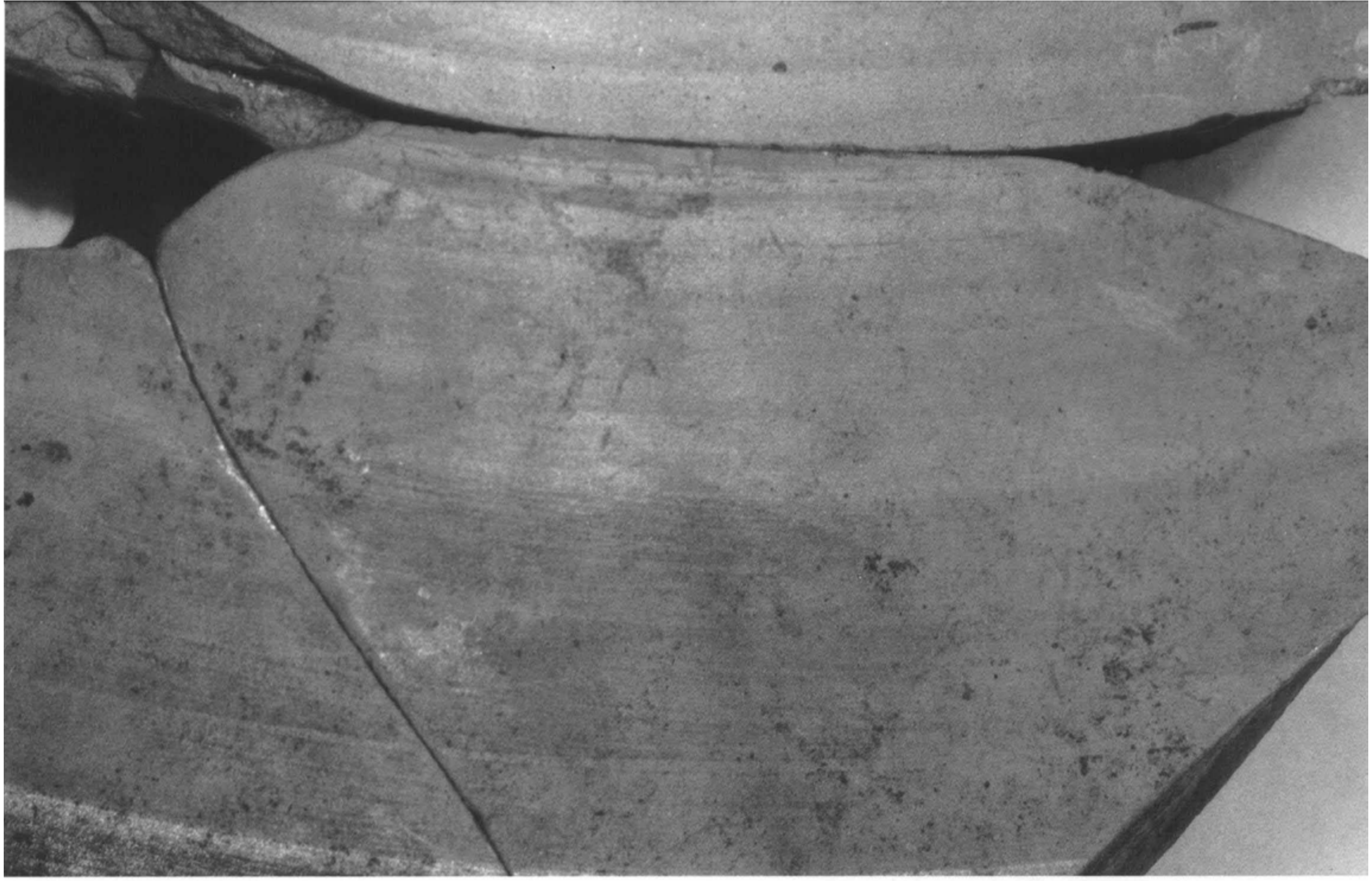


FIG. 11.6

FIG. 11.4 *Cross-section of neck/rim/lip of fragmentary dinos shown in throwing orientation—that is, inverted.*

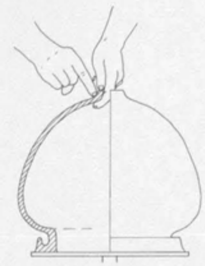
FIGS. 11.5–6 [.5] *Cross-section of neck/rim/lip of fragmentary dinos.* [.6] *Other end of same cross-sectional view of neck/rim/lip.*

FIGS. 11.7–8 [.7] *Decorated inside of neck and rim of dinos fragment.* [.8] *Decorated inside neck.*



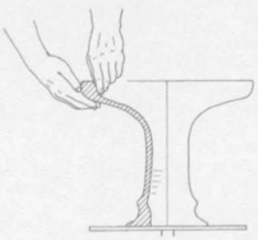
FIGS. 11.9–10

FIGS. 11.9–10 [.9] *The broad, reserved area under the shoulder. Upper half has been burnished smooth, lower half sponged.* [.10] *Close-up of burnished upper half and sponged lower half of reserved shoulder.*



ill. 11h

ill. 11i



ill. 11j

In turning the later dinos, which was set upright in a chuck, the potter scraped away any excess clay from the inside of the mouth and neck, making the interior of the neck vertical. He accented the inward angle of the overhanging lip by removing excess clay, thus thinning it. He left the neck and rim thicker than the rest of the vase for solidity, smoothed the interior with a rib tool as needed, and sponged the dinos inside and out (*ill. 11i*). After adding miltos, he burnished the entire outside of the vase, the lip, the rim, and the inside of the neck, making the rim and lip suitable for decoration (FIGS. 11.7–8).[5] The potter of the dinos fragment in figures 11.9–10 even extended his burnishing inside the vase a little way under the shoulder.

FIG. 11.11

STAND

The stands for early dinoi that have come to light are ceramic and elaborate.[6] They consist of a broad, flaring foot with a tall stem, the walls of which angle slightly outward, then slope sharply inward at the top. Attached to the stem is a pair of flat disks with a globe (the baluster) between them. Connected to the top disk is a funnel-shaped bowl encircled by two heavy rings. The rings are separated by a short, nearly vertical wall.

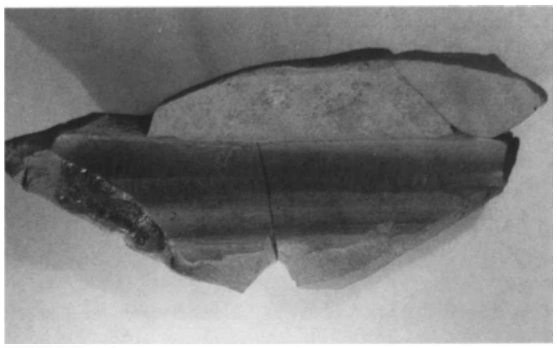


FIG. 11.12

The Getty Museum has fragments of such a stand, which was thrown in three sections. From a medium-sized lump of clay the potter threw the foot, stem, and lower disk upside down by pulling up a tall, hollow-bottomed cylinder, leaving a fair amount of clay at the base from which to form the lower disk (FIGS. 11.11–12). He angled the top of the cylinder sharply outward to form the broad, flaring foot, terminating it in a thick rim, which, when righted, became the resting surface of the foot (*ill. 11j*). The globe was thrown from a second ball of clay by first drawing up a short, hollow-bottomed cylinder, then bulging it outward in the center (*ill. 11k*; FIGS. 11.13–14). From a third lump of clay, the potter created the

FIGS. 11.11–12 *Early Attic dinos stand.* [.11] *Glossed top of stem slopes inward toward lower disk of baluster.* [.12] *Inside view of top of stem.*

upper disk and funnel-shaped bowl right side up. The dinos would rest on the bowl. He pulled up a fresh cylinder, sharply indented the base to form the upper disk, then angled the cylinder outward to form the bowl (FIGS. 11.15–18). Finally, he terminated it in a heavy, deep mouth with a protruding lip, in the process adding a ridge a few centimeters below that matched the lip (*ill. 11l*; FIGS. 11.19–21). He joined the sections with slip and turned the stand to perfect the articulated parts (*ill. 11m*). A less elaborate late sixth-century-B.C. stand in Boston does not include the globe and has only one disk.[7]

FIG. 11.13

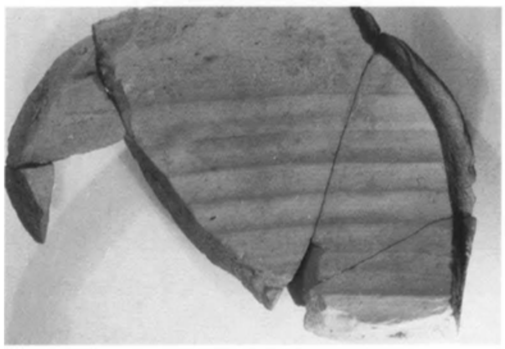
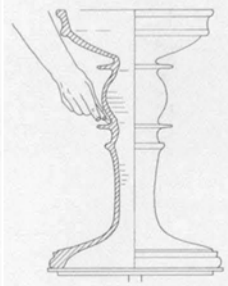


FIG. 11.14

FIG. 11.15

ill. 11k

ill. 11l



ill. 11m

FIGS. 11.13-15 [.13] *Decorated globular portion.* [.14] *Interior of globular portion.* [.15] *Underside of upper disk at the join of disk to globular portion.*

FIG. 11.18

FIG. 11.16

FIG. 11.19

FIG. 11.17

FIG. 11.20

FIG. 11.21

FIGS. 11.16–21 [.16] *Top of upper disk and funnel-shaped bowl fragment.* [.17] *Interior of upper disk and funnel-shaped bowl fragment.* [.18] *Interior of upper disk and funnel-shaped bowl showing join of disk to funnel-shaped bowl.* [.19] *Rim fragment of funnel-shaped bowl on which dinos rested.* [.20] *Cross-section of rim fragment of funnel-shaped bowl on which dinos rested.* [.21] *Other end of rim fragment of funnel-shaped bowl on which dinos rested.*

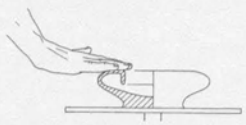
1.

2.

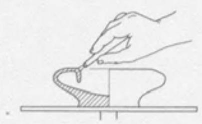
12. Exaleiptron (Kothon)

ill. 12a

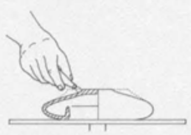
ill. 12b



ill. 12c



ill. 12d



ill. 12e

Although authorities do not agree on the name of this vase, "exaleiptron" has gained general acceptance over other terms used in the past, namely "kothon" and "plemochoë." For example, Richter and Milne identified this shape as a plemochoë and stated that Athenaios defined it as "a terra-cotta vessel shaped like a top standing on a steady foot."[1] Beazley divided the vase into Types A and B, the difference being in the foot.[2] Type A, the earlier of the two, has a shorter, wider flaring foot; Type B has a tall, medium-wide stem terminating in a disklike foot.[3] The body reaches sharply outward and upward from the top of the stem, then turns abruptly inward and upward to a flat or almost flat rim with a deep, inward-hanging lip, purported to prevent spilling. The mouth tends to be about as wide as the edge of the foot. A knobbed lid nestles snugly into the mouth, completing the "top" shape. The exaleiptron is glossed both inside and out. It averages 10–15 cm in width and 15–18.5 cm in height. It is thought to have held scented water both for personal use, for religious ceremonies, and at the grave.[4] It was in production from the early sixth century[5] until the end of the fifth century B.C.[6]

To create the body of an exaleiptron, the potter pulled up a centered lump of clay to form a short cylinder. He angled the sides of the cylinder sharply outward and upward, then sharply inward, pivoting the wall over his inside fingers (*ill. 12a*; FIGS. 12.1–4) and bending the last 2–3 cm downward into the mouth to form the incurving lip (*ill. 12b*). He flattened the top surface by carefully pressing downward on the shoulder of the rotating bowl (*ill. 12c*). With a tool he made a small notch at the lip/shoulder junction to form a resting place for the lid (*ill. 12d*). He then cut the body off the wheel and set it aside to firm up. When it was leather-hard, he placed it on the wheel upside down and turned the lower half, removing excess clay from where the vessel had been secured to the wheel during its forming (*ill. 12e*).

The potter of a Type A vessel threw the foot upside down with a spreading stem similar to that of the Siana cup (p. 156–57). The potter of a Type B exaleiptron threw the stem and foot upside down in a manner somewhat similar

PLATE VI
1. *Type A exaleiptron*
2. *Type B exaleiptron*

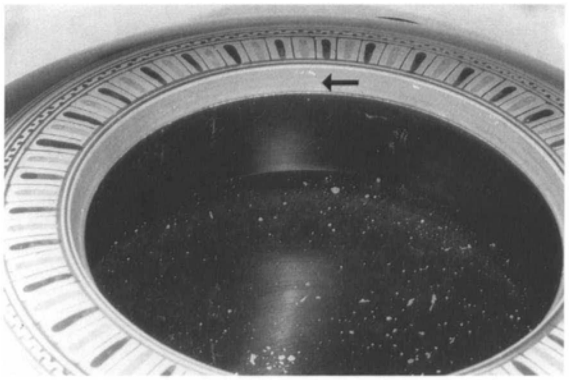


FIG. 12.1

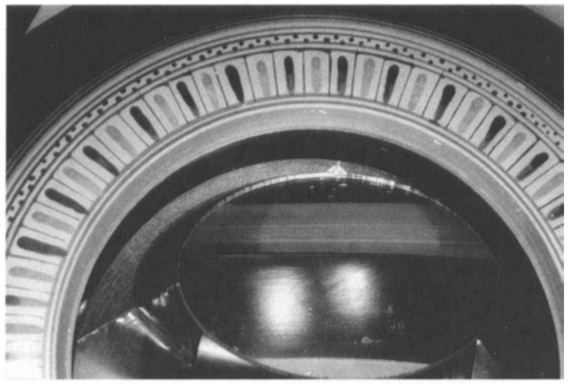


FIG. 12.2

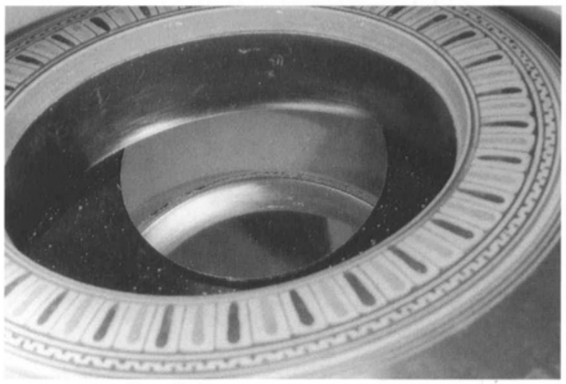


FIG. 12.3

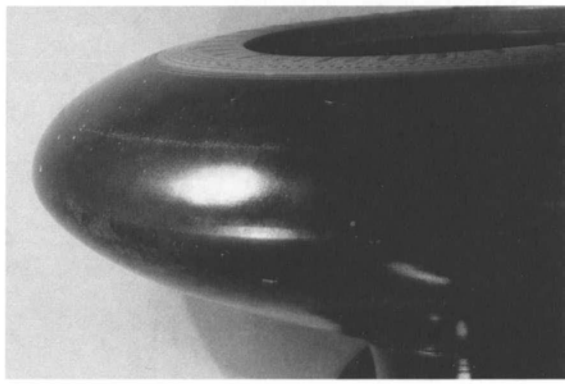


FIG. 12.4

FIGS. 12.1–4 [.1] *View into mouth of exaleiptron showing glossed floor and narrow ledge (arrow) on which lid rests.* [.2] *Inside view of sharp inward curve, as reflected in mirror placed on floor of vase.* [.3] *View of underside of shoulder, as reflected in mirror placed on floor of vase.* [.4] *Profile showing abrupt curve from bottom to top of vase body.*

to that of a lip cup (p. 154), except he left the stem *wider*. He turned the stem as needed and joined it to the body with slip (*ill. 12f*; FIG. 12.5).

The potter threw the almost-flat lid upside down, measuring the edge with care so it would nestle perfectly into the mouth of the vase, giving the vase a continuous line from the knob to the foot. In turning the lid, the potter removed only a thin layer of clay near the outside edge, then smoothed the lid with a sponge. The small, solid knob, which resembles an upside-down neck-amphora, was either turned with a tool from clay left on the lid after it had been cut off the wheel, or it was turned from clay added to the top of the lid (*ill. 12g*). The potter brushed on miltos and burnished the vase and lid prior to giving them to the vase-painter. The lid was fired in situ on the vase for a good fit (*ill. 12h*).

ill. 12f

ill. 12g

ill. 12h

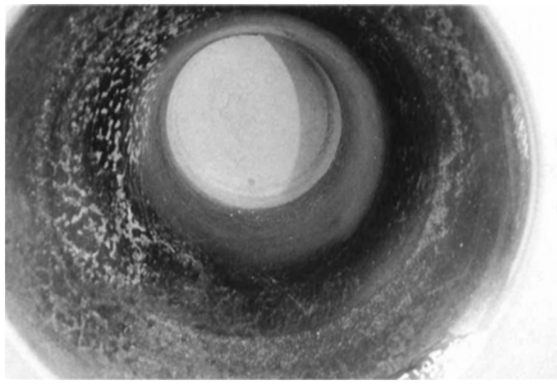


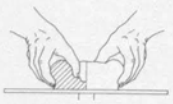
FIG. 12.5

FIG. 12.5 *View of underside of foot showing join of foot to bowl.*

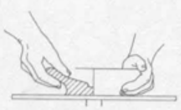
13. Fish Plate

The Attic fish plate, so called because of the fish and other sea creatures that decorate it,[1] has a floor that slopes inward to a small, shallow well used for sauce,[2] or perhaps for drainage.[3] It has a turned-down lip and sits on a sturdy ring foot. On Attic figured fish plates the bellies of the fishes are oriented outward (FIG. 13.1), while on fourth-century Apulian and Campanian fish plates the bellies face inward.[4] Fish plates range in diameter from about 20 cm to 26 cm.[5] They appeared in their developed form in the repertoire of the Attic potter at the end of the fifth century B.C.,[6] frequently painted all black, and flourished in South Italy during Hellenistic times.[7]

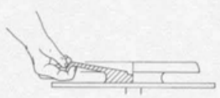
Attic Fish Plate



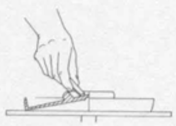
ill. 13a



ill. 13b



ill. 13c



ill. 13d

The Attic potter created his fish plate in one piece. He centered a ball of clay on the wheel, flattened it somewhat, and opened it with his thumbs together pushing down through the clay to within several centimeters of the wheel head, thus leaving enough clay from which to carve out the low foot (*ill. 13a*).[8] The depression became the well for the sauce. If the potter wanted to widen the well, he pulled his thumbs apart a bit. Figure 13.2 is an example of a fish plate with a wide well.

To form the floor of the plate, the potter raised his thumbs up out of the well about a centimeter, spread them outward, grasped the clay between his thumbs and fingers, and proceeded to pull the plate outward and somewhat upward, finishing with his right hand outside for support (*ill. 13b*). He left enough clay at the base to form the foot and thinned the floor outside the well by squeezing the clay between the fingers and thumb of his right hand as the wheel rotated, giving it the slope he desired. On the final pull he carefully folded the thin lip downward, using his index finger as the pivot point (*ill. 13c*; FIGS. 13.3, 9). The broad base of clay remaining on the wheel head supported the forming plate and was the clay from which the potter carved out the foot. He smoothed the floor with a rib, leaving either a raised edge (FIG. 13.4) or an incised groove on the floor adjacent to the edge of the well (see FIG. 13.2). Following the completion of the

FIG. 13.1

PLATE VII
Attic fish plate, interior and profile

FIG. 13.1 *The fish are oriented belly outward on Attic fish plates.*

FIG. 13.2 *The potter incised a groove around the edge of the wide well.*

FIG. 13.3

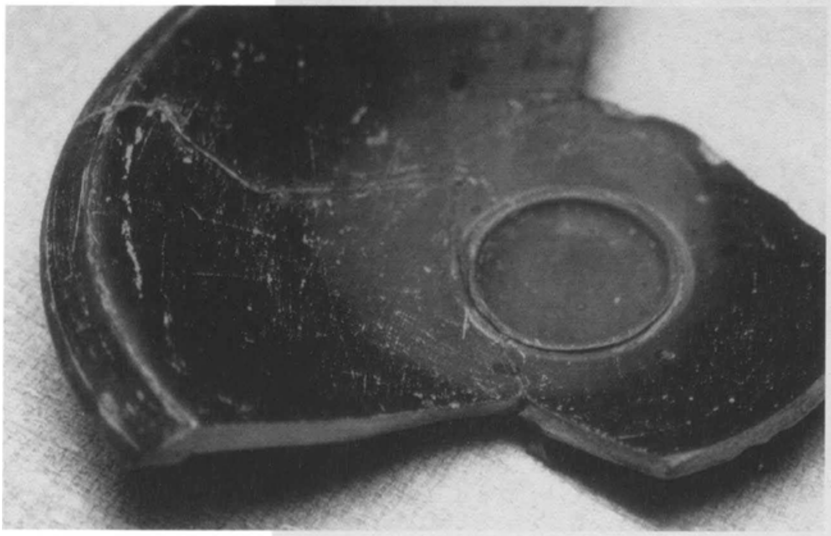


FIG. 13.4

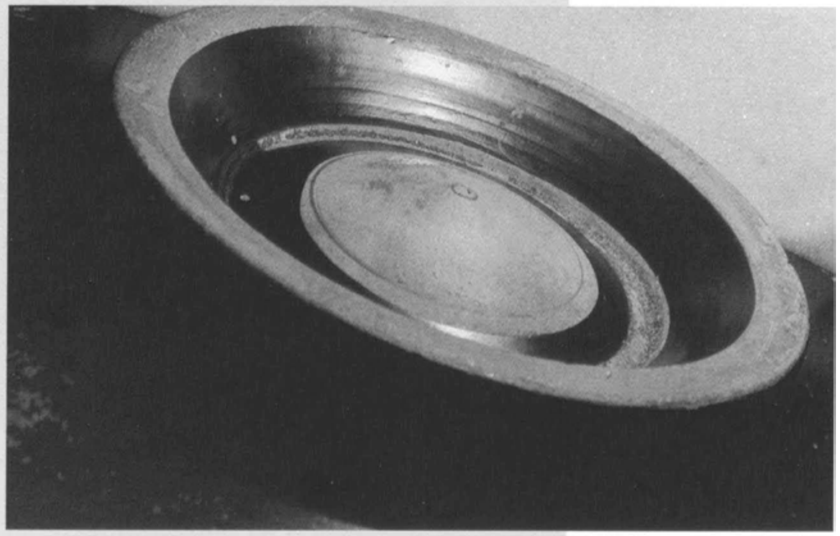


FIG. 13.5

FIG. 13.3 *The rim is folded downward. The torus foot emerges directly from the bottom of the bowl; parallel contiguous burnish marks are present on it.*

FIG. 13.4 *The potter left a raised edge around the well of this fish-plate fragment, perhaps to confine the sauce.*

FIG. 13.5 *Underside of foot of Attic fish plate. The ceiling was formed into a broad cone. Grooves left by a turning tool are evident on wall of ring foot.*

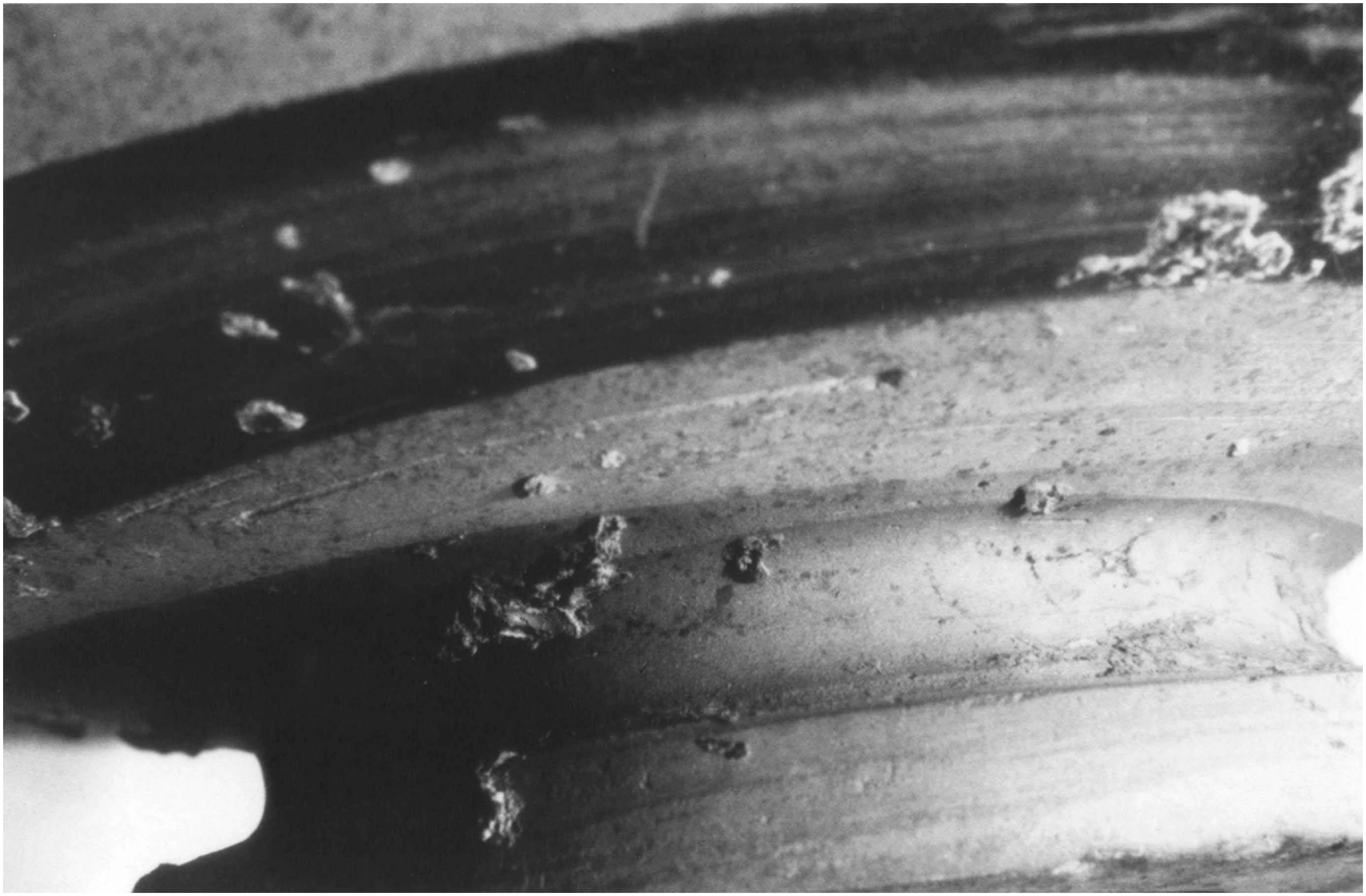


FIG. 13.6 *A rounded loop tool was used to make the stubby stem of this fish plate. The tool mark was left unsponged.*

shape itself, he cut the plate off the wheel and set it aside until it was stiff enough to turn upside down on the wheel to carve the foot (*ill. 13d*). Attic potters made their fish plates with a torus-shaped foot emerging directly from the bottom of the bowl.[9] They shaped both the outside and inside of the foot with a scraper or loop tool. To shape the foot shown in figure 13.5, the potter carefully formed the ceiling of the foot into a broad, smooth cone using the flat side of a rib tool while the plate was upside down on the wheel.

Turning the plate right side up, the potter brushed on miltos, burnished his piece, and set it aside for the vase-painter.

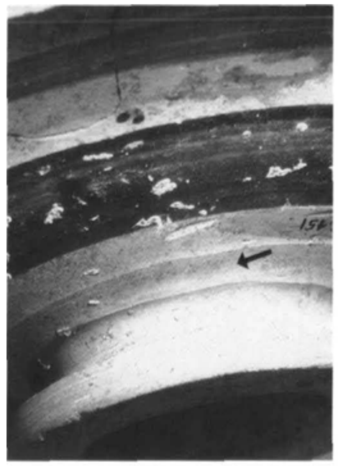


FIG. 13.7

South Italian Fish Plate

An interesting sidelight concerning the construction of fish plates is shown by two examples of South Italian fish plates in the Getty Museum. Although they have nothing to do with the way Attic fish plates were formed, these two examples afford the opportunity to observe turned pottery that has not been sponged or smoothed. South Italian fish plates usually have a low, stemmed foot. The potter who created the fish plate shown in figure 13.6 used a rounded loop tool resembling a modern potter's loop tool. He inserted the loop end of the tool into the clay between the top of the foot and the bottom of the plate, holding it there for one full rotation of the wheel. This maneuver created a prominent, concave cut that was never sponged. Just above this stubby stem he cut away clay from the bowl using the same rounded loop tool and left it, too, unsponged (FIG. 13.7). The cut spirals away from the stem, upward into the plate. He carved out the underside of the foot and left it rough, using the same or a similar tool (FIG. 13.8).

In the South Italian fish plate shown in figure 13.9 the potter left tool marks on the outside of the high stem where he turned it, although the inside of the stem has been smoothed and sponged.

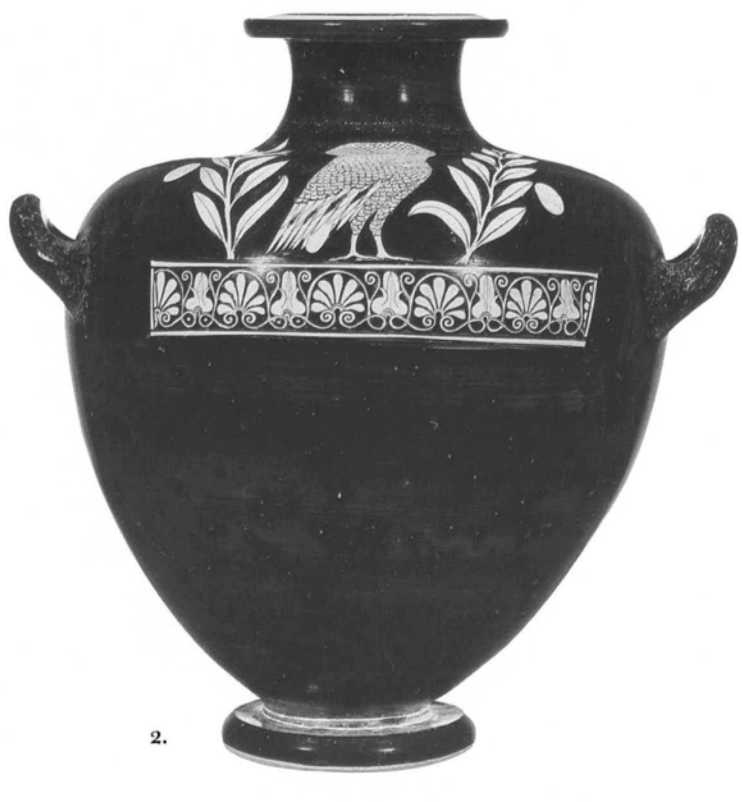
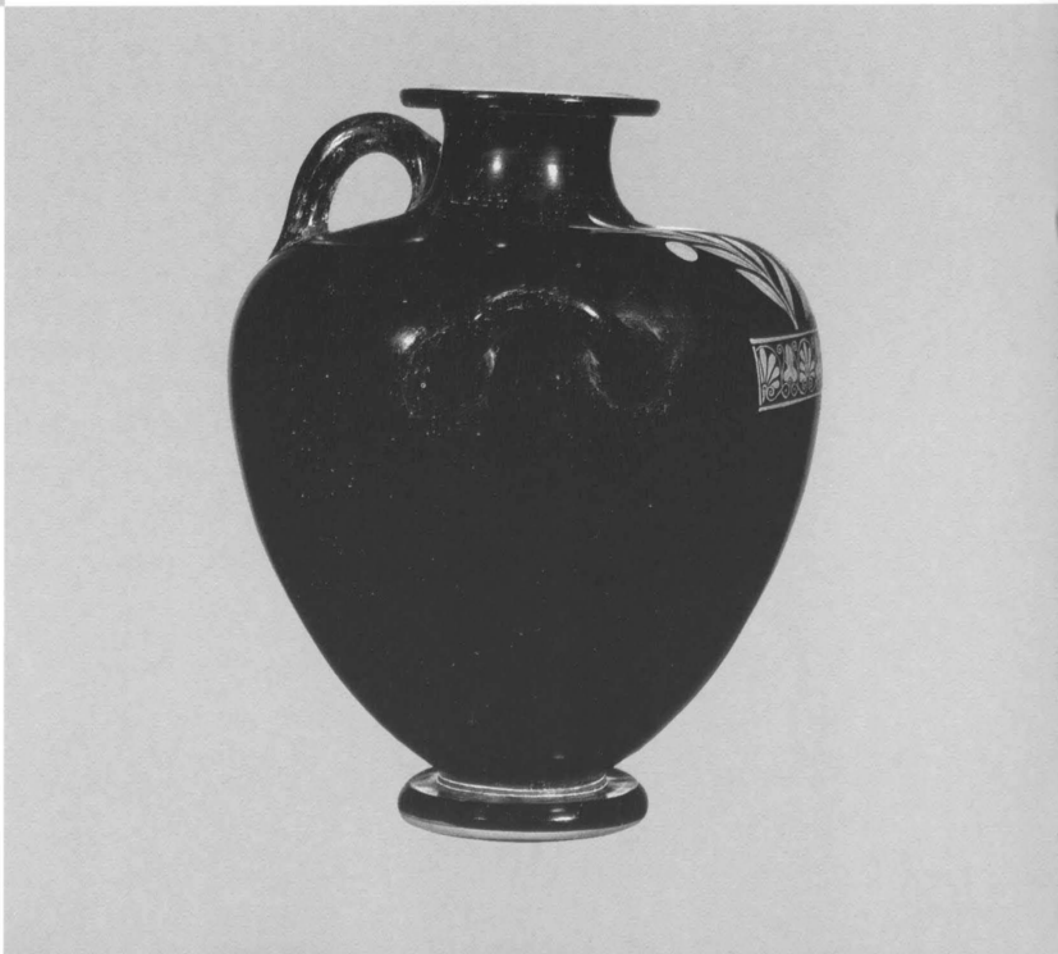
FIG. 13.8

FIG. 13.9

FIG. 13.7–8 [.7] *Loop-tool marks are visible up into the underside (arrow).* [.8] *Ceiling of foot was cut out with the same or a similar tool.*

FIG. 13.9 *The potter left turn marks on outside of stem. Throwing striations are visible on underside of plate and downturned lip.*


1.

2.

14. Hydria

The canonical hydria (shoulder-hydria) is a large, full-bodied vessel with a well-delineated shoulder and a medium-sized, articulated neck with an overhanging torus lip.[1] It has two horizontal handles on opposite sides of the body and a third, vertical handle reaching from the lip to the shoulder on the back midway between the horizontal handles. The typical foot is torus shaped, often with a concave top surface. The shoulder-hydria was constructed in several parts: body/shoulder, neck/mouth/lip, foot, and handles. It was glossed outside but not inside except for the mouth and neck. The vases range in height from about 33 cm to 50 cm. The hydria was principally used for carrying water, although its uses as a ballot box and as a cinerary urn have been recorded.[2] Primarily a black-figure shape, the shoulder-hydria was popular in Attica from the last quarter of the sixth through the second quarter of the fifth century B.C.[3]

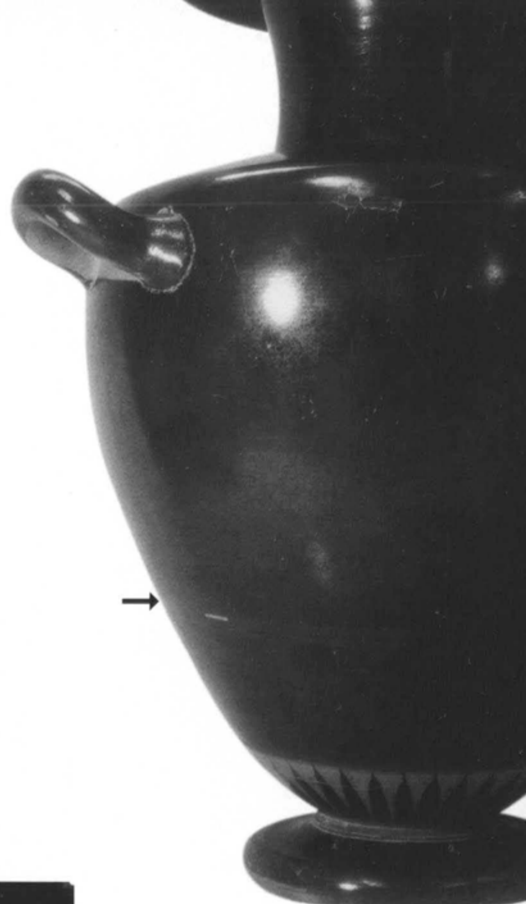


FIG. 14.1

BODY

ill. 14a

The body of a hydria was thrown in one piece. The potter centered a large ball of clay on the wheel, opened it, and drew his thumbs apart to create the floor of the hydria. He pulled up a cylinder that was a little taller than the intended height of the shoulder. With one hand inside pressing in opposition to the hand on the outside, he angled the clay upward and outward to form the body wall (*ill. 14a*). At the shoulder level he turned the clay inward, the outside fingers executing the turn, both hands carefully directing the clay in toward the neck (*ill. 14b*). He did the final shaping and smoothing of the outside surface with a rib. Throwing grooves or striations may be visible on the inside of hydriai. The body was cut off the wheel and set aside to firm up.

ill. 14b

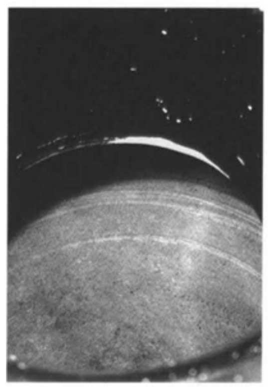


FIG. 14.2

Bodies of very large hydriai were thrown in two parts, the join being about halfway up the body. The interior of the large hydria in figures 14.1–3 is almost as smoothly finished as the outside, except for scrape marks. The potter has removed all signs of throwing except inside along one narrow area where two thin grooves correspond to a slight indentation on the outside, interrupting the

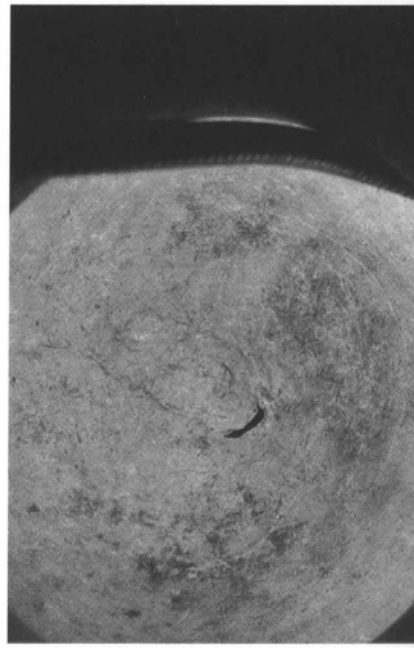


FIG. 14.3

PLATE VIII
1. Hydria, front and side
2. Kalpis, front and side

FIGS. 14.1–3 [.1] *Slight indentation (arrow) in body of hydria indicates it probably was thrown in two sections.* [.2] *Smoothly finished interior. Scrape lines indicate join area.* [.3] *Smoothly finished interior. Perforated floor defect.*

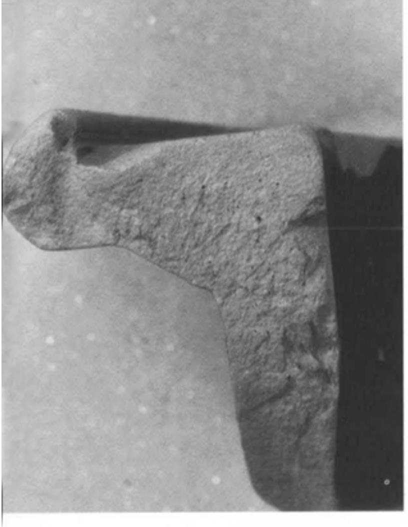


FIG. 14.4

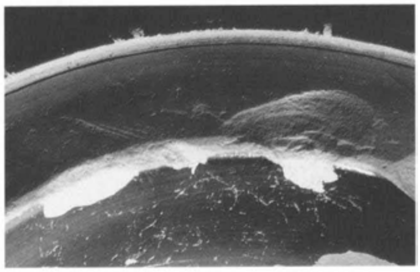


FIG. 14.5

FIG. 14.6

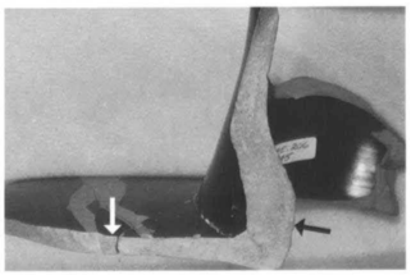


FIG. 14.7

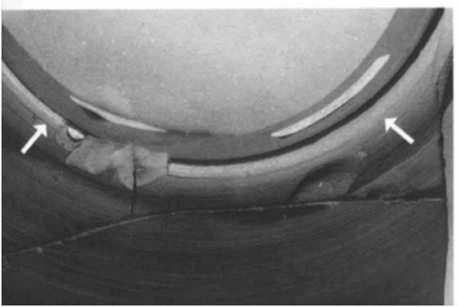


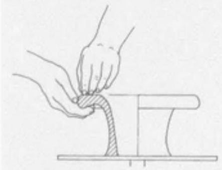
FIG. 14.8

flowing profile of the body. The body of this hydria was very likely thrown in two sections, the join marked by the indentation. While smoothing the join, the potter may also have smoothed most of the interior of the hydria.

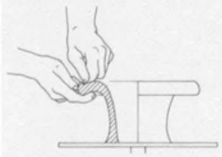
NECK/MOUTH/LIP

The neck/mouth/lip of a hydria was thrown right side up, the potter first pushing his thumbs through a centered lump of clay clear to the wheel head and then enlarging the hole to a bit less than the inside neck opening of the body. He pulled up a short cylinder, repeated the process to thin it as necessary, then angled the clay outward to form the lip (*ill. 14c*). He placed several fingers of his right hand under the lip and his thumb along the edge, while he inserted his left thumbnail into the top outer part of the rim to form the raised edge that is usually found on hydriai (*ill. 14d*; FIGS. 14.4–6). The potter rounded the lip by curving a damp sponge around it. He cut the neck/mouth/lip off the wheel and allowed it to firm up only just enough to prevent it from becoming misshapen when he joined it to the shoulder.

As in neck-amphorae, the neck walls of hydriai tend to be tapered in vertical section, thicker at the base. This taper can be seen in figure 14.7.



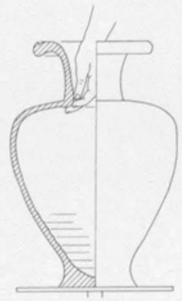
ill. 14c



ill. 14d

JOINING

The potter attached the neck to the shoulder with slip (*ill. 14e*). He was able to reach his hand down inside the mouth and curl several fingers around the lower neck clay, working it into that of the shoulder on the rotating wheel, smoothing the join in the process. A thickening of the clay is visible at the join under the shoulder, often with a distinct difference in the pattern of striations coming from the body and those from the neck. One may even find a break in the flow of the clay where the potter has not completely blended the neck clay into that of the shoulder (FIGS. 14.8–14). On the outside of the hydria, the potter left a sharp angle at the junction of neck and shoulder, without forming a neck ring.



ill. 14e

FIGS. 14.4–6 [.4] *Cross-section of raised edge of lip.* [.5] *Top view of rim with raised edge of lip.* [.6] *Underside of lip.*

FIGS. 14.7–8 [.7] *Tapered neck (black arrow) is twice as thick as shoulder (white arrow).* [.8] *Bulge at join of neck and shoulder (arrows).*

ill. 14f

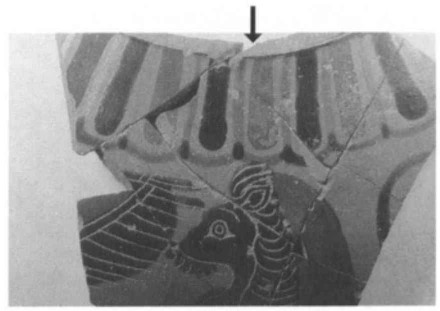
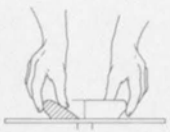


FIG. 14.9

TURNING

When the joined vase reached the leather-hard stage, the potter inverted it on the wheel and turned the lower body, which had been left somewhat thick for support, to create a parabolic shape (*ill. 14f*; FIG. 14.15). Potters tended to turn the lower body of large vases such as the hydria thicker than the upper body. However, the potter who trimmed the vase in figure 14.16 turned the lower body exceptionally thin, a little less than 0.5 cm near the breakthrough defect to the underside of the foot.



ill. 14g

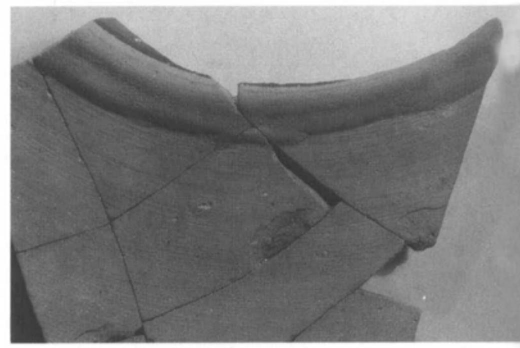


FIG. 14.10

FOOT

The potter threw the hydria foot upside down (*ill. 14g*). He opened a small ball of clay with his thumbs, spreading them apart only a short distance. The pads of his thumbs shaped the walls of the underside of the foot in the process, while his fingers rounded the edge of the foot, giving it a torus shape. There was no need to pull up a cylinder. The foot was cut off the wheel and set aside to firm up, after which it was joined with slip to the turned vase. Figure 14.17 shows the underside of a foot where the potter spread excess slip along the join with a fingertip, perhaps to fill in any missed spots. This procedure left a ring of slip encircling the entire join. The remainder of the ceiling of the foot is smooth. The side walls have been turned with a tool, leaving contiguous planes, as seen also in the side walls of the foot in figure 8.16. After the potter righted the vase, he turned the top of the foot, giving it a concave shape. With a notched rib he created a fillet at the join (*ill. 14h*). He then applied miltos and burnished the hydria on the rotating wheel before adding the three handles.

ill. 14h

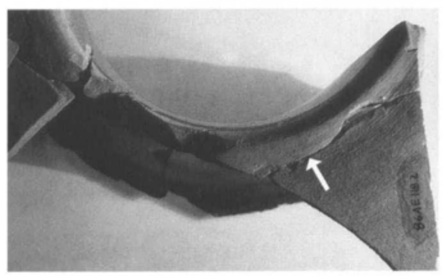


FIG. 14.11

HANDLES

Hydriai have two horizontal, pulled handles[4] opposite one another, attached just below the shoulder. They are cylindrical and usually upturned. A third, pulled handle, midway between the other two, is center-ridged or oval in section,[5]

FIGS. 14.9–10 [.9] *Hydria shoulder fragment with edge of neck showing (arrow).* [.10] *Neck/shoulder join. The potter did not completely blend lower neck clay into shoulder.*

FIG. 14.11 *Typical bulge at neck/shoulder join (arrow).*

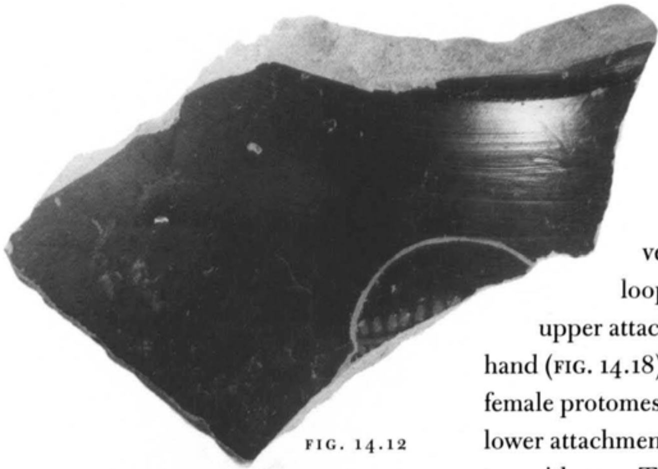


FIG. 14.12

vertically oriented, rooted to the lip, rising slightly above it before looping downward for attachment to the shoulder (*ill. 14i*). The upper attachment often terminates in rotellae, which the potter molded by hand (FIG. 14.18). A few handles have plastic (moldmade) adjuncts such as rivets, female protomes, lion's heads, or palmettes at the front of the handle or at the lower attachment. The potter attached the handle to the lip and smoothed the top with care. The creator of the handle in figure 14.19 did not completely work the attachment into the underside of the lip. The underside is seldom seen. As with other such hidden areas, the potter apparently did not feel it was necessary to give it a smooth finish.

Handles may have had miltos applied. They were held by hand while they were burnished, rather than being burnished on the rotating wheel. Figure 4.10 shows a hydria whose side handles were not glossed, thus offering a clear view of the burnish marks.

FIG. 14.14

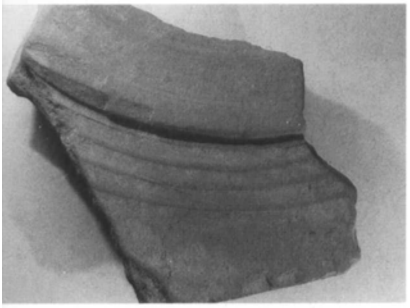
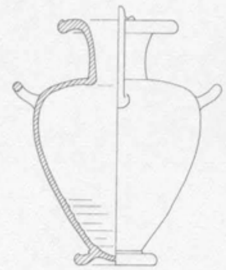


FIG. 14.13

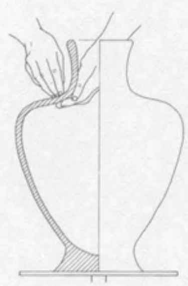


ill. 14i

Kalpis (Continuous-curve Hydria)

The kalpis, a water jug preferred by red-figure painters, differs from the shoulder-hydria in several ways: the neck, shoulder, and body of the kalpis form a continuous curve; its vertical handle is cylindrical and is rooted on the neck rather than on the lip; its foot shape is more varied; its rim is concave on top; and it is usually smaller. It ranges in height from about 25 cm to 42 cm. Its popularity lasted from around the end of the sixth through the fourth century B.C.[6]

The body/shoulder/neck was thrown from one lump of clay (FIGS. 14.20–26). Unlike the continuous-curve amphora, which has a shoulder that angles upward at about 45°, the shoulder of the kalpis slants upward at approximately a 20° angle. This required that the potter exercise care in creating the transition from shoulder to neck in order to keep the neck from slumping.



ill. 14j

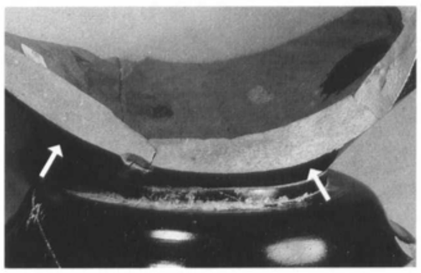


FIG. 14.15

To create a kalpis, the potter pulled up a thick-walled cylinder, forced it outward to shape the body, guided his hands back inward, then upward to form

FIGS. 14.12–14 [.12] *Hydria shoulder fragment with edge of neck showing.* [.13] *Underside of neck/shoulder join with gap between neck and shoulder clay.* [.14] *Cross-section. Neck notably thicker than shoulder. Throwing grooves on shoulder, striations on neck.*

FIG. 14.15 *Turned lower body of hydria showing parabolic shape (arrows).*

FIG. 14.17

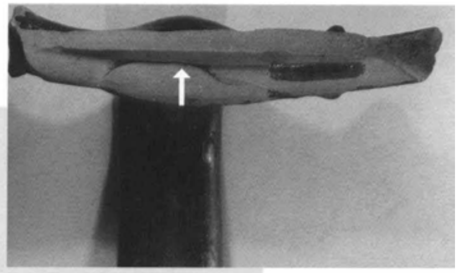


FIG. 14.19

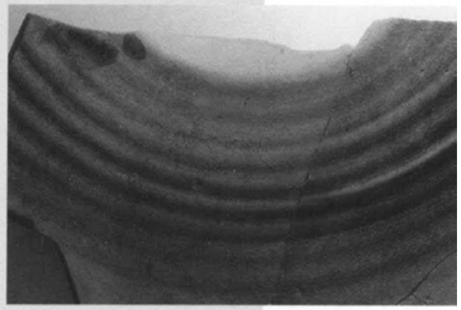


FIG. 14.20

FIG. 14.16

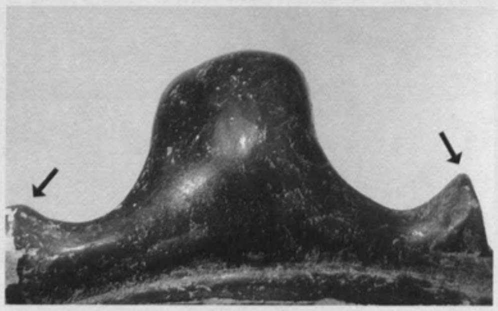


FIG. 14.18

FIG. 14.21

FIG. 14.16 *Thinly turned ceiling of underside of hydria foot with breakthrough into interior.*

FIG. 14.17 *The potter sealed join of foot to body by running a fingertip full of slip around join (arrows).*

FIGS. 14.18–19 [.18] *Vertical handle, terminating in rotellae (arrows), attached to lip and rising above it. Viewed as though looking across the mouth.* [.19] *Handle attachment (arrow) is not completely worked into underside of lip.*

FIGS. 14.20–21 [.20] *Continuous-curve construction shows spiral throwing grooves on shoulder of this fragment and no signs of any join.* [.21] *Outside.*

FIG. 14.22

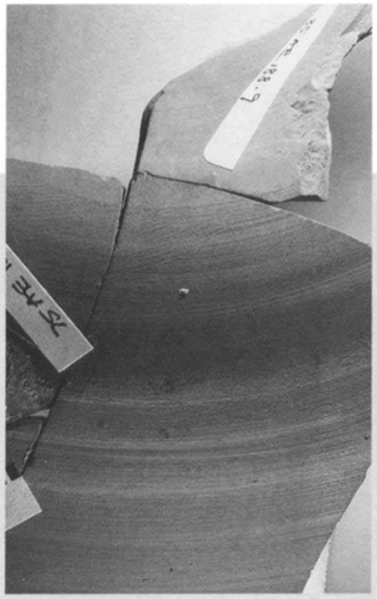


FIG. 14.24

FIG. 14.23

FIG. 14.25

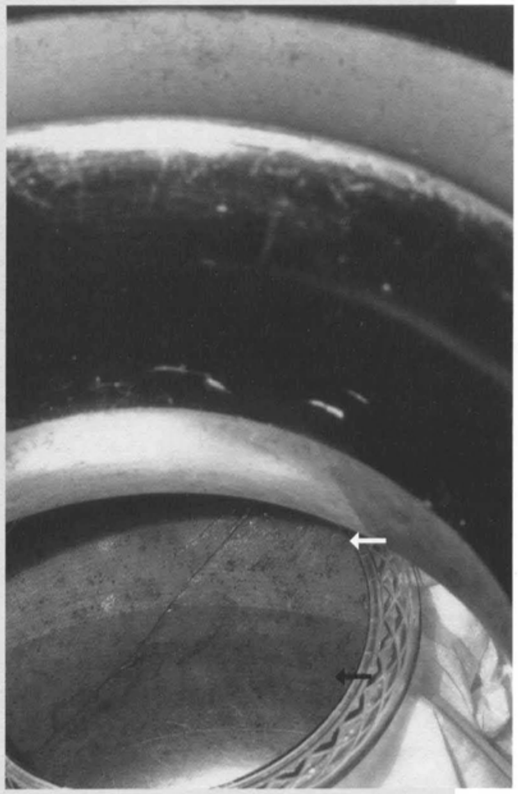


FIG. 14.26

FIGS. 14.22–23 [.22] *Continuous-curve construction shows smooth transition from body to shoulder and neck but no join.* [.23] *Outside.*

FIGS. 14.24–25 [.24] *Continuous-curve construction shows throwing striations but no join.* [.25] *Outside.*

FIG. 14.26 *Mirror placed under shoulder reflects smooth transition from body (black arrow) to shoulder (white arrow).*

ill. 14k

ill. 14l

ill. 14m

the shoulder and neck (*ill. 14j*). The rim and lip were turned in one movement by the dexterous fingers of the potter. He bent the clay outward with his right hand, his thumb pushing downward to form the concave rim, the back of his index finger forming the lip (*ill. 14k*), and holding his middle finger underneath the rim for support (FIGS. 14.27–28). In this manner he could keep his left hand on the inside under the shoulder for support.

The vase was cut off the wheel and allowed to reach the firm leather-hard stage. While it was drying, the potter threw the foot in much the same manner as he threw the foot of the shoulder-hydria (p. 119).

The vase was returned to the wheel upside down for turning. The lower body was turned to the shape of a parabola and the foot secured to it with slip (*ill. 14l*). Figure 14.29 shows that the potter ran a finger as well as the rounded end of a tool along the join on the underside of the foot to make a smooth transition from foot to body. As needed, he thinned the neck and adjusted the neck/lip area. When the potter of the kalpis in figure 6.20 attempted to smooth the underside of the lip with a scraper tool, it may have been dull, and/or the clay was too hard, for the tool bounced along the clay causing "chattering" (see p. 66).[7] When turning was completed, the potter brushed on miltos and burnished his vase.

All three handles of a kalpis are cylindrical. They were pulled, shaped, and attached to the kalpis as the final steps in completing the vase (*ill. 14m*).

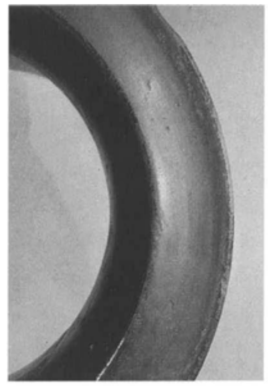


FIG. 14.27

FIG. 14.28

FIG. 14.29

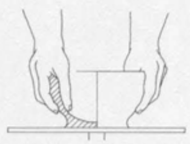
FIGS. 14.27–28 *Concave rim/lip seen from convex upper side.*

FIG. 14.29 *Underside of foot. The potter used his finger to spread slip (black arrow) and a tool (white arrow) to secure and smooth join of foot to body.*

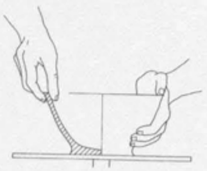

ΚΑΣΤΩΡ ΠΟΛΥΔΕΥΙΚΗΣ

15. Kantharos

The kantharos in its most characteristic form (Type A_1—see silhouettes, p. 256) is a cup with a shallow bowl and a tall upper body.[1] A narrow offset separates the bowl from the upper body. The bowl rests on a foot with a high stem, a fillet separating the stem and bowl. It has a pair of vertically oriented handles that curve inward above the rim. The cup averages about 15 cm in diameter. This is the type of kantharos most often seen in vase-paintings in the hand of Dionysos (sometimes of Herakles), especially in Attic black-figured vase-paintings, although it was rarely produced in Attic pottery at the time Dionysos is pictured holding it.[2] The kantharos he is holding may be of metal.[3] The inward-curving handles made it difficult to drink from a kantharos, so it may have been used mainly for ritual purposes in tombs and sanctuaries, or for pouring libations (FIG. 15.1). Known from the sixth century B.C., the ceramic shape was not widely popular in Athens until the fourth century B.C.[4]

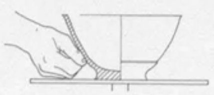


ill. 15a



ill. 15b

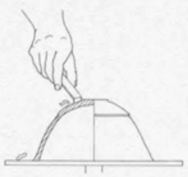
To create the basic kantharos, the potter opened a clay ball and drew up a cylinder. He spread the cylinder outward with his thumbs, forming a smooth, concave floor (*ill. 15a*), then upward between the fingers and the thumb of his right hand, his left hand supporting the cup. He terminated the lip with a very slight flare (*ill. 15b*)[5] and made a narrow offset either with the edge of his right thumbnail or with a tool along the lower portion of the cup (*ill. 15c*), then cut the vessel off the wheel and set it aside to firm up.



ill. 15c

The potter threw a tall, slender-stemmed foot upside down in a manner similar to that of the lip cup (see p. 154) and set it aside when completed.[6]

When the cup was firm, the potter returned it to the wheel right side up. He probably coated the interior of the kantharos cup with miltos and burnished it on the revolving wheel as soon as it had reached the firm leather-hard stage, before turning the outside or attaching the foot. Pressure is applied in burnishing. Burnishing the inside of a cup or bowl while it was secured to the wheel head (rather than up on a slender stem) would offer considerably more stability.

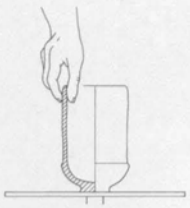


ill. 15d

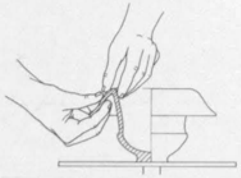
PLATE IX
Kantharos
Cup-Kantharos

FIG. 15.1 *Attic oinochoe showing Dionysos spilling libation from a kantharos.*

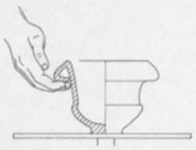
ill. 15e



ill. 15f



ill. 15g



ill. 15h

ill. 15i

The potter then upended the cup and turned the underside of the bowl, peeling off layers of clay to thin the walls until he had shaped it into a gently rounded form (*ill. 15d*). He secured the foot to the bowl with slip and either added a thin coil of clay for a fillet at the join or created one with a notched rib. While the kantharos was still upside down on the wheel, he applied miltos to the outside surface and burnished the vessel before adding the handles.

He pulled a pair of concave handles and bent and cut them to size to curve well above the rim. When they were between the soft and firm leather-hard stages, he delicately rooted them to the top of the rim and attached them at the junction of bowl and upper body, adjusting the shape as necessary (*ill. 15e*).[7] The kantharos was then ready for the vase-painter.

Cup-Kantharos

The cup-kantharos is a fourth-century-B.C. vessel[8] with a low foot. It has a pair of horizontally rooted, upturned handles extending outward from the lower body, the tips of which bend sharply back toward the wall of the kantharos. A common shape of cup-kantharos has a folded lip (FIG. 15.2), which the potter created with an interesting technique that is rather simple to execute. For a cup with a mouth diameter of 10 cm the potter pulled up the upper body some 3–4 cm taller than the anticipated height of the rim (*ill. 15f*). He curled those top few centimeters of clay outward over his right index finger, lightly pinching the rim with his left hand (*ill. 15g*). With care, he gently turned the edge of the lip back under until it touched the kantharos wall, creating a hollow interior (*ill. 15h*). The potter likely made the hollow lip to create a "rattling," produced by one or more clay pellets inserted into the hollow.[9] The hollow lip may or may not have a vent hole pierced in it to allow steam to escape during firing, but the clay comprising the hollow lip is usually thin enough to allow steam to escape through the pores, and the need for a vent hole is therefore lessened. The potter added the handles last (*ill. 15i*). The outside of a cup-kantharos is completely covered with black gloss.

FIG. 15.2

FIG. 15.2 *Cup-kantharos with turned-under lip creates a hollow interior (arrow).*


1.


2.


3.


4.

16. Krater

The Attic krater,[1] one of the largest of the Greek vases, is a wide-mouthed, broad-bodied, footed vessel used primarily for mixing wine with water.[2] The ancient Greeks did not drink their wine neat, but diluted it with water. Milne gives a favorite mixture as one part wine to three parts water.[3] Lissarrague lists wine-to-water ratios of 1:2, 1:3, 3:5, or 2:3.[4] Noble mentions that the ratio can vary from one-to-one to one part wine to ten parts water.[5] The wide mouth facilitated pouring in the liquids and ladling out the diluted wine. The shape defined the function it performed. Kraters were glossed inside, as is true of other wide-mouthed vessels. There are four kinds of kraters: column, volute, calyx, and bell.

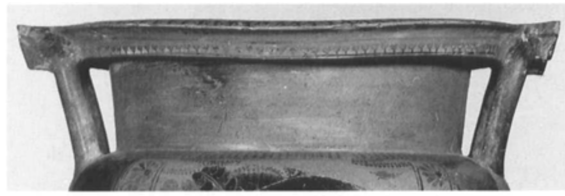


FIG. 16.1

Column-Krater

The column-krater has an articulated neck, whose wide mouth culminates in a broad rim with an overhanging lip. It takes its name from the two pairs of columnar handles, which attach at their top to handle plates (extensions of the rim) and at their base to the krater shoulder (FIGS. 16.1–2). The column-krater was constructed in sections. The body/shoulder was thrown in one or two sections, depending on the vessel's size, the neck/rim/lip in another segment, and the foot in yet another. Handle plates were hand molded and the handles were pulled. Column-kraters range in height from about 35 cm to 56 cm. They have their origin in a Corinthian krater of the last quarter of the seventh century B.C.[6] The Attic shape was popular from the first half of the sixth to the third quarter of the fifth century B.C., after which it fell into decline.[7]

FIG. 16.2

BODY

To make a typical column-krater body in one piece, the potter centered an appropriately sized ball of clay on the potter's wheel, opened it with his thumbs to create the floor, and pulled up a cylinder to a little above the desired height in order to accommodate the expanding body and the inward turning at the shoulder. He left upward-spiraling throwing grooves on the inside and the outside. The lower

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PLATE X
1. Column-Krater, front and side
2. Volute-Krater, front and side
3. Calyx-Krater, front and side
4. Bell-Krater, front and side

FIGS. 16.1–2 *Attic black-figured column-krater.*
[.1] *Handles.* [.2] *Handle plate.*

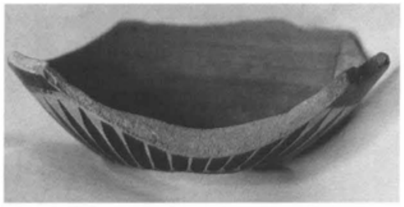


FIG. 16.3

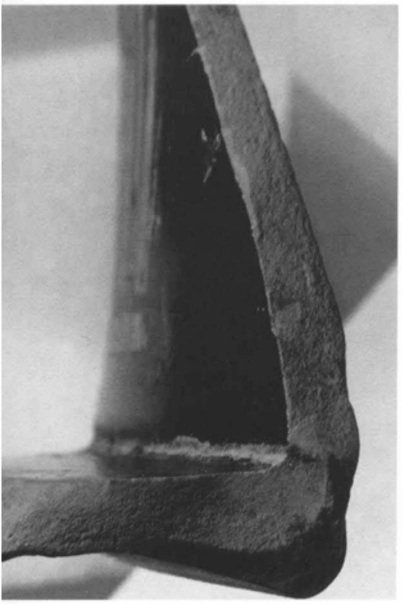


FIG. 16.4

portion near the foot was left thicker than the rest of the body wall for stability and support (FIG. 16.3). He gave the krater shape by guiding the wall of the cylinder outward and completed the body by bringing the clay inward at the top to form the shoulder, leaving the edge thick to facilitate joining with the neck (*ill. 16a*; FIG. 16.4). He likely used a rib tool on the outside for the final shaping and to create a smooth finish, simultaneously partially eliminating interior throwing grooves with his supporting inside hand (*ill. 16b*). The body was cut off the wheel and set aside to stiffen somewhat while the neck section was thrown.

The body of a larger column-krater was thrown in two sections, the dividing point being about midway between shoulder and foot (*ill. 16c*). The potter pulled up the lower body to the junction level, leaving the wall somewhat thick to support the top section. For the upper half, he either placed a fat coil of clay in a wide circle on the wheel and forced it to run true, or he opened a centered lump of clay and pulled it outward to form a doughnut. He then pulled up a cylinder out of which he formed the upper body and shoulder, using calipers to measure and match the outside dimensions of the parts to be joined.

The potter cut the top segment off the wheel and set it aside to dry partially. While it was still somewhat soft but firm enough to move without altering its shape, he joined the two with slip (*ill. 16d*). He may have given a final upward pull to integrate the two sections more completely. A bulging or indented surface circling the inside may disclose the join, and careful scrutiny of the outside may reveal such a join, though great effort was made to eliminate it. In a large column-krater in the Getty Museum (FIG. 16.5) a slight indentation is visible around the entire krater at the level just above the lions' right ankle joints, revealing the area of a probable join.

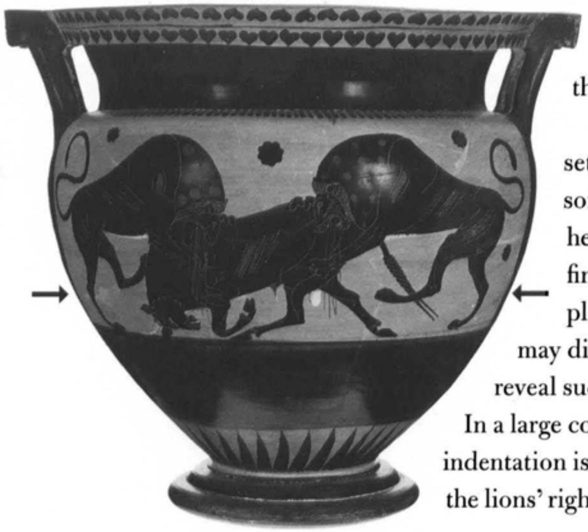
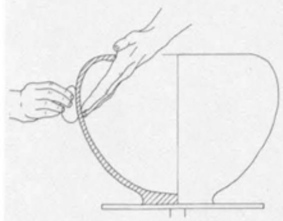
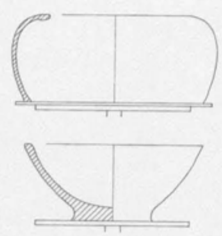


FIG. 16.5

ill. 16a



ill. 16b



ill. 16c

FIG. 16.3 *The potter left lower body wall of column-krater thicker than that of remainder of vase.*

FIG. 16.4 *Thickened shoulder at neck/shoulder join.*

FIG. 16.5 *Slight indentation (arrows) just above level of lions' ankle joints encircles this large column-krater, an indication the body of the vase probably was thrown in two sections.*

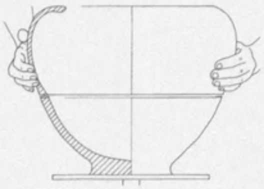
FIG. 16.6

NECK/MOUTH/LIP

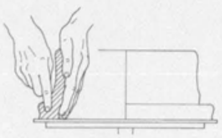
Because of the force of gravity and the fineness of Greek clay it was impractical to throw the neck right side up and then pull the rim out at a right angle parallel to the wheel and pull again sharply downward to form the lip, for the rim and lip would slump. Instead, the potter threw the neck, rim, and overhanging lip of the column-krater upside down in one piece. He pulled up a wide, hollow cylinder, leaving a broad base of clay on the wheel from which to form the rim and lip. He shaped the neck, matching the diameter of the neck opening with that of the shoulder edge. The neck was left thicker than the desired finished piece to allow the potter some leeway in turning and to facilitate the joining process.

FIG. 16.7

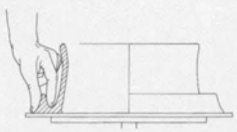
Next he formed the rim and overhanging lip. With his left hand inside the cylinder for support he forced his right index finger downward at an angle into the broad base, forming an outer ring of clay (*ill. 16e*). This outer ring would become the lip. He inserted one or two fingers of his left hand into the new depression, thumb on the outside, and formed the lip on the rotating wheel by squeezing inward and pushing downward with his thumb (*ill. 16f*). In this manner he forced clay off the tip of his left thumb and simultaneously formed the inward-slanting lip with the ball of his thumb (FIG. 16.6). One or two throwing grooves are often visible in the depression created between the neck and lip (FIG. 16.7). Because the neck was thrown upside down, the smooth wheel head automatically created a flat rim at nearly right angles to the neck. The potter removed the neck section and left it to stiffen somewhat.



ill. 16d



ill. 16e



ill. 16f

JOINING

The neck would have been set aside only until the clay had stiffened a little and not until it had reached the firm leather-hard stage. It would have been added to the shoulder before excess clay was trimmed from around the base of the body, both for support and to allow the potter a view of the vase shape in profile. In joining the neck to the body the potter re-centered the body on the wheel.

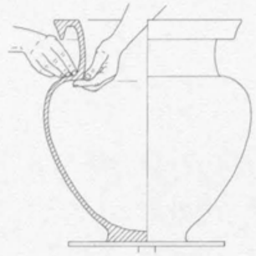
FIG. 16.6 *The potter's left index finger formed underside of column-krater rim, while thumb formed inward-slanting rim.*

FIG. 16.7 *Underside of rim of column-krater.*

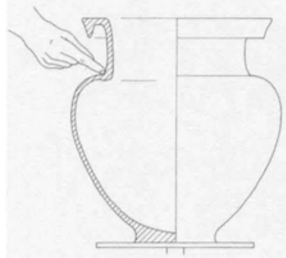
FIG. 16.8

FIG. 16.9

He added slip to the shoulder and placed the neck on top, centering it as closely as possible. Extending his left hand down into the wide mouth, he worked clay from the base of the neck downward into the underside of the shoulder (*ill. 16g*). He curved several fingers around the join in order to meld the clays as the wheel made several rotations. However, the join was not always smoothed; sometimes it was left quite rough, as seen in figures 16.8 and 9. In this example the potter, using a knife, sliced off a portion of the thick join to lessen the bulk. Potters sealed the outside of neck/shoulder joins with a finger as the krater rotated on the wheel, using any excess slip that may have oozed out to facilitate the smoothing process (*ill. 16h*).



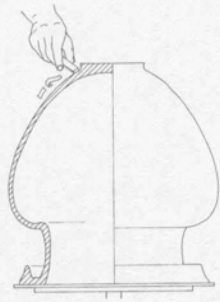
ill. 16g



ill. 16h

TURNING

With column-kraters, turning started while the piece was still on the wheel in an upright position. The potter may have angled the inside top of the mouth slightly outward by scraping away excess clay, or he may have made other adjustments, such as thinning the neck and sharpening the neck/shoulder join. He turned the body of the krater only to get the vessel to the proper thinness, not to alter the general shape, for the seasoned potter would have shaped his vessel carefully while throwing it. If the body had been thrown in two pieces, he probably did some turning to eradicate that join. He then upended the krater and centered it on the wheel. Using a scraper or loop tool, he turned the lower body into a parabola by trimming away the excess clay that had been left for support during throwing (*ill. 16i*).



ill. 16i

FOOT

The broad and sturdy foot of a column-krater was thrown upside down. The potter opened a centered ball of clay with his thumbs, pushing down through the clay to the wheel head, then widened it by pulling his thumbs apart, his fingers controlling and rounding the outside until the opening was of sufficient size to

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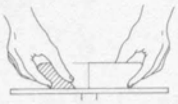
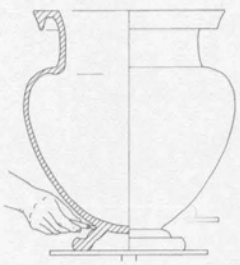
FIGS. 16.8–9 [.8] *Join of neck to shoulder of column-krater was left quite rough. The potter sliced off a portion of lower neck (arrow) at join to lessen bulk.* [.9] *Cross-sectional view of neck/shoulder.*



ill. 16j

ill. 16k



ill. 16l

ill. 16m

fit the base of the krater (*ill. 16j*). It was not necessary for the potter to pull up a cylinder, for the outward movement of his thumbs and his controlling fingers created a thick-walled ring of clay adequate enough to form a sturdy foot. His thumbs gave shape to the inside walls of the foot, forming a hollow-bottomed bowl shape, whose thick rim was the base on which the finished krater was to rest (FIG. 16.10). To flatten this resting surface, the potter pressed down on the top of it with the side of his right index finger, which was braced on top of the left thumb and left index finger, which were firmly supporting the sides of the foot (*ill. 16k*).

The foot was set aside until it was firm enough to be joined to the body. The potter then applied slip to the top of the foot, set it in place on the bottom of the turned vase, and twisted it back and forth a bit to obtain a good join. He used a tool or his fingertips to smooth the join on the underside of the vase. While the foot was still somewhat pliable, the vessel was turned right side up and carefully leveled. Potters of early black-figured column-kraters used a tool to form the top of the relatively thick foot into an echinus shape; later potters gave the foot either a torus or a two-degree profile (*ill. 16l*).

The potter applied miltos to the krater at this time in order to be able to burnish the pot on the wheel before the handles and handle plates obstructed the process. Narrow, contiguous, flat planes may be visible on the tight curves of column-krater feet, a result of the burnishing tool, but burnish marks are rarely seen on the bodies of column-kraters. The undersides of the feet of most kraters seem to have no miltos although they appear to have been polished. They may have been rubbed with a yielding tool, such as a soft cloth or chamois.

HANDLE PLATES

A column-krater has two rectangular, hollow handle plates, with the bottom and one long side open (*ill. 16m*). They are located on opposite sides of the rim, the open long side attached to the rim and lip. The potter hand built the handle plates, smoothing the outside surfaces with a straight-sided rib tool. Unlike wheel-

FIG. 16.10

FIG. 16.10 *Wall of underside of foot is formed by the potter's thumbs, which left striations in the wet clay (arrow).*

FIG. 16.11

FIG. 16.12

FIG. 16.13

FIG. 16.14

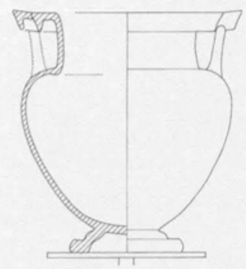
thrown wares, which are consistently even, pieces built and smoothed by hand often have small irregularities on their outside surfaces (FIGS. 16.11–12). Following the example of Corinthian potters, Attic early black-figure potters made box-shaped handle plates, while potters of later column-kraters modified the shape by slanting the lower edge of the outer side inward, sometimes arching the lower edge upward, creating little points at the ends of the arch. The potter may have angled the entire plate upward to enhance the relationship between the plate and the body (FIG. 16.13).

The underside of the handle plate was left rough and unfinished, even sloppy, with little attempt at smoothing any portion of it (FIGS. 16.11–14). Typically, the lip hidden by the handle plate was left undisturbed in the join process (see FIG. 16.11). Occasionally it was partially or completely destroyed. In figure 16.14 the potter, using a thin knife as a saw, cut away a portion of the lip, possibly unintentionally, as he arched the outer side of the handle plate. In figure 16.12 the potter gouged out the entire original lip hidden by the handle plate when he made the attachment. It appears to have been pinched off rather than cut, allowing more room for the potter to manipulate his finger in the joining process.

ill. 16n

HANDLES

A columnar handle is rooted to each end of each handle plate adjacent to the lip—that is, two handles are attached to each plate. The handles extend downward and are attached to the krater shoulder. Potters pulled[8] the two sets of handles for column-kraters (*ill. 16n*), pull lines being especially evident on the inside surfaces where they may be unglossed (FIGS. 16.15–16). In attaching a handle, the potter cut it to size, rounded the upper end, and worked that onto one side of a handle plate while the clay was still damp and pliable. He attached the other end to the shoulder of the vase with slip, running his finger around the attachment to spread evenly any oozing slip and to create a flowing line from handle to shoulder. He repeated this process for the second handle, on the other side of the handle plate.



ill. 16o

FIG. 16.11 *Underside of box-shaped handle plate was left unfinished. Outer surfaces of plate are irregular because they were hand molded.*

FIG. 16.12 *The potter left underside of handle plate rough and unfinished.*

FIGS. 16.13–14 [.13] *Lower edge of outer side of some handle plates was arched, leaving little points at the ends of the arch. The entire handle plate is angled upward.* [.14] *The potter cut into lip of krater under handle plate using a thin-bladed knife in a sawing motion, probably while shaping arched outer side. Underside of handle plate was left rough and unfinished.*

This entire process was duplicated on the other side of the vessel (*ill. 160*). At this point the krater was ready for the vase-painter.

Volute-Krater

The volute-krater,[9] with its scrolled handles rising well above the rim of the vase, has a monumental quality. Sir John Beazley wrote:

> The volute-krater is the vase-shape which has more of the temple in it than any other: not only do the handle-volutes recall the Ionic capital, but the designer of the upper part must have been thinking of epistyle, frieze, and cornice, and the contrast of the ornamented architrave and plain shaft and capital may also have been at the back of his mind.[10]

The shape had its beginnings in the proto-volute-kraters whose handles curve gracefully above the mouth and then return in two hooks or curls.[11] Like the column-krater, the volute-krater has a generous mouth and an articulated neck. A wide, concave-edged lip emerges from the broad rim. The vessel supports a pair of opposite volute handles—the upper portion of the handles from which its name is derived. Early volute-kraters have an echinus foot, later ones a foot in two degrees, the upper degree stepped and spreading and the lower a torus. The vases range in height (with handles) from about 29 cm to 80 cm.[12] They were made from the first half of the sixth century through the fourth century B.C.[13]

BODY/FOOT

Potters created the volute-krater in sections—the body in one or two (depending on size), the neck/mouth in another, and the foot in yet another. The body and foot were made in the same manner as those of the column-krater (pp. 129, 132).

FIG. 16.15

FIG. 16.16

FIG. 16.15 *Pull lines are visible all along inside surface of handles where gloss is thin.*

FIG. 16.16 *Pull lines (arrow) are visible on inside surface of handles, especially obvious where they lack gloss.*

FIG. 16.17

FIG. 16.18

FIG. 16.20

FIG. 16.19

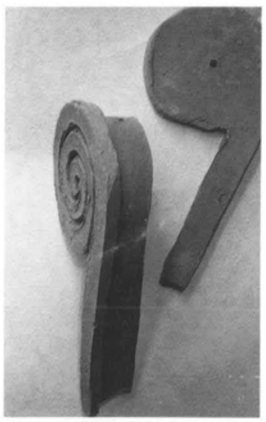
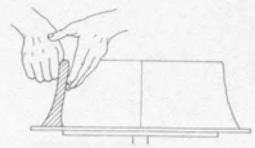


FIG. 16.21

NECK/MOUTH

The neck/mouth section was formed upside down. Owing to the broad size of the opening, the potter probably secured a large ring of clay on the wheel head and forced it to run true rather than centering a lump of clay, opening it, and pulling it outward into a doughnut shape. Because the neck of the volute-krater is quite high, amounting to almost one-third of the total height of the body of the vase, the potter pulled up a cylinder taller than for a column-krater neck (*ill. 16p*). He angled the cylinder inward, giving the neck a concave contour externally.[14] Contact with the flat wheel-head produced the broad rim.

The potter formed a sturdy lip, either rounded, squared, or angled inward (*ill. 16q*). He offset the tall neck with a rib at about the halfway mark, dividing the neck into two panels (*ill. 16r*). The panel near the lip was left in its original thickness, but the panel adjacent to the shoulder was thinned (FIG. 16.17). The potter then cut the neck off the wheel and set it aside with care to prevent its becoming misshapen.



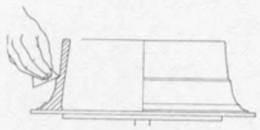
ill. 16p

JOINING AND TURNING

The joining of neck to body was done in the same manner as for the column-krater. The inside neck/shoulder join can be fairly smooth because the wide mouth allows the potter's hand adequate room in which to maneuver, though join signs may be evident (FIG. 16.18). There is no neck ring. After the join was secure, the potter turned the krater upside down on the wheel and removed excess clay from the lower part of the body with a scraper tool, giving it the shape of a parabola.

ill. 16q

When the foot was firm, the potter secured it to the bottom of the krater with slip, smoothing the join on the underside with a finger or tool. While the krater was still upside down, the potter clearly delineated the offset between lip and neck and the one separating the neck degrees. He thinned and shaped the upper degree as needed, often giving it a more concave shape than the lower one.



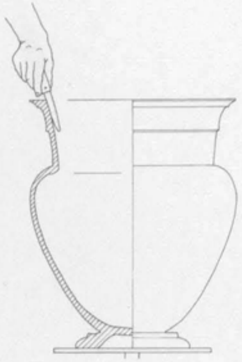
ill. 16r

FIG. 16.17 *Cross-section of volute-krater neck/shoulder fragment with offset neck, showing thinned panel adjacent to shoulder.*

FIG. 16.18 *Underside of neck/shoulder join. The potter did not meld two sections together.*

FIGS. 16.19–21 *Modern re-creation of a volute handle, made by author:* [.19] *Curved center strip secured to inside edge of one of the two side panels.* [.20] *Outside of each volute is inscribed with a spiral.* [.21] *Lower end of center strip is arched.*

Righting the vase, the potter corrected any irregularities of the neck/shoulder join, shaving off any excess clay to define more clearly the interior curve of the mouth (*ill. 16s*), and then sponged the inside of the neck smooth. With a tool he gave the top of the foot its final shape, usually in two degrees, sometimes with a fillet separating the body from the foot. After sponging any rough areas, he brushed on miltos and burnished his vessel before adding the handles.

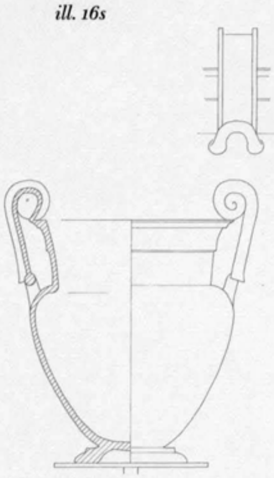


ill. 16s

HANDLES

A volute-krater has a pair of handles, each divided into two parts. The lower part is round, looped, and vertical; the upper part is a vertical, flanged volute.

To create the lower part of one handle the potter first pulled a cylindrical handle, bent it into a loop, and cut it to size. After it had hardened sufficiently, he attached the two ends of the loop to the outer edge of the vase shoulder with the loop upright. He repeated this process for the second handle, on the opposite side of the vase. To create the upper part of one handle, he made the flanged section in three segments—two side panels, which included the volute at the upper end, and a center strip (FIGS. 16.19–21). To craft it, the potter cut the combined volute and side panel from a single slab of clay. He cut two such shapes per handle, inscribing a deep spiral into the outer side of each volute, commencing at the junction of the disk and the side panel and ending in the center of the volute. He cut the long center strip from a slab of clay, carving the lower end into an arch (see FIGS. 16.19, 21, 25). With slip the potter attached the center strip to the inside edge of each side panel, bending it around the volute to form a hollow drum with flanged edges (FIGS. 16.22–23). He either left the bottom of the drum open (FIG. 16.22), or he closed it and made a small hole through the eye of the spiral into the interior to allow steam to escape during firing (FIG. 16.24). When the flanged section was firm, the potter likely added miltos and rubbed it with a yielding tool. He attached the bottom of the volute to the rim of the vase with slip, and the lower end of the arched center strip to the top of the looped cylin-



ill. 16t

FIG. 16.22

FIG. 16.23

FIG. 16.24

FIGS. 16.22–23 [.22] *Flanged portion of handle consisting of three originally separate pieces creates a hollow space that is open on the underside between volutes.* [.23] *Top of flanged portion of handle illustrating join of two side panels with middle strip.*

FIG. 16.24 *The potter pierced a small hole through the eye of the spiral of a closed volute to allow steam to escape during firing.*

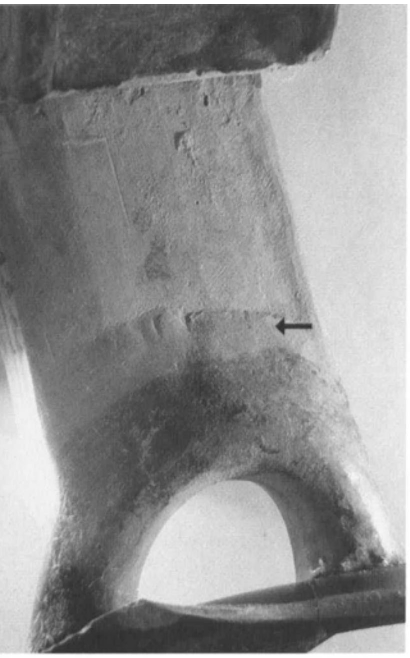


FIG. 16.25

FIG. 16.26

drical handle, adding extra clay to seal the join as needed (*ill. 16t*; FIG. 16.25). The potter duplicated this process for the second handle. The krater was now ready for the vase-painter.

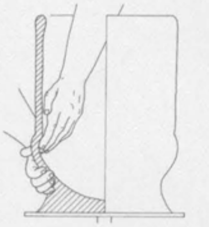
Calyx-Krater

The calyx-krater, one of the largest Attic vases,[15] is reminiscent of a bell-shaped flower. It is well named, for the convex, lower body (cul) has the configuration of the calyx of a flower, while the flaring upper body is suggestive of the bell-shaped corolla. Its large, robust, upturned handles are situated opposite one another on the cul. Its sturdy foot is in two degrees, the upper stepped and spreading above the lower torus. Late red-figured vases have a short stem at the base of the cul. The vessel ranges in height from about 34 cm to 56 cm. The earliest surviving example, from 530 B.C., is a black-figured krater by Exekias, who may have invented the shape.[16] It first became popular in the early red-figure period, at the end of the sixth century, and continued to be made through the fourth century B.C.[17]

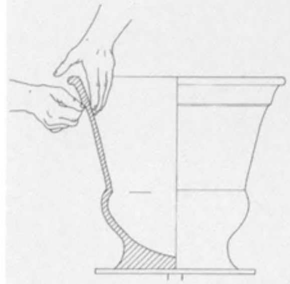
BODY

Potters threw the body of a small calyx-krater from a single, large lump of clay pulled up into a sturdy, fairly thick-walled cylinder. The body of a large calyx-krater was thrown in two sections. The fine-grained, plastic clay that Attic potters used for their decorated pottery, without the addition of temper, will not stand in a cylinder much taller than 40 cm, for it will collapse when the potter attempts to thin the wall. A thick, untempered clay wall is more resistant to being pulled up than a thick tempered wall. Consequently, it takes a good deal of strength and stamina to pull up a calyx-krater body of untempered clay in one piece.

To do so, the potter opened a large ball of clay, widened the floor, and pulled up a fairly thick-walled cylinder. Simultaneously he squeezed the base inward and bulged out the cul (*ill. 16u*). He then flared the cylinder into the

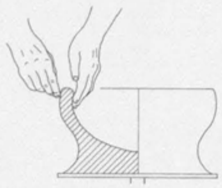


ill. 16u



ill. 16v

ill. 16w



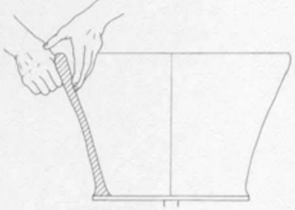
ill. 16x

FIG. 16.25 *Attachment of flanged portion of handle to upright cylindrical, looped handle. Band of extra clay was added to secure join (arrow).*

FIG. 16.26 *Cross-section of thick lip and panel of calyx-krater fragment.*

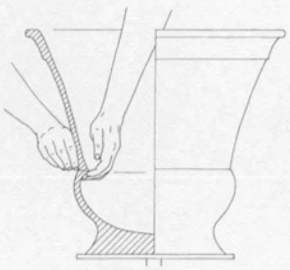
ill. 16y

upper body, crowning it with a thick torus lip. Immediately under the lip he created a wide panel, offsetting it from the upper body by inserting either his thumbnail or a tool into the clay (*ill. 16v*; FIG. 16.26). Because the glossed interior of the vase is quite visible to the user, the potter smoothed it with a sponge or a rib to remove any finger grooves before removing the body from the wheel (*ill. 16w*). He then set the body aside to firm up while he threw the foot in a manner similar to that for the column-krater (p. 132).



ill. 16z

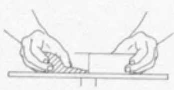
The body of a similarly shaped but larger calyx-krater was thrown in two sections: the cul in one and the upper body in another. The potter shaped the cul from a low cylinder, leaving it quite thick (*ill. 16x*). It was cut off the wheel and set aside to firm up. To make the upper body, which is quite wide where it joins the cul, the potter probably placed a thick roll of clay on the wheel head (*ill. 16y*) and forced it to run true, rather than centering a larger lump of clay on the wheel and having to force it outward into a doughnut shape. He pulled up the upper body (*ill. 16z*), forming the panel and overhanging lip in the same manner as described above (FIGS. 16.26–30).[18] When the two sections had firmed up, they were joined. The wide mouth made it easy to smooth the join (*ill. 16aa*).



ill. 16aa

FOOT

The foot was thrown upside down. It is somewhat shallow and may have been pulled up from clay left on the wheel after the vase had been cut off with a wire or cord. The potter needed only to re-center the flat lump of clay remaining on the wheel, force his thumbs down into the clay clear to the wheel head, and spread them apart to widen the foot. His thumbs shaped the inside walls of the foot while his fingers, curled around the spreading clay, gave the emerging foot a torus edge (*ill. 16ab*). He set the foot aside to firm up.



ill. 16ab

TURNING

When the completed body (whether thrown in one or two sections) had hardened somewhat, the potter returned it to the wheel upside down for turning.

FIG. 16.27

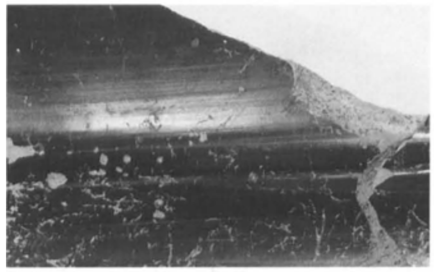


FIG. 16.28

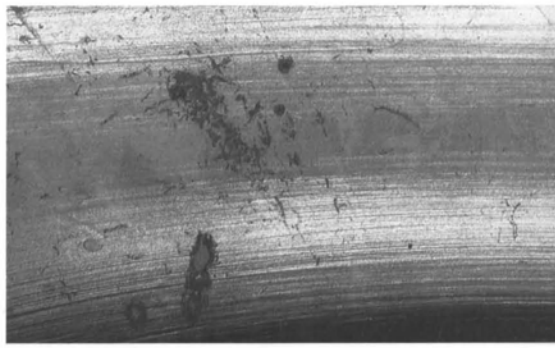


FIG. 16.29

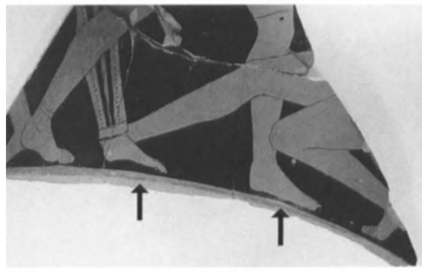


FIG. 16.30

FIGS. 16.27–29 [.27] *Inside of large body fragment of calyx-krater thrown in two sections. Cul is thicker than upper body.* [.28] *Join of upper and lower body sections seen from inside vase.* [.29] *Inside top section showing body at join, smoothed and glossed.*

FIG. 16.30 *Smooth break (arrows) along join line of upper section of large calyx-krater fragment.*

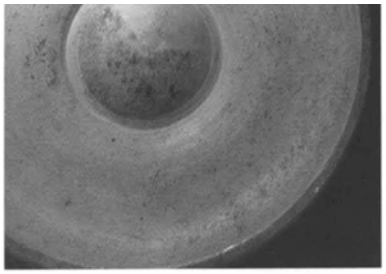


FIG. 16.31

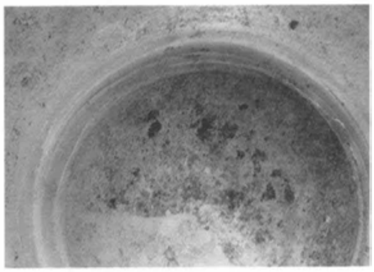


FIG. 16.32

FIG. 16.33

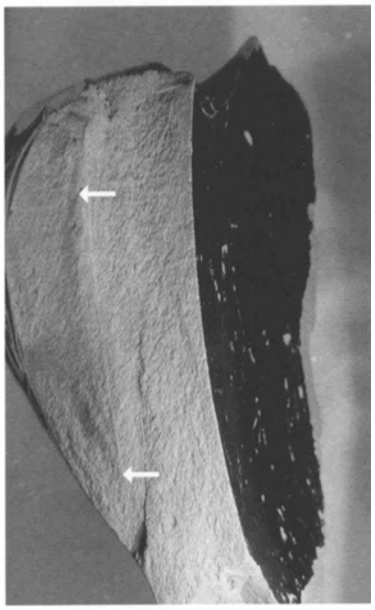
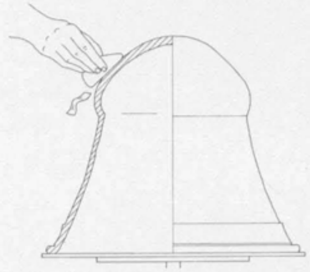


FIG. 16.34

With a tool he made a notch between the lip and the panel and accented the angle at the offset between the panel and the flaring wall of the upper body. He peeled off layers of clay to thin the upper body and turned the cul, rounding the outside bottom (*ill. 16ac*), to which he attached the foot with slip. He sometimes created a fillet with a notched rib, though many calyx-kraters have only a simulated fillet, scratched into the gloss by the vase-painter. After righting the vase, the potter gave the top of the foot its final shape with a tool. He brushed on miltos and burnished the vase on the rotating wheel before adding the large handles, which would have impeded the burnishing process. The potter of the krater in figures 16.31 and 32 spread excess slip at the join on the underside of the foot by holding a finger in one spot as he slowly rotated the wheel.

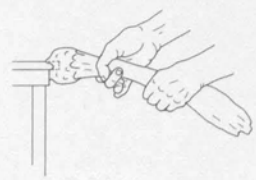


ill. 16ac

HANDLES

Calyx-krater handles are robust enough to permit lifting and transporting a full krater with confidence. Each handle was pulled. Because of the large size of the handle, the potter attached one end of a very thick coil of clay to a ledge or the edge of a table (*ill. 16ad*) and proceeded to pull and squeeze it to elongate the thick handle. He shaped it into a loop, cut it to size, and set it aside until it reached the leather-hard stage. He repeated the process for the second handle. He may have coated the handles with miltos before hand burnishing them (FIG. 16.33) and attaching them to the cul with slip (*ill. 16ae*; FIGS. 16.34–36).

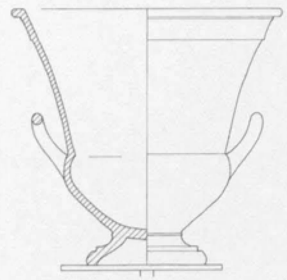
The vase was then ready for the vase-painter.



ill. 16ad

Bell-Krater

The bell-krater is a red-figure innovation. According to Boardman, Beazley thought it might have had its origin in a wooden vessel.[19] The body rises from a low disk foot or sometimes a modified disk foot[20] into the hint of a stem[21] before expanding into the shape of an inverted bell with a mildly flaring mouth with a torus lip (FIG. 16.37). Its sturdy, horizontal, cylindrical handles, located high up

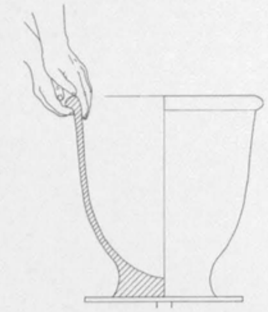


ill. 16ae

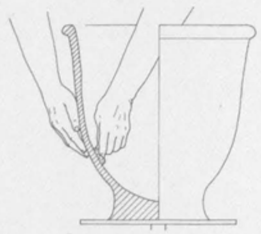
FIGS. 16.31–32 [.31] *Extra slip at join of foot to body of calyx-krater, smoothed by finger.* [.32] *Close-up of same foot.*

FIGS. 16.33–34 [.33] *Hand-burnishing strokes on reserved inside of large calyx-krater handle fragment.* [.34] *Join line (arrows) of bottom of handle to vase cul.*

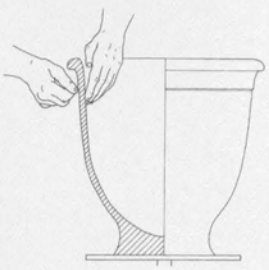
on the body opposite one another, are slightly upturned. Most early bell-kraters, from before 450 B.C., have downward-angled lug handles and an angled rim terminating in a sharp-edged lip (see silhouettes, p. 256). As with other types of kraters, the vase is glossed on the inside. It ranges in height from about 30 cm to 40 cm. The bell-krater was produced in Athens from the early fifth through the fourth century B.C.[22]



ill. 16af



ill. 16ag



ill. 16ah

BODY

The body of the bell-krater was thrown from one lump of clay. The foot was thrown separately. The bell-krater is not a difficult shape to form, although it takes strength to throw a large lump of clay. Like the calyx-krater, the body of the bell-krater was developed from a fairly tall, thick-walled cylinder. The potter squeezed the base of the cylinder inward a bit, then angled it outward and upward into a fairly straight wall, curving the rim outward into a rounded, protruding lip (*ill. 16af*). Since the wide mouth of the bell-krater afforded a clear view of the interior of the vase, the potter smoothed it in preparation for the gloss. He may have used a damp sponge on the inside of the krater in order to eliminate any throwing grooves caused by his fingers (*ill. 16ag*). On the outside he slightly offset a wide panel below the lip (used by the vase-painter for border decoration) by inserting the edge of his thumbnail into the clay (*ill. 16ah*). He then set the body aside to firm up while he made the foot and pulled and shaped the sturdy, cylindrical handles.

FOOT

The disk foot is shallow and quite likely was pulled up from clay left on the wheel after the body of the vase had been cut off it with a cord or wire. The potter rounded up the lump of clay remaining on the wheel, forced his thumbs down through the clay to the wheel head, and spread them apart a short distance to widen the foot. He pulled the sides up only a few centimeters and flattened the

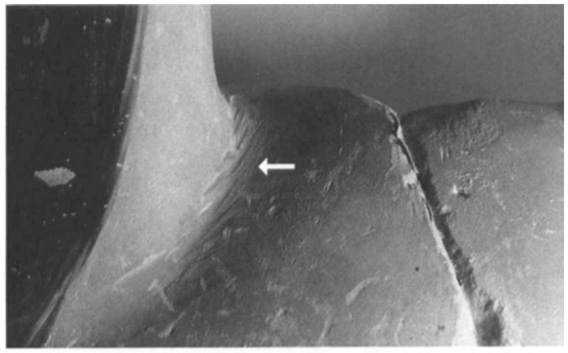


FIG. 16.35

FIG. 16.36

FIGS. 16.35–36 [.35] *Tool marks left by potter at join line of calyx-krater handle to vase cul (arrow).* [.36] *Slip did not completely cover area of join of handle (absent) to vase. Residual tool marks are evident on cul at edge of join area.*

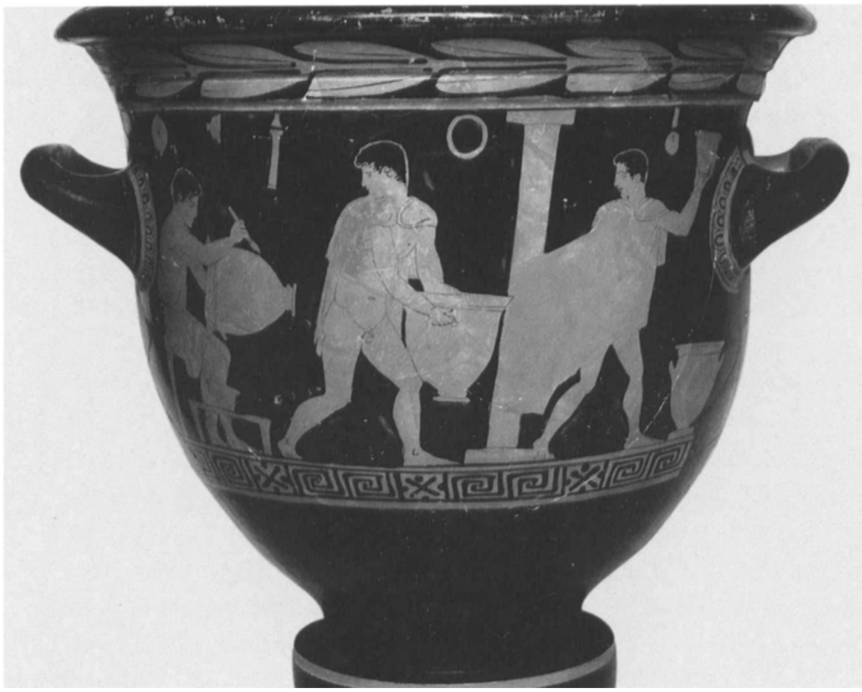
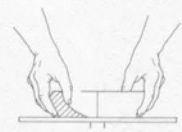
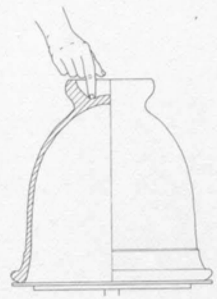


FIG. 16.37



ill. 16ai



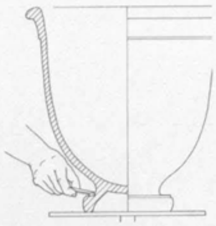
ill. 16aj

rim (*ill. 16ai*), which would become the resting surface of the foot. The foot was cut off the wheel and left to firm up before it was attached to the vase.

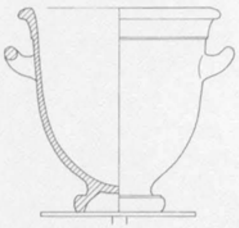
TURNING AND JOINING

When the body was firm, it was placed upside down on the wheel for turning. The potter refined the area on the underside of the lip as needed. He probably had to thin the body below the offset panel with a scraper tool. He removed clay from the thickened base, re-curving the body slightly to form the hint of a stem.

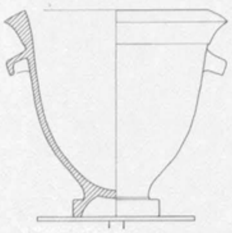
FIG. 16.37 *Bell-krater depicting pottery workshop.*



ill. 16ak



ill. 16al



ill. 16am

He joined the firmed-up foot to the base of the body with slip and smoothed the inside join (*ill. 16aj*). After righting the krater, he smoothed the join on the outside of the vase, shaping the top of the foot with a tool (*ill. 16ak*). He then brushed on miltos and burnished the entire vase.

HANDLES

The sturdy handles may have been pulled from clay attached to the side of a ledge or table, as for the calyx-krater (see p. 140, *ill. 16ad*), or they may have been pulled from a pear-shaped lump of clay held in the potter's left hand as for the neck-amphora (see p. 24, *ill. 2s*), depending on the size of the handles. For a taller krater, the larger, thicker handle would have been pulled from the former position, the smaller handle from a lump of clay that could easily be grasped in the potter's hand. The handles were bent to shape and cut to size and allowed to harden somewhat. When they reached the firm or rigid leather-hard stage, the potter burnished them by hand and then added them to the vase (*ill. 16al*; FIG. 16.38).

On bell-kraters with lug handles the rim was angled downward, and the potter broadened it with a rib or the flat side of a finger, leaving a sharp-edged lip (*ill. 16am*). Lug handles were hand-built to shape from a slab of clay in much the same manner as the handle plates of the column-krater. They were attached angled downward. The foot was created in a similar manner to that described above.

The krater then awaited the vase-painter's brush.

FIG. 16.38

FIG. 16.38 *Bell-krater handle fragment with contiguous planes on inside, reserved area of handle as a result of hand burnishing.*

17. Kyathos

The kyathos has a graceful shape resembling a teacup, though a bit larger, with a high, looped, flat-strap or oval handle and a low ring or two-degree foot; it is glossed on the inside. It is a black-figure shape connected with the Nikosthenic workshop,[1] and in particular with Psiax.[2] Eisman[3] suggests that kyathoi were used in sets. The terra-cotta kyathos was used as a ladle for dipping diluted wine from a wine mixer;[4] its prototype was a metal dipper.[5] It dates from the late sixth to the mid-fifth century B.C.[6]

FIG. 17.1

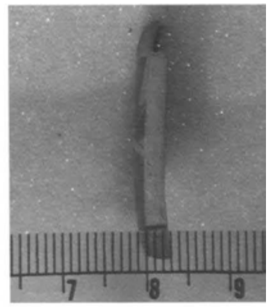


FIG. 17.2

BODY

The kyathos lends itself to being thrown off the hump, a process whereby the potter creates pieces, one after another, from the top of a large, conical lump of clay. Figure 17.1 may indicate that the Greeks were familiar with this technique. The potter is depicted throwing a kyathos-shaped vase, and he appears to be throwing it off the hump (although the piece is larger than a kyathos). Throwing off the hump is especially effective for creating a number of similarly shaped small pieces, for it eliminates the need for centering a ball of clay for each piece to be thrown. The method also enables the potter readily to create the foot along with the pot.

To throw a kyathos off the hump, the potter centered a large ball of clay on the wheel and formed it into a cone (see FIG. 3.9). From near the top of the cone he squeezed inward with the lower part of his cupped hands, partially separating a small ball of clay (*ill. 17a*). Into this ball of clay he thrust his thumbs, creating a slender doughnut shape (*ill. 17b*). He gently squeezed the wall of the doughnut of clay upward and outward between the thumb and index finger of his right hand into the kyathos shape (*ill. 17c*). Since the base of the kyathos was firmly rooted to the hump, and the walls were fairly upright, the potter was able to throw the kyathos quite thin (FIGS. 17.2–3). In doing so, he angled the rim subtly outward (FIG. 17.4). He formed the low foot either into a torus shape (*ill. 17d*) or into a foot in two

ill. 17a

ill. 17b

ill. 17c

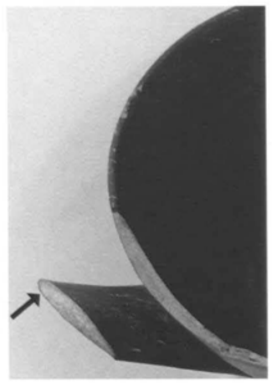


FIG. 17.3

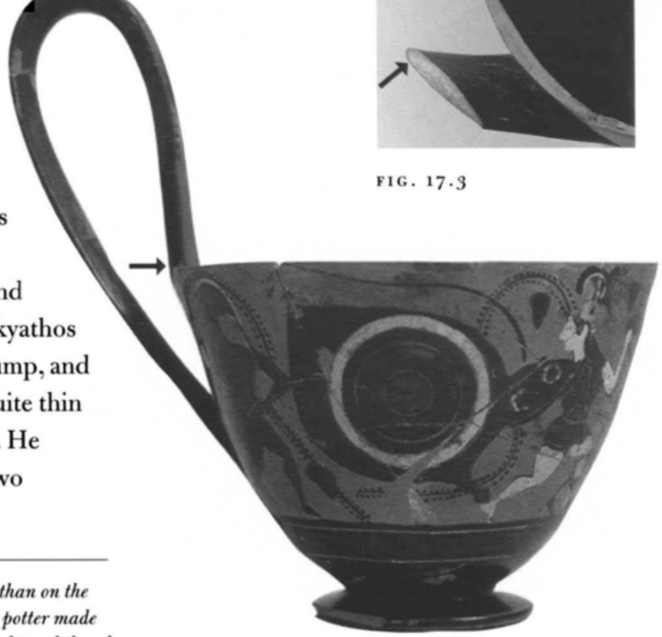


FIG. 17.4

PLATE XI
Kyathos, front and side

FIG. 17.1 *The potter depicted on this pinax may be throwing "off the hump."*

FIG. 17.2 *Kyathos walls are pulled very thin; this fragment is less than 3 mm thick.*

FIG. 17.3 *Thin rim of kyathos. Cross-section of pulled handle is thicker on one side than on the other (arrow). The potter made it between his straightened thumb and second joint of his stiffened index finger.*

FIG. 17.4 *Potters tended to angle the rim of the kyathos slightly outward. There is often a bulge where handle joins rim (arrow).*

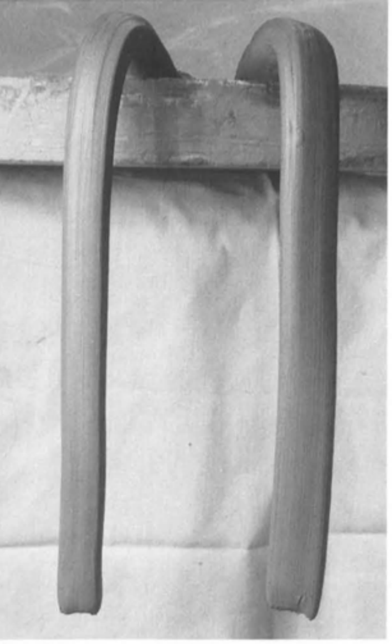


FIG. 17.5

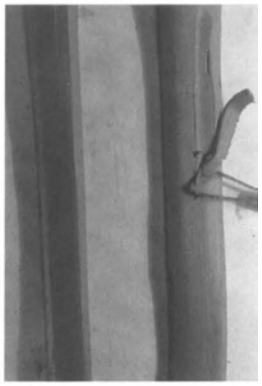


FIG. 17.6

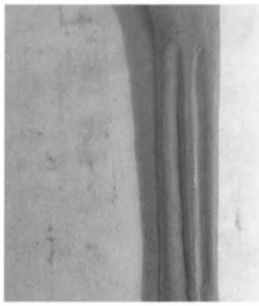


FIG. 17.7

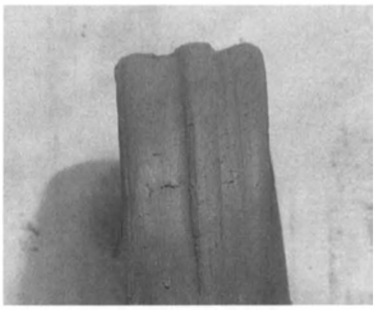


FIG. 17.8

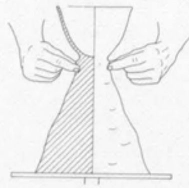
degrees, then cut the kyathos off the hump with a taut wire or cord (*ill. 17e*) and set it aside. When it was firm, he inverted the piece and turned the underside of the foot, cutting only a very short distance into the solid clay with a tool (*ill. 17f*). He followed the inside contour of the cup in shaping the ceiling of the foot. He then applied miltos and burnished his piece before adding the handle.

HANDLE

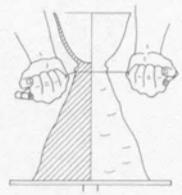
The potter pulled a long, slender, flat strap (see FIG. 17.3) or an oval handle from a lump of clay (see FIG. 17.12). He secured the lump to a ledge, allowing the freshly pulled handle to hang downward until the shine, or stickiness, had disappeared from the clay (FIG. 17.5). Many kyathoi have a relief decoration running along the center of the handle in the shape of a slender stem terminating in a palmette or an ivy leaf. There are several methods by which this relief design could have been made, but the evidence points to the following: The potter laid the newly formed handle on a flat surface and excised two parallel strips of clay along most of the length of the handle, leaving a rounded stem, or column, protruding down the center (FIGS. 17.6–8). This tooling produced a smoothly curved junction between the central stem and the adjacent depressions (FIGS. 17.9–13).[7] The potter made the palmette at the end of the stem by gently impressing a metal stamp into the handle near the rim end of the stem, then excising clay from around it (FIGS. 17.14–15). Consequently, the surface of the palmette is often slightly lower, that is, it may protrude less than the surface of the stem.[8]

Once decorated, the handle was looped to shape and cut to size. When it reached the soft-to-firm leather-hard stage, the potter delicately but firmly rooted it to the rim with slip and attached it to the body. A slight bulge is often seen on the outside of the rim at the join (*ill. 17g*; see FIG. 17.4). Kyathoi handles frequently have a hand-molded finial attached with slip to the top of the handle (see FIG. 17.14). In figure 17.16 the finial has separated from the handle and is missing.

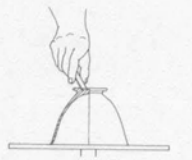
The kyathos was now ready for the vase-painter.



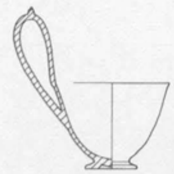
ill. 17d



ill. 17e



ill. 17f



ill. 17g

FIGS. 17.5–8 *Modern re-creations of kyathos handles, made by author:* [.5] *Pulled, flattened ovoid handles simulating kyathos handles.* [.6] *Excising clay from one side of a handle.* [.7] *Clay has been excised from both sides of handle, leaving a ridge (or column) in the middle.* [.8] *The handle bent to shape. The tool leaves a depression on either side of the ridge, with a smooth curve where ridge and depression meet. These examples were not sponged, but left rough.*

FIG. 17.9

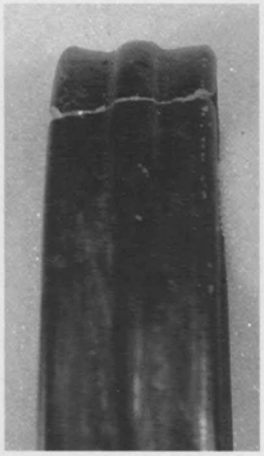


FIG. 17.10

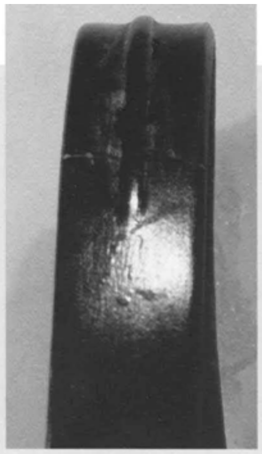


FIG. 17.11

FIG. 17.12

FIG. 17.13

FIG. 17.14

FIG. 17.15

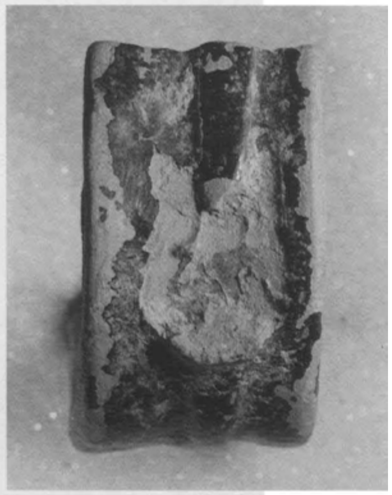


FIG. 17.16

FIGS. 17.9–13 *Kyathos handles with excised ridges. Excision left a depression on either side of ridge (or column) and a smoothly curved junction where ridge and handle meet.*

FIGS. 17.14–15 [.14] *Top of handle has added finial.* [.15] *The potter impressed palmette design into clay at end of ridge of kyathos handle using a metal stamp, then excised clay from around it. The palmette is slightly lower than the ridge.*

FIG. 17.16 *Kyathos handle with missing finial, viewed from top of handle.*

1.

2.

3.

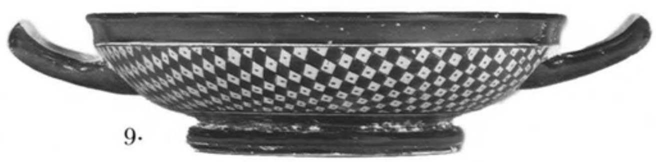
4.

5.

6.

7.

8.



9.

18. Kylix

The kylix is a broad, shallow drinking cup with a stemmed or, rarely, stemless foot. Its horizontally oriented handles are slanted upwards.[1] It is usually decorated on both the inside and the outside. The cup is associated with wine drinking. Kylikes vary greatly in size, ranging from about 12 cm up to a few with a bowl diameter greater than 46 cm.[2] It was made from the second quarter of the sixth century to the second quarter of the fourth century B.C.,[3] being particularly popular at the end of the sixth and beginning of the fifth centuries.[4]

The genius of Greek potters in creating the kylix, especially the continuous-curve cup, has been recognized with these terms: "the most exquisite accomplishment of Greek pot-making,"[5] having formed an "elegant silhouette . . . a triumph of the potter's art,"[6] and having "attained their highest excellence . . . in regard to beauty and grace of form."[7] The kylix is the most delicate of all the Greek vase shapes. Not only is it an aesthetically pleasing form to create, it is also an exacting one. The shape challenged the best potters and the finest vase-painters.

Stemmed kylikes can be divided into three groups: (1) cups with lip and body continuous but set off from the foot (Type A, band, Cassel, Merrythought, and some stemless cups); (2) cups that have the lip, body, and foot in a continuous curve (Type B and Type C, the former having a shallow chamfer atop the foot near the edge, the latter having a fillet between the stem and the foot; some Type C cups have an offset lip); and (3) cups with lip, body, and foot set off from each other (lip cup, Droop, Komast, Siana, Gordion, and some stemless cups). Handles of all kylikes were created separately. (See silhouettes, p. 257, for drawings of kylix shapes.)

BOWL AND LIP

Bowl and foot of all kylikes were thrown separately except for the stemless cup, which was made in one piece.

PLATE XII
1. Komast cup 2. Siana cup
3. Type C kylix 4. Droop cup
5. Type A kylix 6. Band cup
7. Lip cup 8. Type B kylix
9. Stemless kylix

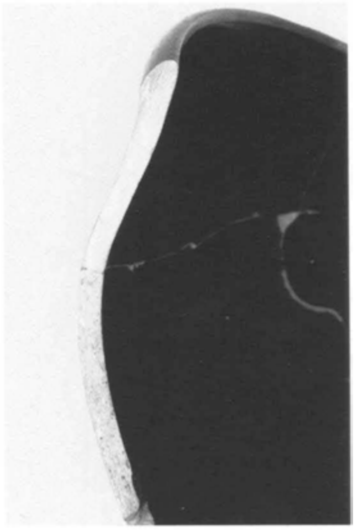


FIG. 18.1

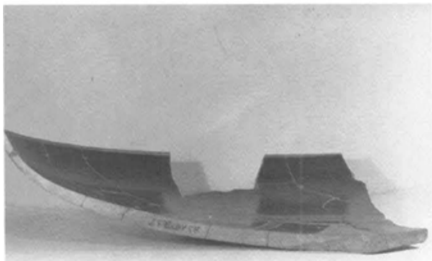


FIG. 18.2

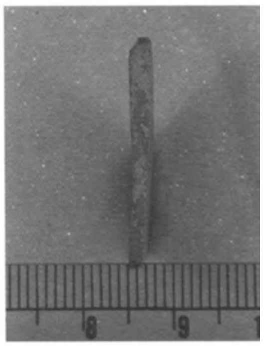
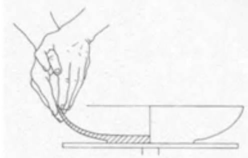


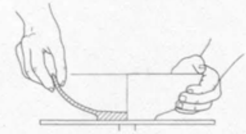
FIG. 18.3

In creating the continuous-curve bowl for Type A, Type B, continuous-curve Type C, band, Cassel, Merrythought, and some stemless cups, the potter opened a centered lump of clay by pushing his thumbs down through the lump to within about a centimeter of the wheel head and then pulling them slightly apart. He used one of several techniques to form the bowl. With large, broad bowls—such as most Type A and Type C, and many Type B cups—the potter pulled the clay outward and slightly upward, with the fingers of his left hand on the inside opposing those of the right on the outside (*ill. 18a*). To form the bowl of smaller continuous-curve cups such as band,[8] Cassel,[9] Merrythought, and continuous-curve stemless cups, he opened the clay with his thumbs and pulled it outward and upward into a bowl between the thumb and index finger of his right hand, his left supporting the wall of the bowl (*ill. 18b*). The potter gave the band and Cassel cups a slightly flared lip (*ill. 18c*; FIG. 18.1). In both of the above techniques the potter created a bowl shape with an uninterrupted, convex outside and concave inside profile (FIG. 18.2). He may have had to repeat the outward/upward procedure several times to attain the desired profile, and a rib or a chamois may have been used for thinning and smoothing. The bowls of many kylikes were thrown extremely thin, especially near the rim (FIG. 18.3). (The larger Type A and Type C cups are usually thicker.) Once the wall had been thinned, the potter could modify the contour only slightly due to the centrifugal force of the revolving wheel. Creating a graceful bowl was thus an exacting maneuver requiring great skill.

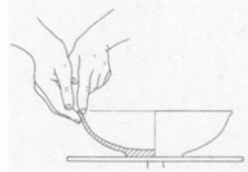
The bowls of lip cups, Droop, offset Type C, offset stemless, Komast, Siana, and Gordion cups were made with the lip offset. The offset was made during the creation of the bowl and may have been fine-tuned when the potter turned the bowl. The lip of the lip cup is either straight or cants very slightly outward (FIG. 18.4).[10] It has a sharp, narrow offset on the outside and a deeper offset on the inside (FIGS. 18.4–6). The potter shaped the body and lip in one movement, making the offsets with his thumbs or thumbnails, the outside thumb slightly



ill. 18a



ill. 18b



ill. 18c

FIG. 18.1 *Lip of bowl for band and Cassel cups has a slight outward flare.*

FIG. 18.2 *Kylix bowl fragment with uninterrupted convex outside and concave inside profile, typical of that found in Type A, Type B, and some Type C and stemless cups.*

FIG. 18.3 *A strong, plastic clay is required to create a kylix bowl wall that is only 1.5 mm thick.*

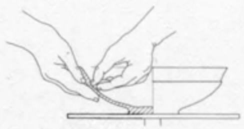
above that of the inside.[11] With his left thumb resting on top of his left index finger, the potter made the indent on the inside with his thumbnail. He held one or two fingers of his right hand against the outside wall, making the sharp, narrow offset with the edge of his right thumbnail (*ill. 18d*). He then cut the finished bowl off the wheel and set it aside to firm up.

The lip of the Droop cup is deeply concave on the outside and correspondingly convex on the inside. To create the Droop lip, the potter held his left thumb and index finger together against the inside of the lip in opposition to a finger of his right hand pressing inward (*ill. 18e*).

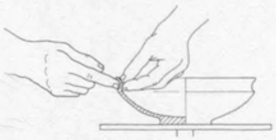
The lips of offset Type C and offset stemless cups are not as deeply offset as that of the Droop cup, but they are made the same way. The lips of some stemless cups (and a few Type C cups) are offset on the inside but have a continuous curve from lip to stem on the outside. To create this shape, the fingers of the potter's right hand are held against the outside while the inside is formed as in the lip cup.

In making the lip and relatively deep bowl of Komast and Siana cups, the potter opened the lump of clay and drew the wall outward and upward, but at the lip/bowl junction he held an inside finger in place while manipulating the clay up over it with his outside finger, giving the body a bulging effect (*ill. 18f*). He then brought his two opposing fingers outward to finish forming the lip. This procedure gave the body an elongated S shape with an offset at the junction of lip and body (FIGS. 18.7–8).[12] The Siana lip is higher than the Komast lip, and the bowl is not as rounded. The completed bowl was cut off the wheel and set aside to firm up.

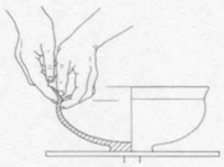
The bowl of the Gordion cup has a lip with a profile that is convex outside and concave inside, matching the profile of the body below.[13] To form the Gordion lip, the potter pushed the rim outward with a finger of his inside hand into the cupped fingers of his outside hand. His thumbnail or a rib delineated the conjoin of bowl and lip (*ill. 18g*).



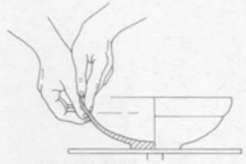
ill. 18d



ill. 18e



ill. 18f



ill. 18g

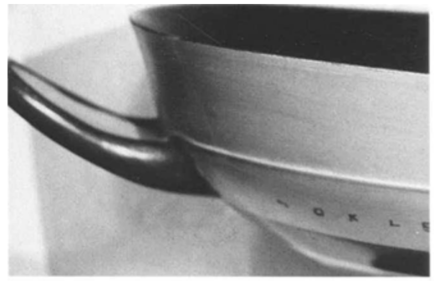


FIG. 18.4

FIG. 18.5

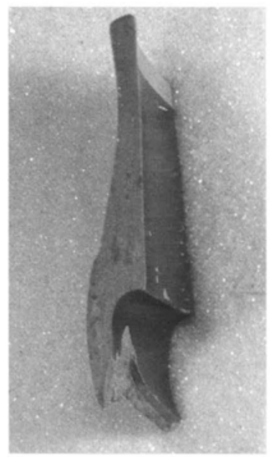
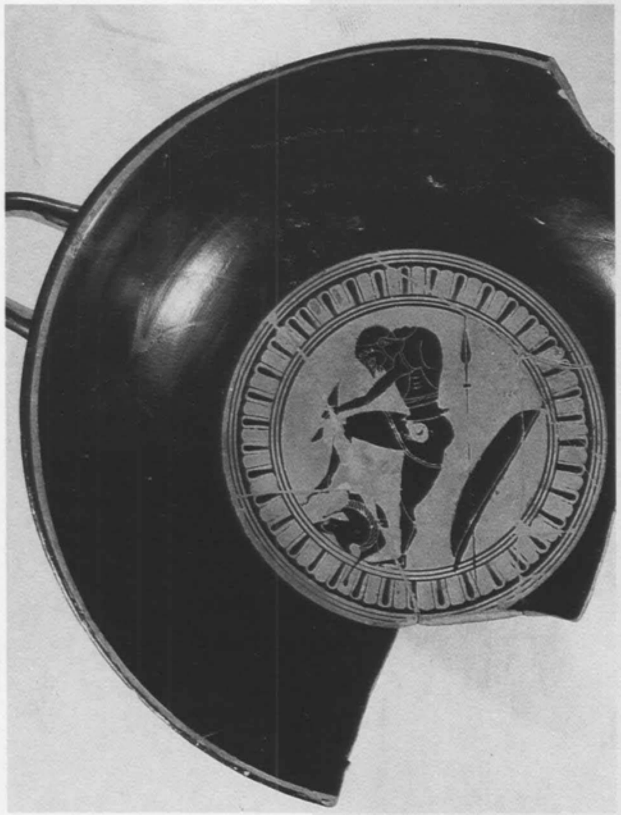


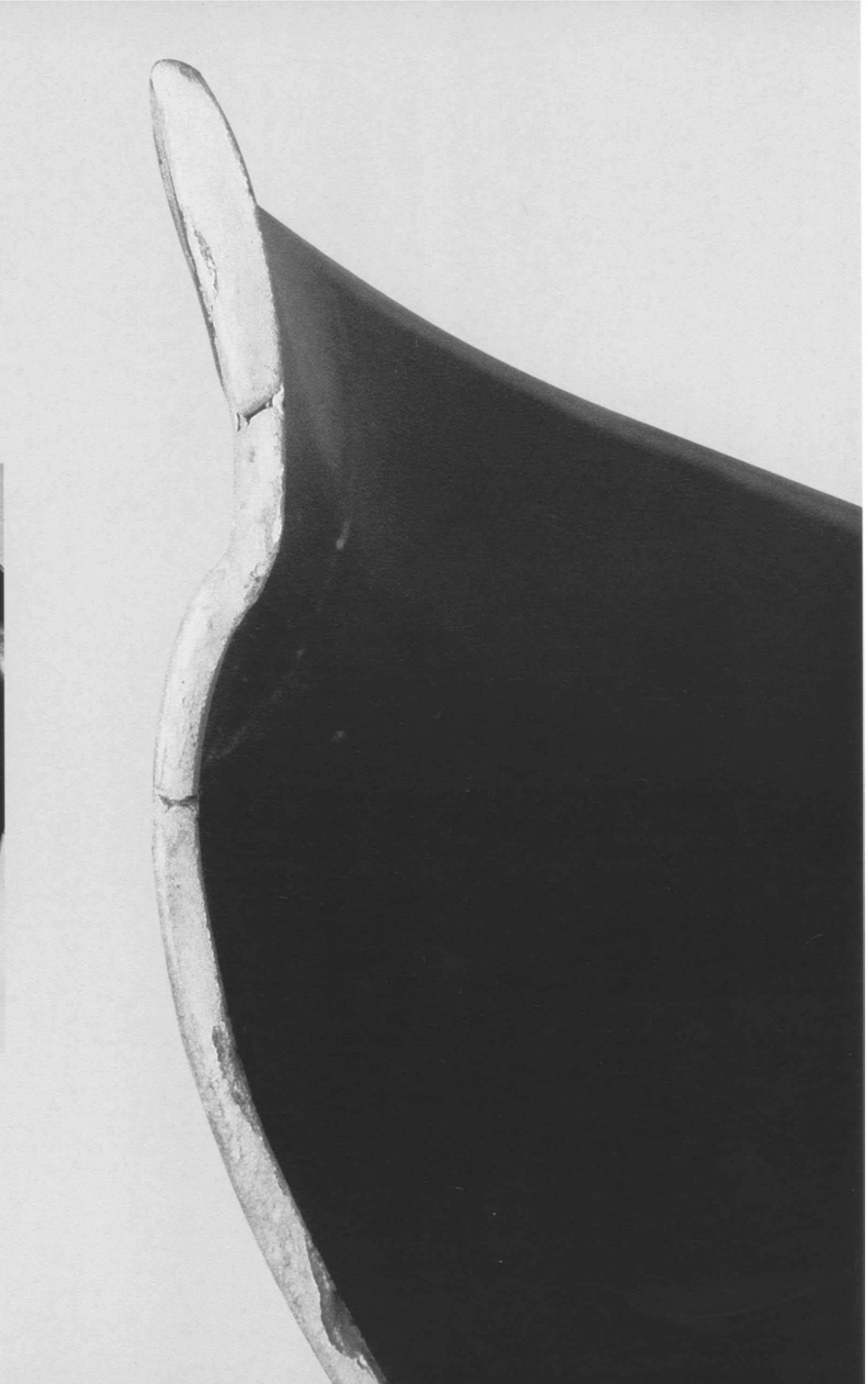
FIG. 18.6

FIG. 18.4 *Lip cup with exterior offset made with the potter's thumbnail.*

FIG. 18.5 *Lip cup with interior offset.*

FIG. 18.6 *Some lip cups have profile with distinct interior offset and elongated S shape on outside.*

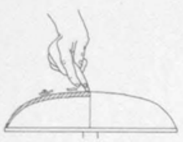




FIGS. 18.7–8 [.7] *Komast and Siana cup bowls have elongated S-shaped profile with a mild offset midway on the S.* [.8] *Inside of same cup.*

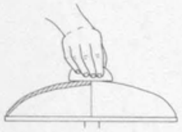
TURNING

Little turning would have been done on the inside of the bowl, which would have been smoothed with a sponge during throwing. The potter would probably have added miltos as needed and burnished the leather-hard inside of his bowl prior to turning the outside and adding the foot. A broad bowl on a comparatively slender stem would be unstable on a rotating wheel and would therefore resist the pressure applied during burnishing of the bowl. After the inside of the bowl was burnished, the potter inverted and centered it for turning. The broad, flat base left on the bottom when the bowl was cut off the wheel had to be removed. The potter peeled off layers of clay with a loop or other scraper tool until the bottom of the bowl had a gently rounded contour (*ill. 18h*). Some potters flattened a small circular area in the center of the underside of the bowl where the stem was to be attached (*ill. 18i*). Many kylix bowls were thrown especially thin near the rim. In turning, the potter left the bottom a little thicker to give stability at the stem attachment (see FIG. 18.2). Tapping the overturned bowl and listening to the sound helped determine wall thickness.[14]



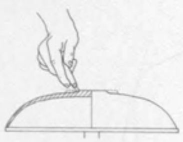
ill. 18h

Not all bowl bottoms were given a gently rounded or flattened shape. Exceptions were probably the innovative creations of individual potters. In turning the Type B bowl, some potters created a shallow, recurved platform, about 2–4 mm high, for the stem attachment (*ill. 18j*; FIG. 18.9). Using a narrow loop tool, the potter sometimes cut either concentric grooves or a spiral into this platform for stronger bonding of bowl to stem (FIGS. 18.10–11). He also cut circles or spirals into the top of the stem of such cups for the same reason. These did not correspond exactly with those of the bowl.[15] A more complete discussion of this subject is found below, under stems.



ill. 18i

Another technique for making certain the bowl was securely affixed to the stem was leaving a small central boss protruding from the center of the inverted bowl during turning; the top of the stem would then be carved to fit around the boss (FIG. 18.12).



ill. 18j

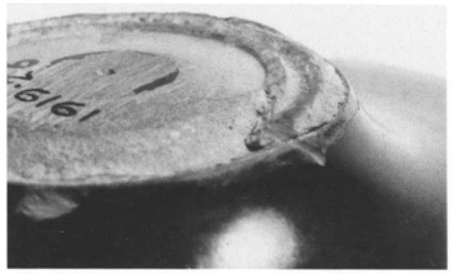


FIG. 18.9

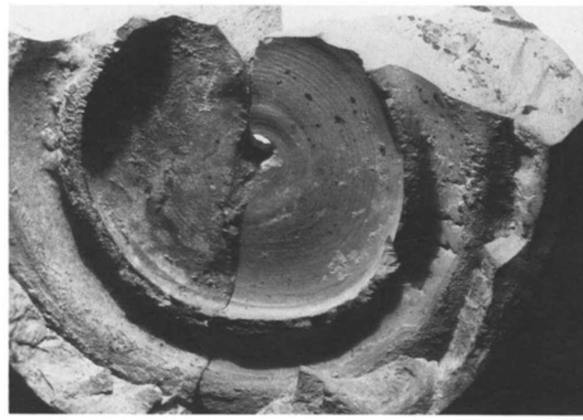


FIG. 18.10

FIG. 18.11

FIG. 18.9 *A pair of grooves is cut into shallow recurved platform on bottom of outside of this bowl. Gloss was used in place of slip as a cement to attach now-missing stem and foot.*

FIG. 18.10 *Bowl bottom fragment. Concentric grooves are cut into shallow recurved platform on bottom of this very large Type B kylix bowl. Gloss was used as a cement to attach missing stem and foot.*

FIG. 18.11 *Bowl bottom; stem missing. The potter cut a spiral into top of recurved platform on bottom of this Type B kylix bowl and painted it with sticky gloss (stem of this bowl can be seen in fig. 18.20).*

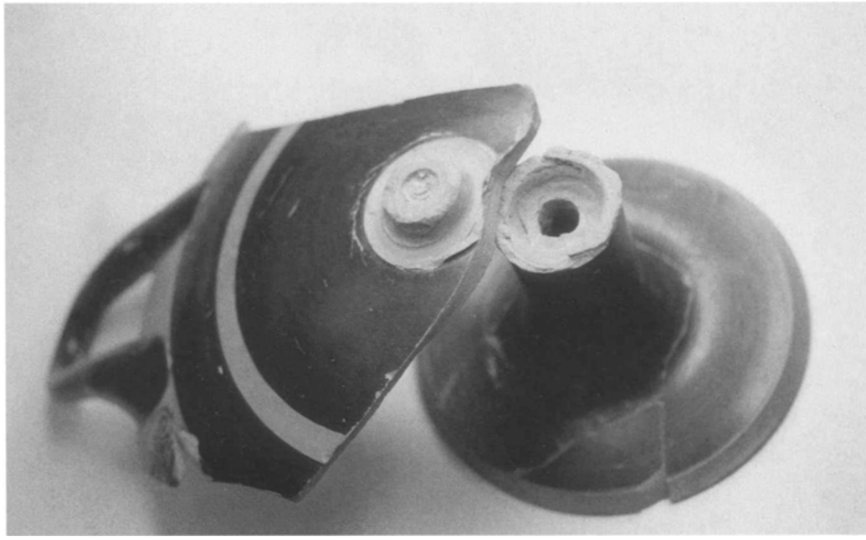
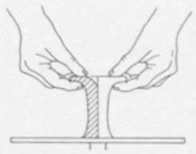


FIG. 18.12

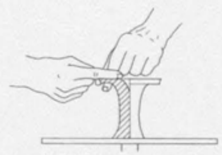
ill. 18k

STEM AND FOOT

Little-Master cups include lip, band, Cassel, Gordion, and Droop.[16] The tall, narrow stem found on the first three of these and on Merrythought cups was fashioned upside down on the wheel.[17] The potter drew up a slender pillar from a centered ball of clay (*ill. 18k*). He formed the foot by making a shallow depression in the top of the pillar with his thumbs and then angling the clay outward for the foot (*ill. 18l*). He flattened the clay to form the resting surface of the foot by pressing down on the top with an outstretched index or middle finger while holding the thumb of his opposite hand along the edge of the emerging foot to give a concave shape to the edge and top of the foot (*ill. 18m*). A straight-sided rib was used for the final flattening of the resting surface (FIG. 18.13). When the stem was righted, this flat surface provided a broad foot with an ample base on which the cup would rest. The supporting thumb would have formed a slightly raised edge

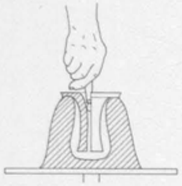


ill. 18l

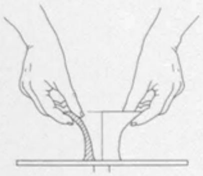


ill. 18m

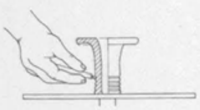
FIG. 18.12 *When the potter of this kylix turned the outside of the bowl, he left a small central boss protruding, which fits into hollowed top of stem.*



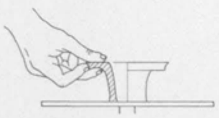
ill. 18n



ill. 18o



ill. 18p



ill. 18q

ill. 18r

around the outside perimeter of the foot, accentuating the concavity of the top of the foot (FIG. 18.14). After the newly thrown stem and foot had been cut off the wheel and had reached the soft-to-firm leather-hard stage, the potter secured it upside down in a chuck and hollowed out the stem with a loop tool (*ill. 18n*; FIG. 18.15). He then turned it right side up, thinned and trued up the outside of the stem with a tool, and perfected the perimeter and top of the foot if needed. He inverted it and luted it to the center of the overturned, leather-hard bowl with slip. The stem joined the bowl rather abruptly and without a fillet, the exception being the band cup, which often does have a fillet, usually painted red.[18] Miltos was applied, and the entire exterior of the overturned kylix was burnished.

The Gordion stem is shorter and stouter than those of the rest of the Little-Masters.[19] Its foot was either like that of the Little-Masters, or it ended in a flaring edge like that of the Siana cup (*ill. 18o*).

Droop cup stems are thicker than those of the rest of the Little-Master and Merrythought cups. The potter channeled the upper stem with a tool (*ill. 18p*), which was left reserved by the vase-painter. The foot is a heavy torus.[20] Some Droop bowls have a narrow frieze of animals painted upside down under the handle zone.[21]

The moderately low, relatively wide stem and foot of a Type A or Type C cup was thrown upside down on the wheel. The potter opened the clay lump down to the wheel head, widened it slightly, and pulled it up and outward, usually terminating the Type A foot with a concave edge and top (*ill. 18q*), while the Type C foot more often had a torus edge. On Type C cups the potter used a notched rib to add a fillet just above the foot (*ill. 18r*). Throwing striations are not usually evident on the underside of these feet, indicating potters possibly smoothed them with a rib tool during throwing. The undersides are also somewhat shiny, although they do not appear to have been burnished since they do not have those marvelously smooth superficies of the painted surface of the bowl proper. The undersides of the feet may have been rubbed with a yielding tool

FIG. 18.13

FIG. 18.14

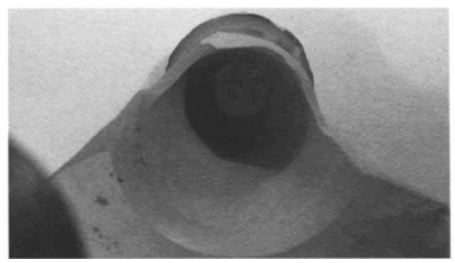


FIG. 18.15

FIG. 18.13 *The potter flattened wide resting surface of this band cup foot with a straight-sided rib tool.*

FIG. 18.14 *The potter created concave edge of foot of this lip cup with the pad of his thumb.*

FIG. 18.15 *View of inside of fragmentary lip cup stem hollowed out with knifelike tool. Wide tool marks remain.*

FIG. 18.16

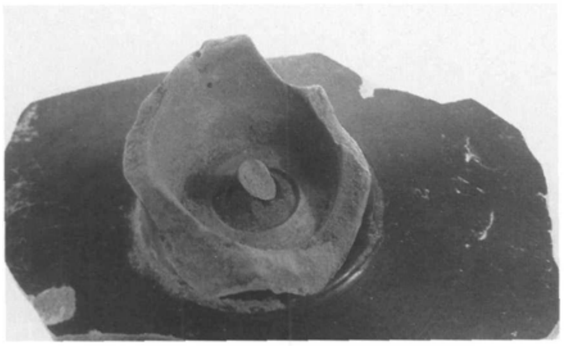
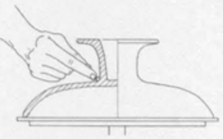


FIG. 18.17

when they had reached the leather-hard stage to give them an extra shine since they would be visible when hung on the wall. These feet were luted to their respective bowls with slip. The potter secured the join of Type A cups with a fillet. For Type C cups he added a ring of clay encircling the join, which he then worked up into the bowl and down into the stem, giving the join a continuous-curve appearance (*ill. 18s*).

Brijder makes a good argument for the foot of most Komast cups being thrown on the inverted Komast bowl.[22] To do so the potter added a ball or a ring of clay to the overturned, leather-hard bowl, which had been centered and secured to the potter's wheel (*ill. 18t*). He forced the ball or ring of clay to run true and shaped it with a flaring foot in the same manner as he would have if it had been thrown separately on the wheel (*ill. 18u*). The Komast cup often has a protrusion in the form of a rounded knob extending downward from the ceiling of the foot. Brijder believes such a protrusion was "left between the fingers during throwing" and "shaped into a roundish knob—in the turning process."[23] In other types of wheel-thrown vases, also, a raised mound of clay (rounded knob) can be found on the floor of the vase (see FIG. 8.1). The mound occurs when the potter pushes downward as well as outward as he opens a ball of clay with his two thumbs to create the floor of a vessel. This procedure forces some of the soft clay up between his thumbs as he spreads them apart. The roundish knob in the ceiling of a Komast-cup foot possibly was formed from such a mound. The potter Pamphios created a black-figured Type A cup that has a rounded knob in the center of the ceiling of the foot (FIG. 18.16). It is coated with black gloss. The potter may have left the knob as an expression of his individuality when he scraped excess clay off the underside of the bowl in turning, or he may have thrown the foot as for the Komast cup, leaving a mound when he opened the clay to create the foot, then accenting it by giving it a coat of black gloss.

The foot of the Siana cup was thrown separately and upside down. Some potters opened a clay ball all the way to the wheel head, others to within



ill. 18s

ill. 18t

ill. 18u

FIG. 18.16 *The potter left short knob of clay in center of ceiling of foot of this kylix.*

FIG. 18.17 *Fragmentary spike emerges from ceiling of foot of fragmentary Siana cup.*

several centimeters of the wheel head, thus leaving a thick ceiling. In either technique the potter pulled up a short cylinder and flared it to form the resting surface of the foot. He cut the foot off the wheel, allowed it to firm up a bit, then affixed it to the underside of the bowl with slip. Many Siana-cup feet have a prominent spike protruding from the ceiling of the foot (FIG. 18.17). Brijder has written (based on 120 cups) that there is a spike in the ceiling of the cups produced by a single potter, who worked with the C Painter in his workshop over a period of twenty years.[24]

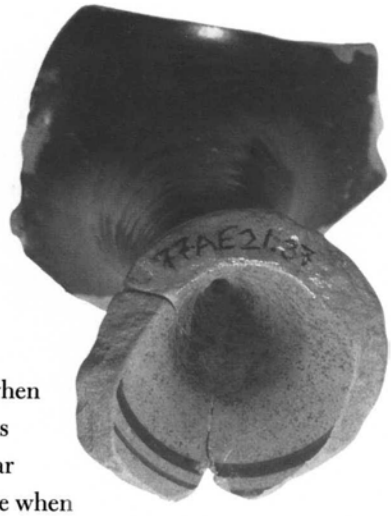
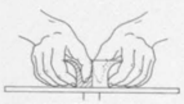


FIG. 18.18

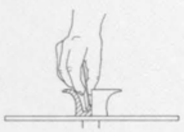
The spike may be produced in several ways. It may result when the potter opens a ball of clay with his two thumb tips, if he separates his thumb tips leaving the distal knuckles together as his thumbs near the wheel head (*ill. 18v*). In this technique the potter refines the spike when he turns the underside of the foot. The spike may also be turned entirely from the excess clay left in the ceiling during throwing. Using a tool in this manner would likely leave a groove at the base of the spike (*ill. 18w*).[25] In some Siana cups the potter left the ceiling extra thick in the finished cup; in others he turned the ceiling so that it was in alignment with the outside profile of the cup.

FIG. 18.19

The very slender stem of a continuous-curve Type B cup, also created upside down, was started from a ball of clay drawn up into a solid pillar as in the lip cup. After making a shallow depression in the top of the pillar, the potter pulled the clay outward to shape the foot, rounding the edge. He flattened the standing surface with his finger or with a flat rib and cut the foot off the wheel, allowed it to firm up, then inverted it into a chuck. In some very slender Type B stems the potter hollowed out only the foot portion, leaving the remainder of the stem solid (FIGS. 18.18–19). This last technique is used especially for stems with spirals or concentric circles cut into the solid top surface (FIG. 18.20). With other very slender stems the potter hollowed a narrow channel through the entire stem with a loop-type tool (FIG. 18.21). He then centered the foot right side up



ill. 18v



ill. 18w

FIGS. 18.18–19 *The potter hollowed out only lower half of this Type B kylix stem.*

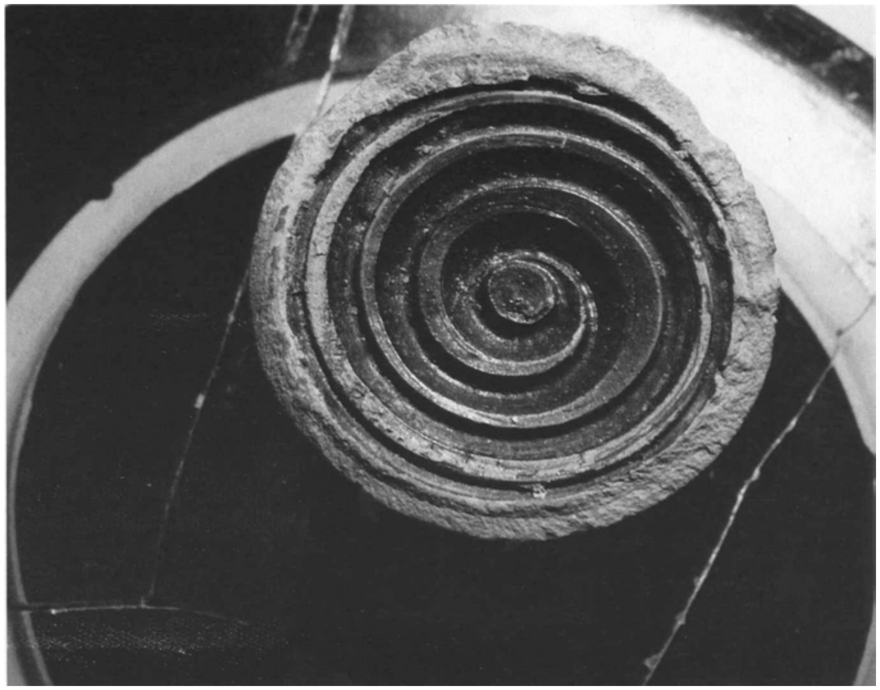


FIG. 18.20

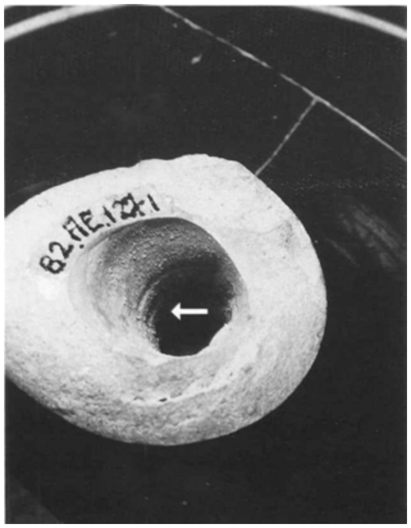
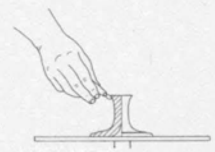


FIG. 18.21

on the wheel head, created a shallow chamfer by removing a thin strip of clay just above the edge of the foot, and thinned the stem by removing layers of clay with a shaping tool, giving a slender waist and flaring top to the stem (*ill. 18x*). The top of the stem was then coated with slip and luted to the bowl with care. A small rope of clay was added at the join and worked both up into the bowl and down into the stem to give the kylix a continuous curve from rim to foot.

As mentioned above, in some Type B stems of the solid variety the potter made the top slightly concave, then cut either a spiral or concentric grooves



ill. 18x

FIG. 18.20 *The potter of this Type B kylix stem cut a spiral into top of stem and coated it with sticky levigated slip instead of using regular, unlevigated slip as adhesive for joining stem to bowl. (Opposing bowl surface belonging to this stem can be seen in fig. 18.11.)*

FIG. 18.21 *The potter hollowed out entire slender Type B stem leaving spiral tool marks (arrow). View is from top of stem looking down to foot.*

into it (see FIG. 18.20). They were joined to a bowl, into which the potter had likewise cut spirals or grooves (see FIG. 18.11). Where separation has occurred, and both stem and bowl have survived, one sees that the spirals (or grooves) do not mesh. Potters made them independently of one another, though spirals were meant to oppose spirals and circles to oppose circles. Many of these stems and bowls with spirals or concentric grooves were secured with levigated slip (which after firing became Greek gloss) and not with ordinary or unlevigated slip.

The reason for the spirals or circles may be the following: Although levigated slip is an excellent glue, for small contact areas it is desirable to increase the interface between the glue and the surfaces being attached. Spiral or circular grooves significantly increase the contact surface area for the glue, thus improving the likelihood of a solid union. The opposing grooves and ridges do not need to mesh, so long as the adhesive used can fill in spaces, as levigated slip can. Spirals and concentric grooves are easily produced on a turning wheel. The potter painted the levigated slip both over the stem top and over the grooves or spirals of the bowl bottom and joined the two while the levigated slip was still wet and sticky. Dry levigated slip will not stick to dry either before or during firing but wet adheres tightly to wet.[26] Greek levigated slip is made of the finest colloidal particles and is stickier than unlevigated slip. Potters may have felt that the finely levigated slip would fill in the grooves or spirals better and thus more securely than the customary slip affix the very slender stem to the bowl (see FIGS. 18.27–28). (Potters today score adjoining clay parts to make a firm bond, but this does not appear to have been a common practice in antiquity.) In the slightly concave stem top in figure 18.20 only the outer perimeter came in contact with the bowl, leaving an air space in

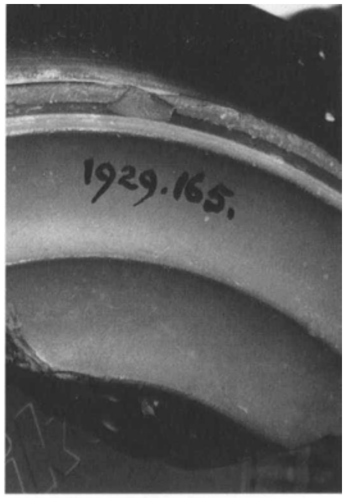


FIG. 18.22

FIG. 18.23

FIG. 18.24

FIG. 18.22 *Grooves rather than flat surface leave decorative finish under stemless kylix foot.*

FIG. 18.23 *Slip (arrow) was used to cement handle to bowl and to round out and fill in tight area between handle and bowl where handle angles upward. It was spread and smoothed with a tool.*

FIG. 18.24 *Slender roll of clay (top arrow) was added to inside of handle at handle/bowl join. Air trapped in space between handle (bottom arrow) and added roll of clay may have helped cause break.*

FIG. 18.25

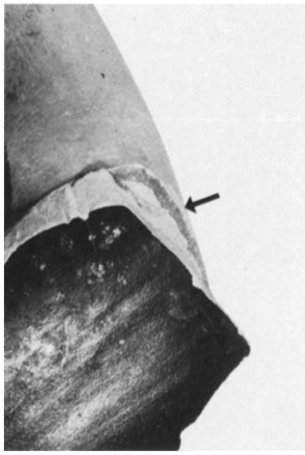


FIG. 18.27

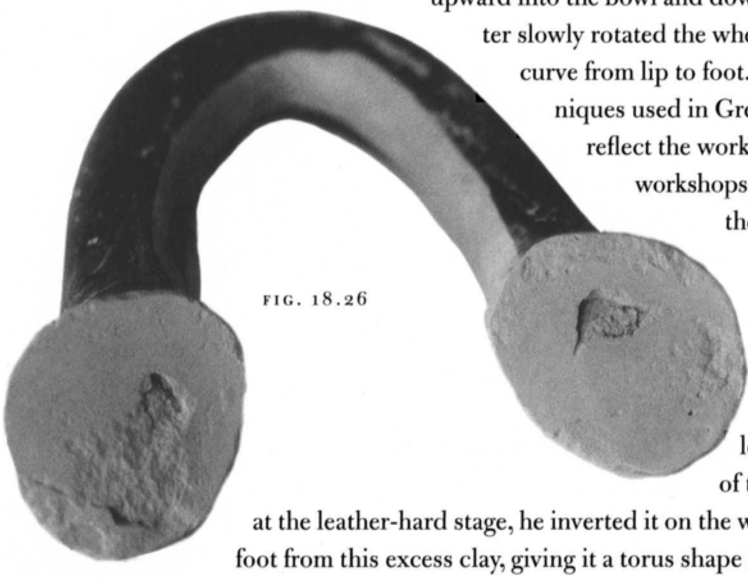


FIG. 18.26

FIG. 18.28

the center. Either the expansion of air during firing caused the separation, or the levigated slip may have been too dry when the potter joined the stem to the bowl, causing an inadequate join and thus the separation. A small coil of clay was added around the outside of the join to disguise it. The coil of clay was worked upward into the bowl and downward into the stem as the potter slowly rotated the wheel, giving the kylix a continuous curve from lip to foot. The various attachment techniques used in Greek pottery workshops may reflect the work of specific potters or their workshops. The potter brushed miltos onto the outside of the kylix bowl and stem and burnished the vase prior to the addition of the handles.

When throwing stemless kylikes, the potter left excess clay on the bottom of the bowl. When the bowl was at the leather-hard stage, he inverted it on the wheel and turned a low, broad foot from this excess clay, giving it a torus shape in one, two, or three degrees. He may have created a fillet between bowl and foot.[27] He hollowed the underside of the foot. An innovative potter carved out several grooves with a wide loop tool on the underside of the stemless cup in figure 18.22.

HANDLES

As was the case with most other Attic vases, kylix handles generally were pulled. The potter held a pear-shaped ball of clay in his left hand and pulled the narrow end with his dampened right hand, thinning the developing handle in the middle, thus giving it a waist.[28] He bent the handle to shape, repeated the pro-

FIG. 18.25 *Long, slender air pocket (arrow) developed when the potter added a roll of clay to round out area between inside of handle and bowl of kylix.*

FIG. 18.26 *Perhaps too little slip was used in attaching this kylix handle, which made a clean break from the bowl.*

FIGS. 18.27–28 [.27] *Adhesive strength of levigated slip (arrow) is shown by part of the bowl coming off with the handle when kylix broke.* [.28] *This kylix handle may have been affixed to its bowl with finely levigated slip rather than the more commonly used unlevigated slip.*

cess for the second handle, and then cut them to size and attached them to the bowl with slip when they were leather-hard. He smoothed around the join with a finger except at the top where the handle turns upward and is at a tight angle to the bowl, making it impossible to insert a finger. In some cases he used a tool to spread slip across the top of the join (FIG. 18.23), in others he added a thin roll of clay between the handle and the bowl, working it into the join with a tool. Inserting such a roll may trap air, leaving a bubble between the added clay and the top of the handle (FIGS. 18.24–25). In some case the trapped air may have caused the separation of the handle from the bowl. In figure 18.26 it would appear that the potter used either too little slip, too watery slip, or just water in joining the handle to the bowl. The bowl may have been fairly damp at the time of attachment, leading the potter to believe the handle was adequately secured, though obviously a better adhesive was needed. In figures 18.27 and 28 the potter used levigated slip instead of customary slip as a glue to attach the handle to the kylix. The fact that the pot stuck to the handle when the cup broke attests to the adhesive quality of the wet levigated slip. In figure 18.29 the potter extruded the handle by dragging a shaped wire loop or metal form through a slab of clay (see also FIGS. 3.10–11). The slightly raised lines impressed by the form on the full length of the handle identify it as being

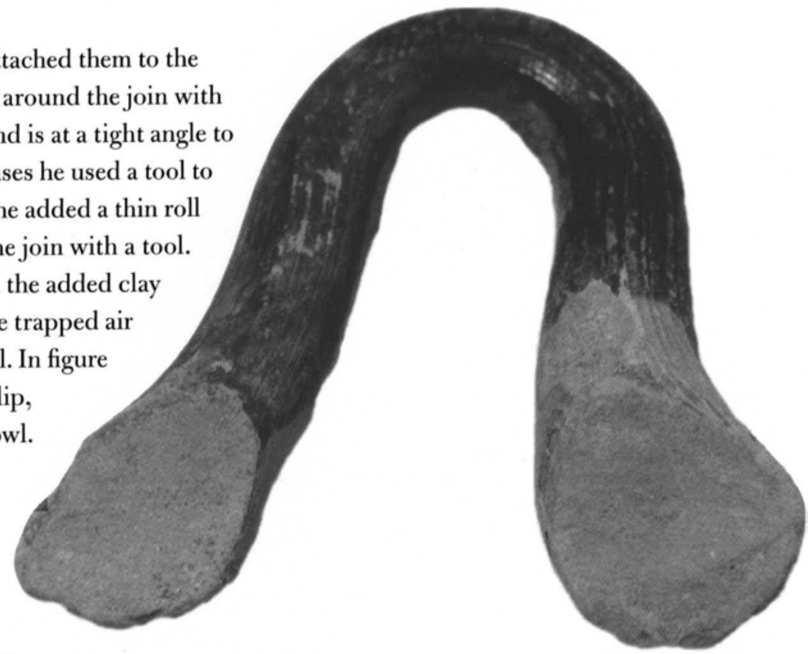


FIG. 18.29

FIG. 18.30

FIG. 18.31

FIG. 18.29 *Extruded kylix handle. Irregularities of mold are impressed on full length of handle.*

FIGS. 18.30–31 *Merrythought cup with angular wishbone handles and knobs.* [.30] *Profile.* [.31] *Side.*

FIG. 18.32

FIG. 18.33

FIGS. 18.32–33 [.32] *Profile view of footless, knobless Merrythought cup.* [.33] *Top view.*

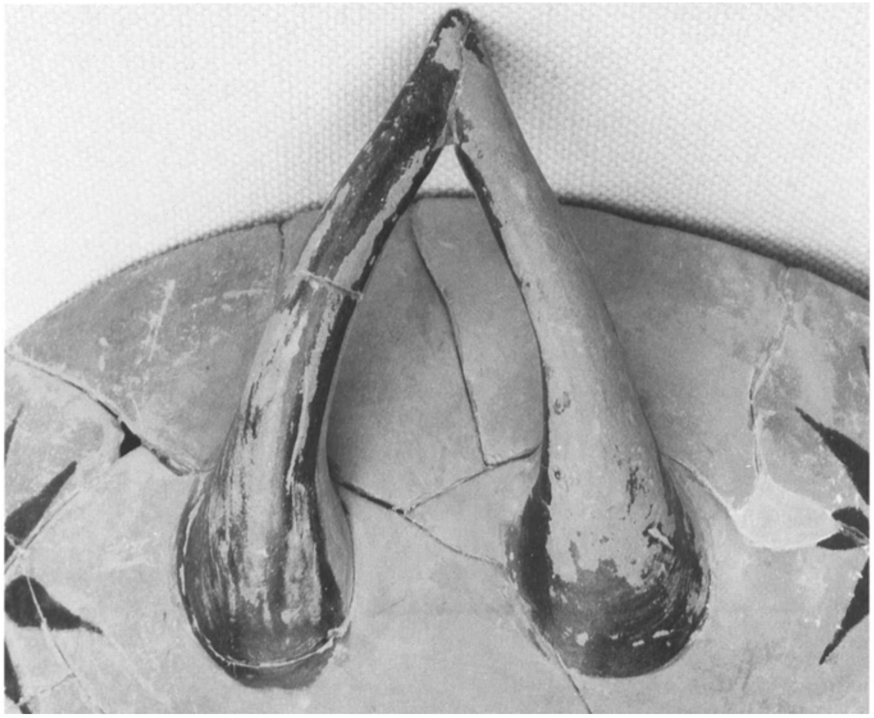
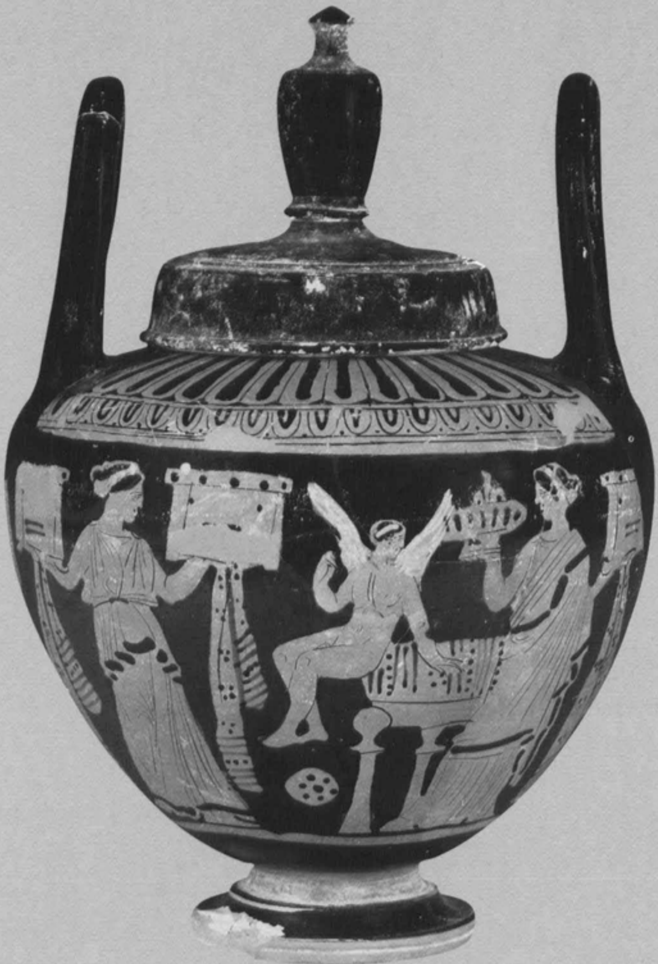


FIG. 18.34

extruded. After the potter had cut the handle to size, he broadened the ends by gently pushing on them with a thumb or tool.

The handles of the Merrythought cup suggest the shape of a wishbone, some with cylindrical clavicles (handle arms), others angular. Most handles have a knoblike structure attached to the top, reminiscent of the joining of the clavicles of the wishbone of a bird (FIGS. 18.30–34).

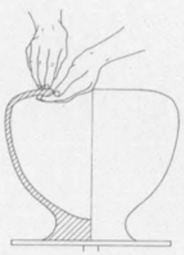
FIG. 18.34 *View of underside of wishbone handles.*




19. Lebes Gamikos

The lebes gamikos is a high-shouldered bowl with an articulated neck and a pair of looped handles rising vertically from the shoulders. The inside is not glossed except for the mouth. One of the two forms of lebes gamikos has a low foot that may be in two degrees; a short, straight neck over which a cap lid fits; and tall handles rising well above the neck (FIGS. 19.1–2). The other form has a taller neck, a spreading mouth with a lip in several degrees, a thin echinus foot, and looped, vertical handles (often double). The bowl is permanently attached to a tall, conical support (stand) almost as high as the bowl itself.[1] The former type, with lid, ranges in height from about 23 cm to 46 cm; the latter type, also with lid, ranges from about 38 cm to 64 cm. Both types are nuptial bowls used to hold water for sprinkling and purification.[2] The lebes gamikos made its appearance in the early sixth century and continued to be created into the mid-fourth century B.C.[3]

ill. 19a



ill. 19b

ill. 19c

FIG. 19.1

Low-footed Lebes Gamikos

To create the body and foot, the potter centered a lump of clay on the wheel, opened it with his thumbs, and pulled up a medium-high cylinder. With his left hand on the inside of the cylinder and the right hand on the outside, he directed the wall outward then upward to the shoulder level (*ill. 19a*). To support the outward-spreading walls of the body and to have clay from which to form the foot, he left a fair amount of clay at the base. To create the shoulder, he turned the cylinder inward, pivoting the wall over his inside fingers and ending at the neck opening (*ill. 19b*). The lebes gamikos has a broad, nearly horizontal shoulder, similar to that of the stamnos. The fine-grained, untempered clay would tend to slump if the neck were thrown with the body. The potter therefore cut the vessel off the wheel and set it aside to firm up.

The neck was thrown as a bottomless cylinder, probably from clay left on the wheel after the vase body had been cut off. The potter drew up a short, straight neck and set it aside to firm up along with the body (*ill. 19c*). When both were somewhat firm, he joined the two with slip. He curved a finger under the

PLATE XIII
Low-footed lebes gamikos
Lebes gamikos on stand

FIG. 19.1 *Low-footed lebes gamikos.*

FIG. 19.2

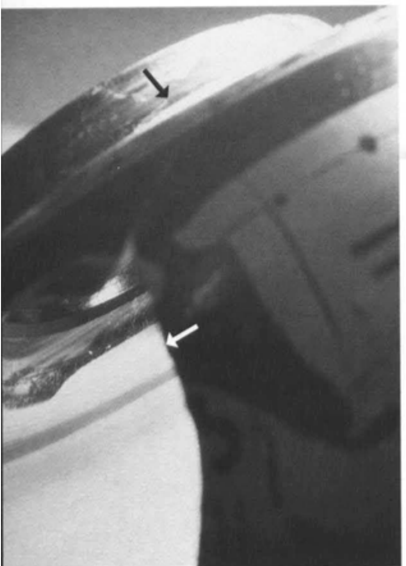


FIG. 19.3

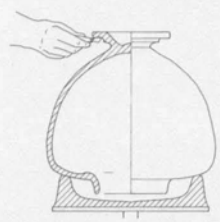
shoulder to meld the neck clay with that of the shoulder (*ill. 19d*; FIGS. 19.3–5).

The potter then inverted the vessel and placed it in a low chuck on the wheel for turning. From the large amount of clay left at the base of the body during the forming process, the potter turned the lower part of the body and shaped the foot (*ill. 19e*). On the underside of the foot of two nuptial vases in the Getty Museum the potter turned a small cone on the ceiling of the foot (FIG. 19.6), corresponding to a depression on the inside of the bowl (FIG. 19.7).

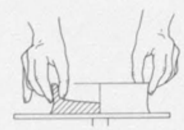
To create the handles, the potter grasped the butt end of a pear-shaped lump of clay in his left hand and pulled the narrow end with his right hand until he had a long cylindrical or oval handle shape.[4] He made a pair of these, looped them, cut them to size, and then set them aside until they reached the firm leather-hard stage. After the vase had received a coat of miltos and had been burnished, the potter attached the handles in an upright position to the shoulder with slip.

The lid was thrown upside down, the potter thrusting his thumbs into a small ball of clay, spreading them apart, and pulling up a low wall (*ill. 19f*; FIGS. 19.8–9). Using calipers, he carefully measured the inside diameter of the lid and the outside diameter of the neck, making sure the cap lid would fit properly over the neck. He cut the lid off the wheel and set it aside to firm up. Probably from the clay remaining on the wheel he then pulled up a solid pillar for the knob, often giving it the shape of a handleless amphora[5] or modified handleless amphora (*ill. 19g*; FIG. 19.9). He placed the lid back on the wheel in an upright position for turning, removed excess clay from the shoulder of the lid, detailed the lip, and affixed the solid knob to the lid with slip (*ill. 19h*).

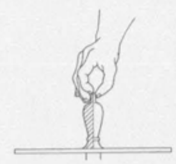
ill. 19d



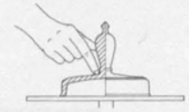
ill. 19e



ill. 19f



ill. 19g



ill. 19h

FIGS. 19.2–3 [.2] *Low-footed lebes gamikos missing all of one and half of the other handle.* [.3] *View under shoulder taken through missing part of vase, showing join of neck to shoulder. Outside of neck (black arrow) and inside of neck (white arrow) are visible in photo.*

FIG. 19.4

FIG. 19.5

FIG. 19.6

FIG. 19.4 *View under the shoulder of low-footed Attic lebes gamikos taken through missing part of vase, showing join of neck to shoulder (arrow).*

FIG. 19.5 *View under shoulder of low-footed lebes gamikos taken through missing part of vase, showing neck/shoulder join (arrow). Neck missing.*

FIG. 19.6 *Small cone on ceiling of foot opposite depression in floor of bowl inside. The potter turned underside of foot with a tool, leaving a broad standing surface.*

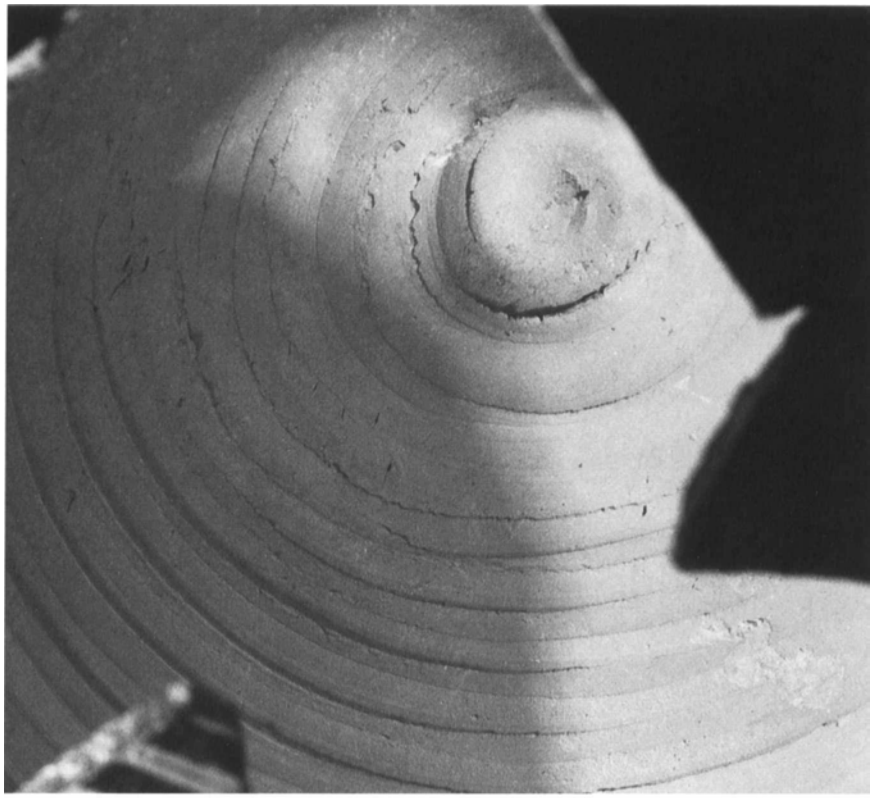
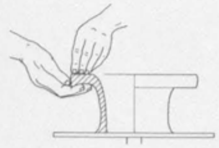


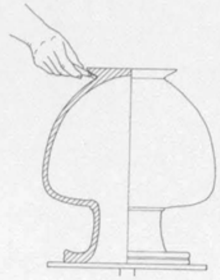
FIG. 19.7

FIG. 19.8

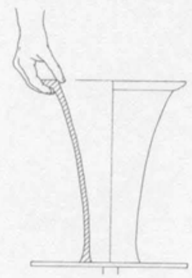


ill. 19i

ill. 19j



ill. 19k



ill. 19l

Lebes Gamikos on Stand

The bowl of the second type of lebes gamikos was formed in the same manner as that for the low-footed vessel. The potter threw the neck right side up by pulling up a cylinder and matching its diameter to that of the neck opening on the bowl. He angled the top of the cylinder outward to form the mouth and lip, supporting the underside of the lip with the fingers of his right hand (*ill. 19i*). When the neck was somewhat firm, the potter joined it to the shoulder. With a rib tool or his fingertips he shaped a fillet at the join on the outside of the vase (*ill. 19j*). Inverting the bowl, the potter turned it, forming the thin echinus foot from the excess clay at the base of the bowl (*ill. 19k*). He refined the neck/shoulder join and

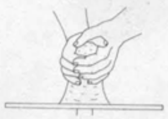
FIG. 19.7 *Small depression shows in center of floor of lebes gamikos opposite cone on underside. Deep ridges are evident where the potter altered the inside shape using a tool.*

FIGS. 19.8 *Underside of knobbed cap lid of lebes gamikos.*

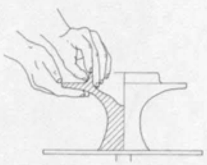
detailed the lip, and then set the bowl aside until it was leather-hard. He may have brushed on miltos and burnished it at this time, before joining it to the support.

The tall, broad, conical-shaped support is a simple form, which was thrown upside down. The potter pulled up a cylinder, spread it outward, and terminated it in a torus-shaped foot (*ill. 19l*), applying miltos and burnishing it when it had reached the leather-hard stage. He joined the bowl to the support with slip and then made and added handles as described above.

This form of lebes gamikos has a domed, flanged lid, often with a pomegranate knob. The lid was thrown upside down from a low pillar of clay (*ill. 19m*). The potter hollowed out the top of the pillar with his thumbs and pulled it up into a low bowl shape, then outward to create the lip. He formed the flange between his left thumb and middle finger, the tip of his index finger limiting the height of the flange, his right hand supporting the lip (*ill. 19n*). He then cut the lid off the wheel, and when it was somewhat firm, he inverted it and turned the top and knob, detailing it by hand (*ill. 19o*). When the lid was at the firm-to-rigid leather-hard stage, he applied miltos and burnished it in preparation for the vase-painter. The lid was dried and fired on the vase for a closer fit (*ill. 19p*).

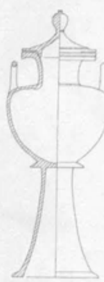


ill. 19m



ill. 19n

ill. 19o



ill. 19p

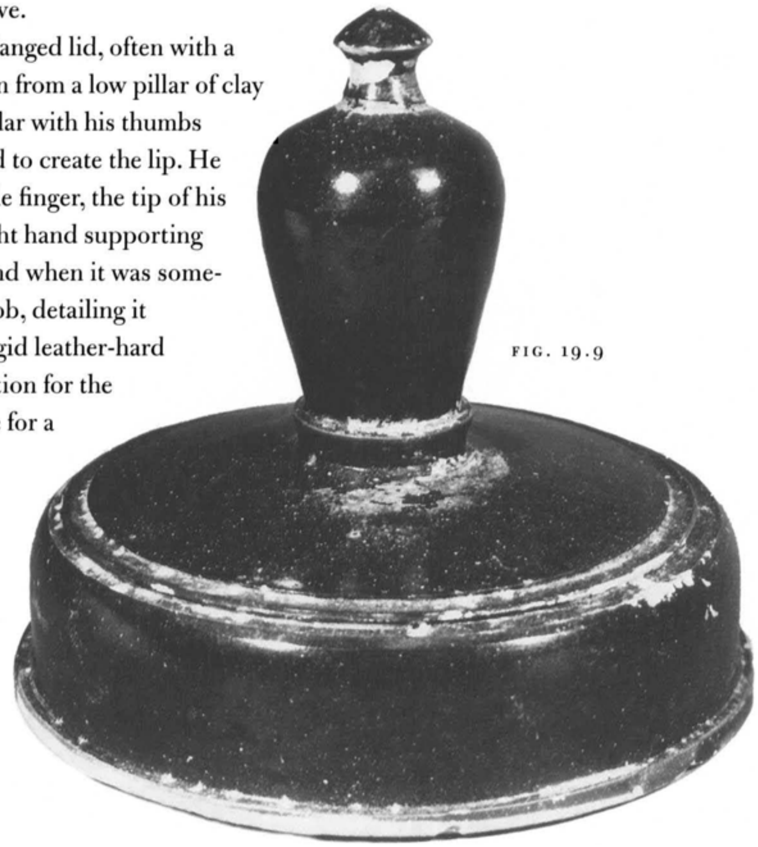


FIG. 19.9

FIGS. 19.9 *Outside of cap lid.*

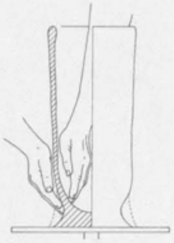
1.

2.

3.

20. Lekythos

The Attic lekythos is a slender, single-handled, footed, narrow-necked vessel. It was not glossed on the inside except for the mouth. It was a container for oil that was used in the sanctuary,[1] at the grave, in the Athenian kitchen, and at the bath by both men and women.[2] It was a particularly suitable shape for oil because the narrow neck allowed the fluid to flow drop by drop[3] or in only a very thin stream.[4] Early black-figured lekythoi (Deianeira type) had globular or ovoid bodies, a heavy ring collar (unlike sub-Deianeirans), and a continuous curve from short neck to echinus foot. Ranging in height from about 14 cm to 18 cm, they made their appearance in the first half of the sixth century B.C.[5] Black-figured lekythoi produced from the middle to the end of the sixth century B.C. have a shoulder and taper toward the echinus foot.[6] Late black-figured, red-figured, and white-ground lekythoi, created during the fifth century B.C.[7] and considered canonical, have a slender, cylindrical body with a well-defined shoulder. The neck is elongated, terminating in a cup-shaped mouth[8] with a sharp inner edge that curtailed dripping and served as a funnel for filling the lekythos.[9] The foot changed from an echinus to a disk shape. They range in height from around 20 cm to 48 cm, late white-ground lekythoi being the tallest.[10]



ill. 20a

ill. 20b

BODY/SHOULDER/FOOT

To create the canonical lekythos, the Athenian potter threw the body, shoulder, and foot in one piece,[11] the neck and mouth in another (FIG. 20.1).[12] The single handle was pulled.[13] To make the body of a canonical lekythos with a well-delineated shoulder, the potter centered a ball of clay on the wheel. He opened it by pressing his thumbs down through the center of the clay to within several centimeters of the wheel head, leaving adequate clay with which to shape the foot. Forming a concave floor with his thumbs, he pulled up a tall, narrow cylinder. He started giving the body its shape at the level of the top of the foot. With the fingers of his outside hand opposing those of his inside hand he pushed

PLATE XIV
1. Early lekythos, front and side
2. Squat lekythos, front and side
3. Canonical lekythos, front and side

FIG. 20.1 *Neck and mouth of canonical red-figured lekythos.*

FIG. 20.1

the clay inward to form the general shape of the top of the foot (*ill. 20a*). He then angled the cylinder slightly outward and upward until the maximum shoulder diameter was reached. At the shoulder he turned the clay sharply inward. This was a smooth transition, with the inside fingers remaining at the shoulder but rotating as they opposed the outside fingers executing the turn, both hands continuing to direct the clay inward toward the neck (*ill. 20b*; FIG. 20.2).

The potter used a rib tool to produce a smooth surface on the outside when shaping the lekythos. Deep throwing grooves, such as those found in amphorae, are usually not present on the inside of finished lekythoi, the exception being at the base, where one may find grooves caused by pressure from the potter's fingers indenting the clay for the foot (FIG. 20.3). As he raised the cylinder and continued to refine the body shape, such grooves became throwing striations. He cut the body off the wheel and set it aside to firm up.

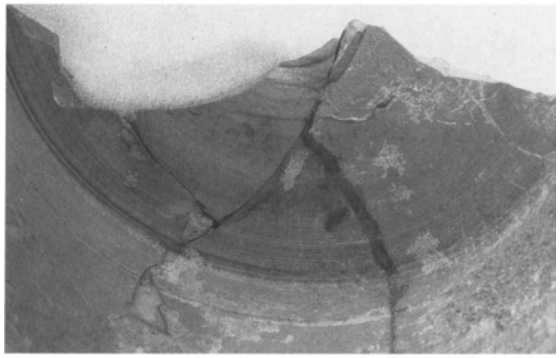


FIG. 20.2

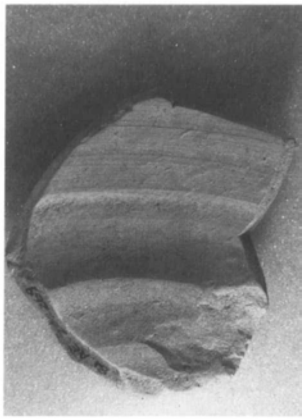
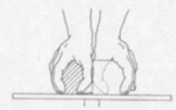


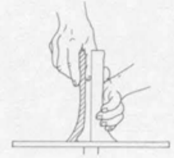
FIG. 20.3

NECK/MOUTH

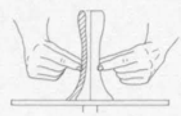
The potter created the neck/mouth section by opening a small ball of clay with the backs of his thumbs held together and pushing clear down to the wheel head, creating a hollow-bottomed piece. At the wheel head he spread his thumb tips apart, keeping the knuckles together, to form the flared base of the neck (*ill. 20c*). He then pulled up a narrow, somewhat thick-walled cylinder between the thumb and index finger of his right hand to about the height of the finished rim (*ill. 20d*). Throwing grooves inside the neck can be identified in some sherds (FIG. 20.4). He narrowed the diameter of the neck by collaring-in while he simultaneously raised his hands (*ill. 20e*). The mouth was formed from the top of the thick-walled neck by the potter carefully spreading the opening with his two thumbs (*ill. 20f*). He then shaped the mouth by pinching the clay between his right thumb and index finger to form the bowl, supporting the neck and mouth with his cupped left hand at all times (*ill. 20g*). To flatten the rim, he straightened the right index finger



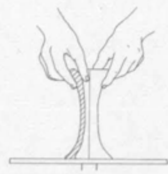
ill. 20c



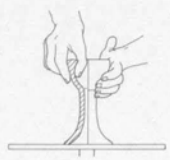
ill. 20d



ill. 20e



ill. 20f



ill. 20g

FIG. 20.4

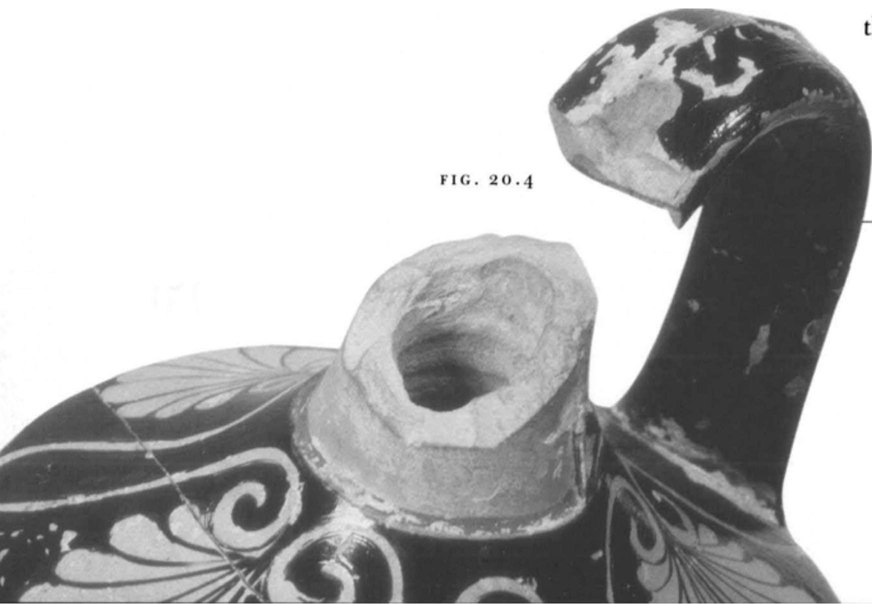
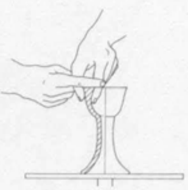


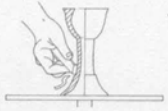
FIG. 20.2 *Looking up inside to shoulder fragment. The potter turned the clay sharply inward to create the shoulder.*

FIG. 20.3 *Throwing grooves at lower body of lekythos fragment.*

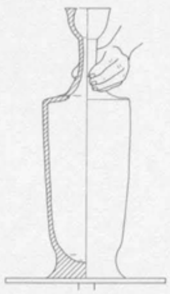
FIG. 20.4 *Throwing grooves are visible inside very slender neck of this fragmentary lekythos.*



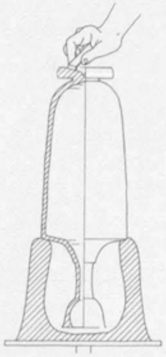
ill. 20h



ill. 20i



ill. 20j



ill. 20k

FIG. 20.5

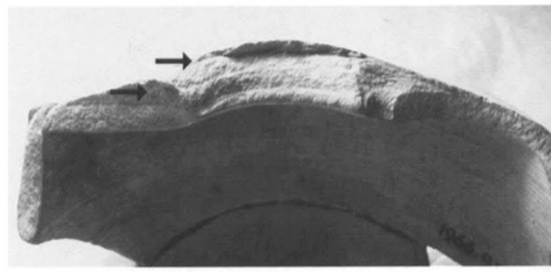


FIG. 20.6

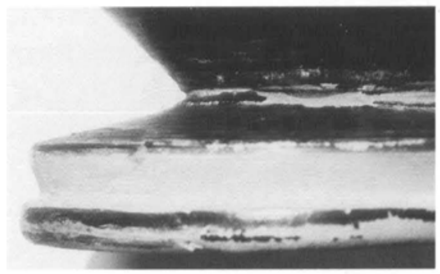


FIG. 20.7

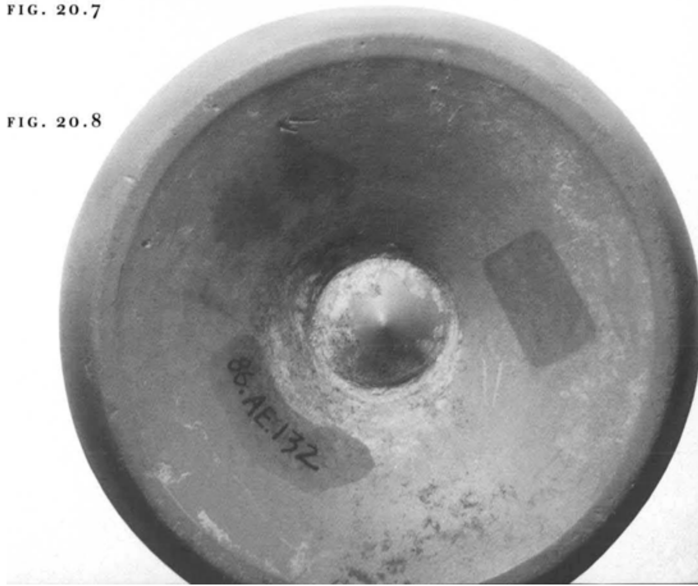


FIG. 20.8

and laid it across the left thumb and index finger, which loosely grasped the edge of the mouth (*ill. 20h*), while he gently exerted downward pressure. This maneuver produced the sharp inward turn found on the inside of the mouth rim on the standard lekythos and gave the outside profile its slight outward flare. In turning the neck wall, the potter cut away successive ribbons of clay with a scraper tool (*ill. 20i*; FIG. 20.5). In this manner he formed the chamfer or ridge slightly above the shoulder/neck join (see FIGS. 20.1, 4). Using calipers to measure the neck opening of the vase body, the potter trimmed the outside of the base of the neck to a bit wider than the neck opening of the body. The neck thus completed, the potter set it aside. When it was firm, he placed it on top of the slip-covered shoulder opening (*ill. 20j*). In figure 20.6 an extra layer of clay is visible where it was added on top of the join and worked into the outside neck and shoulder clay to secure a stronger bond and to perfect the profile of the vase.

TURNING

Turning was done before the handle was attached. The potter adjusted the neck to run true before he turned the body. He used a scraper or a loop tool to peel off unwanted clay. Turning would have included any or all of the following: sharpening the profile of mouth and neck, thinning the neck wall, detailing the chamfer, perfecting the shoulder profile and thinning the body, removing excess clay from and refining the shape of the lower body, sharpening the conjunction of body and foot, and detailing the foot.

The potter created a disk foot, sometimes with a groove carved into the edge of its horizontal surface, sometimes with a cut into the side, giving it a two-degree appearance (FIG. 20.7). To shape the underside of the foot, he turned the vase upside down and placed the neck into a centered chuck, straightening the lekythos so it ran true. He then proceeded to cut away clay with a scraper or a loop tool, taking care not to cut into the floor of the lekythos body (*ill. 20k*). He gave the underside one of several shapes. Leaving a very slender resting sur-

FIG. 20.5 *Tool marks are visible where potter shaved clay from neck wall to thin it.*

FIG. 20.6 *Three layers of clay are visible in neck/shoulder join, the bottom layer being the shoulder. Neck (bottom arrow) was laid on top of this particularly horizontal shoulder, and layer of clay was added and spread over join (top arrow).*

FIG. 20.7 *Disk foot of white-ground lekythos with deep cut into edge, giving a two-degree appearance to the foot.*

FIG. 20.8 *Small cone hangs down from center under foot of lekythos.*

FIG. 20.9

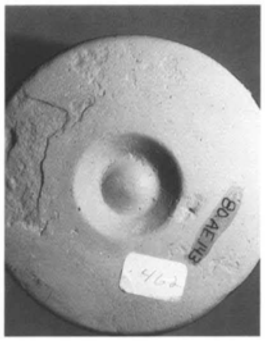


FIG. 20.10

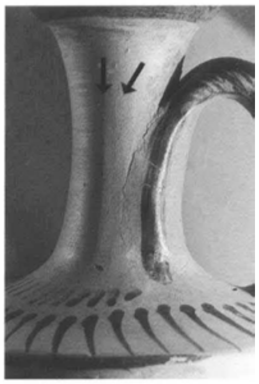


FIG. 20.11

face, he angled the underside inward, stopping just short of the center, where he either left a small convex cone (FIG. 20.8) or cut sharply toward the floor of the vase and then left a convex cone (FIGS. 20.9–10). The underside of a lekythos foot tends to be very smooth and rich in color. Because it was visible when oil was poured from the lekythos, the potter likely polished it with a yielding tool. When turning was completed, he sponged the vase, applied miltos, and burnished his vessel.

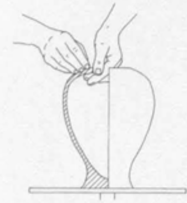
HANDLE AND HANDLE ATTACHMENT

The handle was added last. The potter pulled the single handle from a lump of clay about the size of a tennis ball molded into a pear shape. Holding the lump in one hand and keeping the other hand wet at all times, he repeatedly squeezed while simultaneously sliding his wet hand down along the neck of the clay lump, elongating it (*ill. 20l*). Most lekythoi handles have an oval cross-section. The potter formed such a handle by pulling the clay between the conjoined thumb and index finger, thumb placed rigidly atop the distal joint of the index finger.[14] When the pulling was completed, he placed the butt end of the lump on a flat surface with the handle arching into a high loop. When it had firmed up a bit, he cut it to the desired size. The distal end of a developing handle is thinner than the butt end. The potter molded the distal end to fit the curve of the lekythos neck, rooted it to fit the length of the neck, and attached the originating end to the outer edge of the shoulder. He attached the handle with slip both at the neck and at the shoulder (*ill. 20m*).

Vertical planes are visible on the neck parallel to the handle attachment in the lekythos in figure 20.11 where the potter used a knife blade for smoothing the attachment. It would appear as though the handle or the vase, or both, were too firm when joined, for a crack developed, which the potter closed by compacting and smoothing the clay with the knife, unsuccessfully attempting to avoid a permanent crack during the firing.

ill. 20l

ill. 20m



ill. 20n

FIG. 20.9 *Typical underfoot shape of mid-sixth- through fifth-century-B.C. lekythos with convex central cone.*

FIG. 20.10 *Typical underfoot shape of mid-sixth- through fifth-century-B.C. lekythos.*

ill. 20o

ill. 20p

ill. 20q

ill. 20r

The bodies of smaller, earlier lekythoi (latter half of the sixth century B.C.) were created in much the same manner as those of canonical vessels. In creating the body, the potter left the top rim of the cylinder somewhat thickened. This thickened rim became the neck edge after the potter turned the cylinder inward to form the shoulder (*ill. 20n*). The thickening can be seen on the underside of shoulder/neck fragments as a ring of clay adjacent to the flared end of the neck (FIGS. 20.12–13). In figure 20.14 the potter thickened the neck edge by folding the last centimeter or so of the shoulder clay back under and onto itself. He did this by holding the tip of his left index finger about a centimeter under the neck opening on the inside of the shoulder and bending the clay with his right index finger over onto the left (*ill. 20o*), which was then moved away to allow the fold to meld into the shoulder. To smooth this thickened band and blend it into the rest of the shoulder clay, he curved his index finger over it as the wheel rotated. In the above example the potter left the end of the folded-over edge fragmented.

The neck was made in much the same manner as described above for the canonical lekythos except it was shorter, there was no chamfer, and the mouth had a shallower bowl shape—it was more rounded. In figure 20.15 of a neck/shoulder fragment in the Getty Museum the potter inserted a pencil-sized dowel in the neck opening after the vase had firmed up a bit, producing a very smooth interior neck that is clearly visible. This procedure may have been used to straighten the neck.

In joining the neck to the body, it was necessary for the potter to soften the edge of the neck opening on the body with water and to widen it slightly by exerting outward pressure against the inside edge with a finger (*ill. 20p*). This allowed him to nestle the slip-coated, flared edge of the neck into the shoulder opening (*ill. 20q*). The wetted neck-edge clay was then flattened over the flared end of the neck and worked up into the neck to form a smooth profile on the outside (*ill. 20r*). On the inside of these vases there is a decided join line at the junction of the neck and shoulder (see FIGS. 20.12, 14).

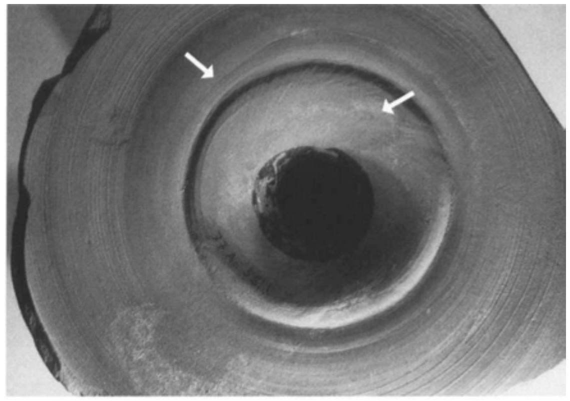


FIG. 20.12

FIG. 20.13

FIG. 20.11 *Vertical planes (arrows) are visible on neck where the potter used a knife blade to smooth handle attachment. A separation developed between handle and neck.*

FIG. 20.12 *Underside of shoulder looking from body up through neck. Flanged end of neck (right arrow) has been nestled under thickened neck edge of shoulder (left arrow). Spiral stress lines (right arrow) are visible on flange.*

FIG. 20.13 *Underside of shoulder looking from body up through neck, which was created by the coil-and-throw technique. Spiral stress lines are visible on flange.*

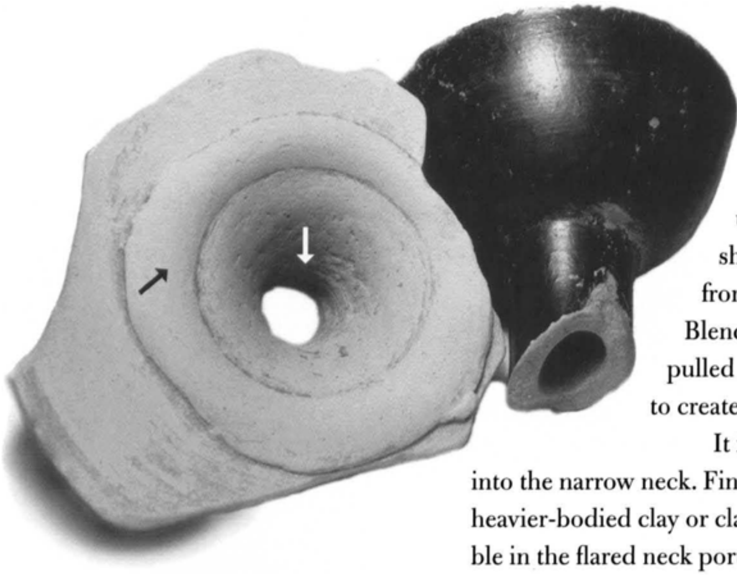


FIG. 20.14

FIG. 20.15

In some instances the potter used the coil-and-throw technique to create the neck. He threw the body of the vessel and then added a coil of clay to the firmed-up neck edge. He secured it by curling a finger under the coil and attaching it to the underside of the shoulder. This technique produced a smoother transition from the shoulder to the neck flange (FIGS. 20.13, 16–17). Blending the coil of clay into the outside of the shoulder, he pulled it up into a narrow, thick-walled cylinder and proceeded to create the neck in the above-described manner.

It is not unusual to see spiraling stress lines running up into the narrow neck. Fine-grained Greek clay cannot stand as much stress as a heavier-bodied clay or clay with the addition of temper. The stress lines are visible in the flared neck portion of the above-mentioned neck/shoulder joins. They are especially evident in a shoulder fragment of a small lekythos in the Getty Museum made in one piece (see FIG. 20.15).

In turning the smaller, late sixth-century-B.C. lekythos, the potter placed the vessel upside down in a chuck, shaved off excess clay from the lower part of the vase, and fine-tuned the echinus foot (*ill. 20s*). On the underside of the foot he left just the hint of a resting surface, angled the underside inward with a tool to just short of the center, where he cut sharply up toward the body of the lekythos, producing either an inverted V-shape (FIG. 20.18) or a protruding cone as found in canonical lekythoi (see FIGS. 20.9–10).

The handle was made in the same manner as for the canonical lekythos. However, late sixth-century-B.C. black-figured handles tend to be thicker than canonical handles. When the potter attached the handle to the shoulder, he ran his finger around the join to spread any excess slip and to smooth the join (*ill. 20t*). These finger-smoothing lines are more readily visible around early black-figured lekythos handles because they are devoid of shoulder decoration (FIG. 20.19).

ill. 20s

ill. 20t

FIG. 20.14 *Inside of vase looking up through neck. Neck edge of shoulder (black arrow) was thickened by folding clay over onto itself. Flared base of lower neck (white arrow) was nestled under shoulder. Broken-off mouth fragment is to the right.*

FIG. 20.15 *Spiral stress lines inside shoulder of small lekythos fragment. Pencil-thin dowel was probably inserted into neck of this vase and held there briefly during throwing, leaving inside of neck very smooth.*

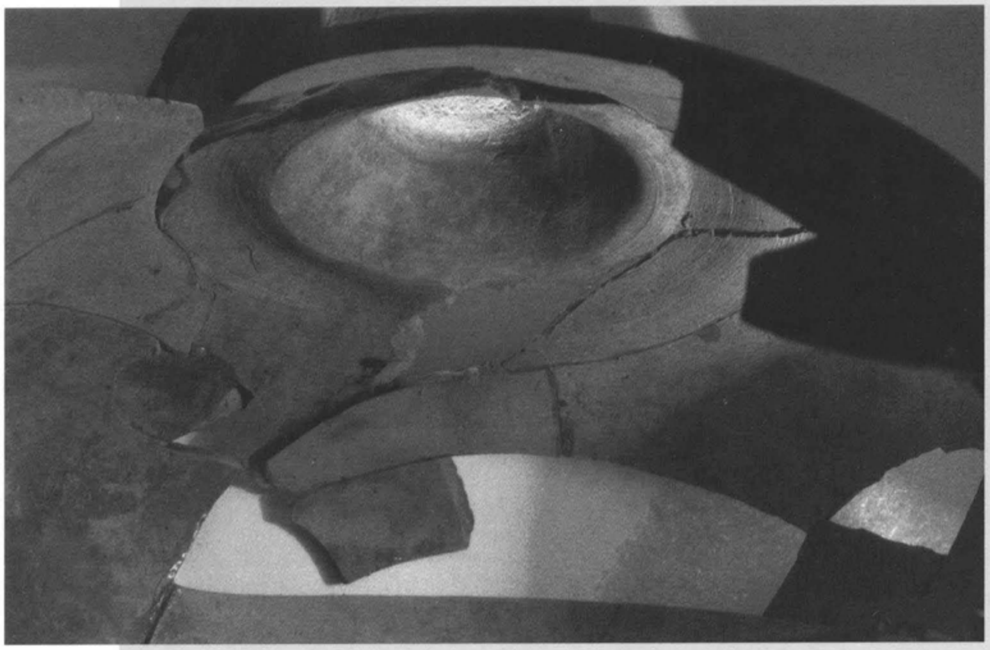


FIG. 20.16

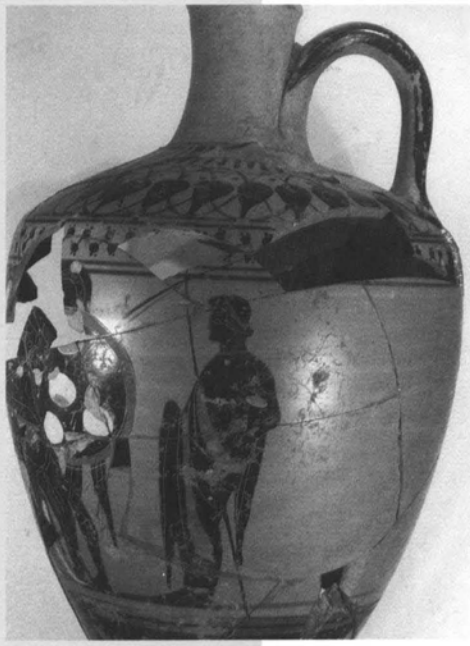


FIG. 20.17

FIGS. 20.16–17 [.16] *Coil-and-throw technique. Neck was formed from coil of clay that was added to shoulder, then thrown.* [.17] *Outside.*

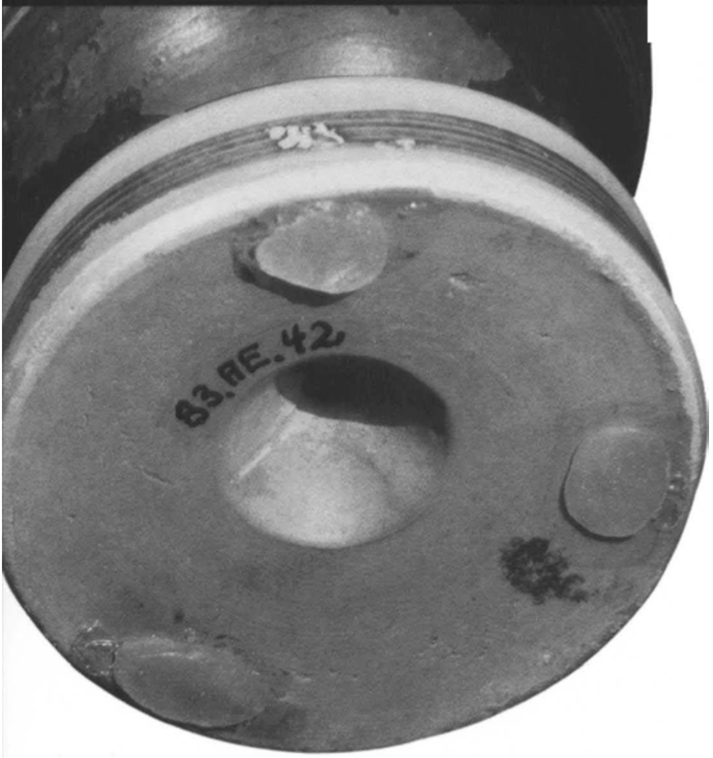


FIG. 20.18

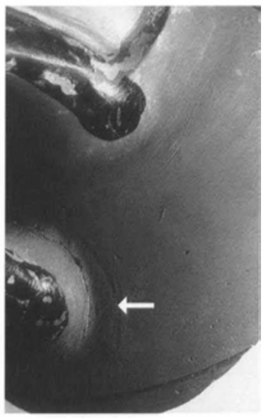


FIG. 20.19

Squat Lekythos

Squat lekythoi, red-figured vases some 14–18 cm in height, have a less defined shoulder, sit on a broad foot, and were popular during the second half of the fifth through the fourth century B.C.[15]

The squat lekythos was thrown in one piece. The potter drew up a cylinder, from which he shaped the foot and body. To make the neck, he gently collared-in the upper portion of the cylinder with his thumbs and index fingers. From the remaining clay at the top of the cylinder he shaped the mouth. He turned the body in a manner similar to that described above for the canonical lekythos, added miltos, and burnished it. He left a resting surface for the foot and turned the underside essentially flat. Several preconservation photos of a Getty Museum squat lekythos illustrate the process of creation (FIGS. 20.20–24).

Figure 20.25 shows a squat lekythos on which the potter did not remove all the tool marks from the lower neck by either turning or burnishing.

Lekythos with Inner Oil Cup

Some white-ground lekythoi to be placed on a grave monument were made with a small, hidden, inner oil receptacle attached to the bottom of the neck, which limited to a relatively small amount the precious oil within the lekythos.[16] Created by various potters, the receptacle was made in three different known shapes, each characteristic of specific potters and painters: a conical receptacle by the potter who created lekythoi for the Villa Giulia Painter; a cylindrical container in lekythoi decorated by the Sabouroff,[17] Inscription,[18] and Torch Painters;[19] and a globular or bulbous shape in lekythoi decorated by the Achilles Painter.[20]

In an example of the globular-shaped inner oil cup in a lekythos by the Achilles Painter in the National Archaeological Museum in Athens (FIG. 20.26), the foot, body, and shoulder were made in the same manner as for canonical lekythoi. However, the potter left an opening at the neck edge of the shoulder large enough to receive the bulbous oil receptacle. When the shoulder was fairly firm, he cut out a notch with a square corner from the neck edge of the shoulder,

FIG. 20.18 *Typical underfoot shape of small black-figured lekythos.*

FIG. 20.19 *Finger-smooth lines (arrow) around base of handle at shoulder attachment.*

FIG. 20.20

FIG. 20.21

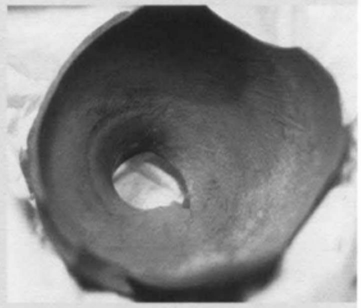


FIG. 20.22

FIG. 20.23

FIG. 20.24

FIGS. 20.20–24 [.20] *Break in body wall of squat lekythos shows very thick lower body. After conservation.* [.21] *Throwing striations inside lower body.* [.22] *Spiral stress lines lead toward neck opening where the potter collared-in clay at shoulder.* [.23] *Handle attachment (arrow) was molded to fit around neck (missing).* [.24] *Foot was shaped with a tool, sponged, and burnished or rubbed. Small portion of underside of foot was covered with gloss, illustrating dipping as a glossing technique.*

FIG. 20.25 *The potter did not remove tool marks on lower neck.*

creating a depression into which the flange at the base of the neck was to fit (FIGS. 20.27–28). In creating the neck for this vase, the potter measured the flared base of the neck to fit the notch in the shoulder, pulled up the neck, and formed the mouth in the usual manner for canonical lekythoi. He then set this section aside while he threw the oil cup. He made the crude, bulbous oil cup right side up with a diameter smaller than that of the shoulder opening. He cut the cup from the wheel, allowed it to become leather-hard, then inverted it and crudely sliced chunks of clay from the base, giving it a tapered shape (FIGS. 20.29–30). When it was somewhat firm, he joined it to the underside of the neck either with regular slip or with the finely levigated slip used to make Greek gloss. Gently twisting it back and forth a bit would assure a good join. In a lekythos in the Ashmolean Museum (FIGS. 20.31–32) the join partially separated, indicating either that the neck and the oil cup were too dry when the potter joined them, or that he placed the assembly onto the shoulder before the cup was firmly bonded to the neck. With the oil cup attached to the neck, he added slip to the flared edge of the neck and fit the assembly into the shoulder notch. The bonding was not always adequate. There is almost no evidence of slip on the exposed, notched neck edge of the Athens lekythos (see FIG. 20.27).

The neck section of another lekythos in the National Archaeological Museum in Athens, this one by the Torch Painter, has a cylindrical-shaped oil receptacle that likewise separated at the shoulder join (FIG. 20.33). In this example the potter made the lekythos body as described above, leaving the neck opening large enough for the narrow receptacle to slip through (FIGS. 20.33–35). He created the neck/mouth section in the usual manner and set it aside. The slender oil receptacle was shaped in probably no more than one upward pull. Throwing grooves are evident on the outside surface, and there is still a flare at the base of the oil cup from pulling up the cylinder (see FIG. 20.35). The cup appears to have been wrenched from the wheel head without being adequately cut loose. The potter joined the oil cup to the neck and the neck to the opening in the vase

FIG. 20.26

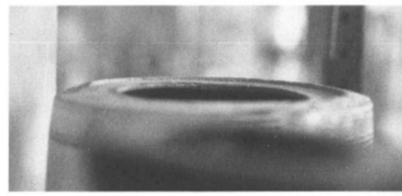


FIG. 20.27

FIG. 20.28

FIGS. 20.26–28 [.26] *Separated mouth and neck fragment with attached oil cup and white-ground lekythos to which it belongs.* [.27] *Notched top of shoulder.* [.28] *Oil cup attached to underside of neck.*

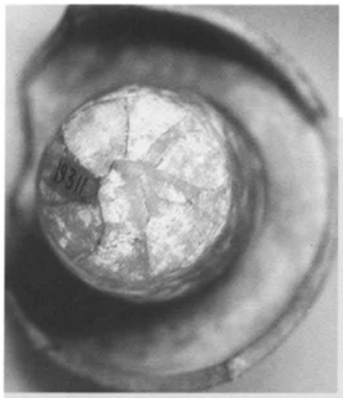


FIG. 20.29

FIG. 20.31

FIG. 20.30

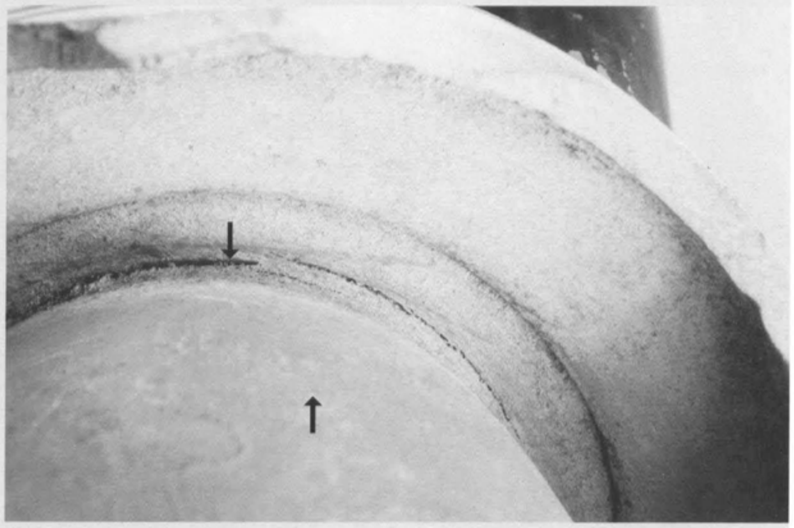


FIG. 20.32

FIGS. 20.29–30 [.29] *Tapered base of globular oil cup, seen from below.* [.30] *Side view.*

FIGS. 20.31–32 [.31] *Crudely sliced chunks of clay were cut from base of oil cup.* [.32] *Looking up at underside of shoulder. Oil cup (bottom arrow) partially separated from base of neck (top arrow).*

with finely levigated slip, not with regular slip. The shiny gloss used in luting is evident in figures 20.33–35.

Gloss was similarly used in the shoulder area of the Getty Museum's large lekythos with an inner cylindrical receptacle decorated by the Sabouroff Painter (FIGS. 20.36–37).[21] The gloss can be seen as a shiny, dark line where it has oozed out at the otherwise secure join of the oil-cup assembly. The bottom portion of the vase is gone, affording a clear view into the interior of the lekythos. A small hole in the shoulder is also visible. It is a vent that was purposely created by the potter to allow gasses to escape during the firing process, the inner oil receptacle blocking the normal escape of gasses through the neck.

Huge Lekythos

Five extant huge, white-ground lekythoi, ranging from 70 cm to 100 cm in height, were created in the last decade of the fifth century B.C.[22] They are similar in shape, technique, and painting style and may all have been the creation of one potter.[23] Unlike canonical white-ground lekythoi, the entire surface of the vase is covered with white slip—mouth, neck, and foot included—perhaps to suggest marble.[24] These lekythoi were created for display since some are bottomless and were evidently meant to be secured over a stake.[25]

The author has not handled any of these huge lekythoi. The following construction technique analysis is based on observing the Madrid vase in its case (FIGS. 20.38–39) and on the information published by Ricardo Olmos Romera.

The Madrid lekythos (95 cm high) appears to have been thrown in four sections: the foot, the body and shoulder, the neck, and the mouth. The clay may have had temper added to it. The potter threw the foot and low stem upside down and hollow. He flattened the base in the same manner as for the top of the mouth of standard lekythoi and created the body and shoulder up to the chamfer in a manner similar to that of canonical lekythoi. He then inverted the body in a chuck for turning, rounding or hollowing its bottom to receive the foot. He threw

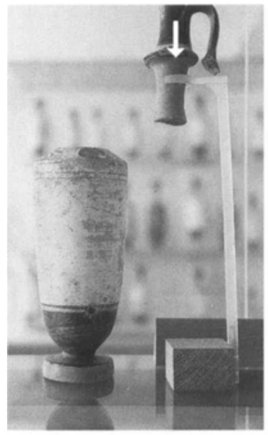


FIG. 20.33

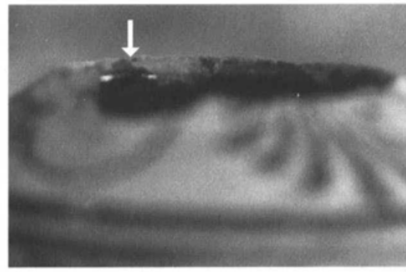


FIG. 20.34

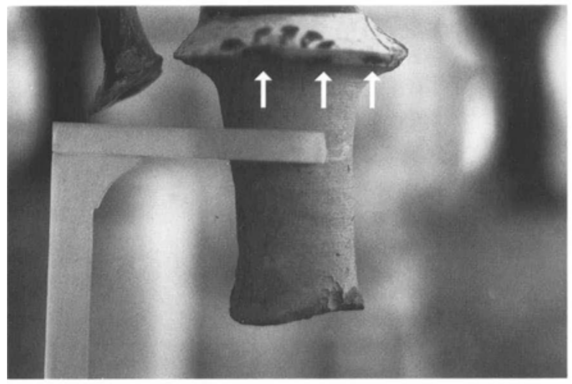


FIG. 20.35

FIGS. 20.33–35 [.33] *Neck and cylindrical oil cup separated from body at shoulder. Neck and oil cup were joined with the levigated slip used to make Greek gloss (arrow).* [.34] *Finely levigated slip used to make Greek gloss (arrow) was used in place of regular slip to join neck to shoulder.* [.35] *Cylindrical oil cup attached to neck with levigated slip used to make Greek gloss (arrows).*

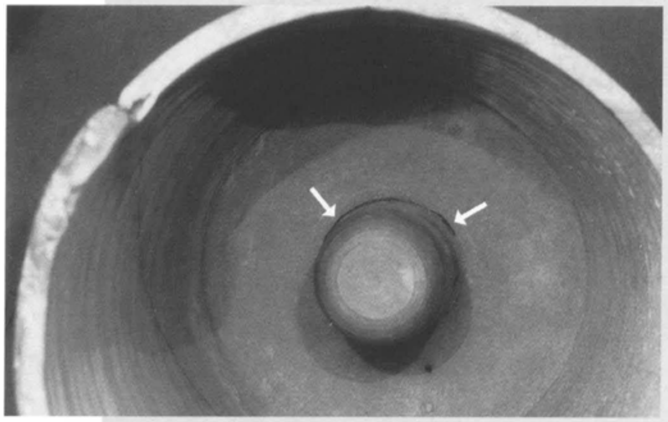


FIG. 20.36

FIG. 20.37

FIGS. 20.36–37 [.36] *Inside looking up toward shoulder. Cylindrical oil cup is nestled into shoulder and secured with gloss (arrows).* [.37] *Outside.*

the long, slender neck as a separate cylinder and terminated it in a flaring neck ring. The neck seems to have been pulled up in one continuous motion and not turned afterwards since several spiral turns are visible. It appears to have been inserted into the body at the chamfer and probably secured with slip. The flaring mouth with everted edge was created with a short stem[26] and was meant to be separate and removable from the neck after firing. Commencing several centimeters above the wheel head, thus leaving room to turn the stem, the potter created the mouth in a manner similar to that of a small bowl with an everted lip. After allowing it to firm up, he placed the mouth on the wheel upside down for turning. With a tool he flattened the neck edge of the mouth so it would rest securely on top of the neck ring, then shaped the stem to be considerably narrower than the inside diameter of the neck, and hollowed it out (*ill. 20u*).[27] If the mouth had been attached to the vase, it might have been too tall to fit into the potter's kiln, which may account for the mouth being separate from the neck, although it sits comfortably into the neck. (Lids of vases were fired seated on the mouth for a snug fit.) The mouth may have been intended as a removable funnel.

ill. 20u

FIG. 20.38

FIG. 20.39

FIGS. 20.38–39 [.38] *Huge lekythos thrown in four sections: mouth, neck, body, and foot.* [.39] *Mouth was meant to be removable; it is separate. Separately thrown neck fits down into extended shoulder.*

1.

2.

3.

21. Loutrophoros

The Attic loutrophoros is a tall vase with an ovoid body. It has a long neck, which, along with the mouth, makes up a little more than two-fifths of the total height of the vase. The neck of early, mostly black-figured, loutrophoroi is wide and flaring and culminates in a robust mouth with a prominent lip. The inside of the mouth is glossed and has a reserved stripe encircling it about midway. The body tapers gently at the base. (Later, mostly red-figured loutrophoroi have a more slender, nearly straight neck, which culminates in a broad, flaring, decorated mouth. The body tapers markedly into a narrow stem.) The vase stands on either an echinus, flaring, or two-degree foot, usually with a vertical member above a torus or echinus element (FIG. 21.1). It ranges in height from about 25 cm to 95 cm. Loutrophoroi are known from the eighth century[1] and were potted through the fourth century B.C.[2] There are two types: loutrophoros-hydria and loutrophoros-amphora, differentiated mainly by their handles and by their use.

The loutrophoros-hydria has a pair of looped handles attached vertically atop either side of the shoulder and opposite one another. They are flat on the inside facing the neck and either fully or slightly rounded on the outside (FIGS. 21.2–3). The vase has a third, tall strap handle at the rear midway between the two side handles, reaching from the top of the neck to the shoulder (FIG. 21.4). This type of loutrophoros is depicted in vase-paintings as a vessel used in the ritual bathing of the bride.[3]

The loutrophoros-amphora, or simply loutrophoros, has a pair of tall, vertical strap handles reaching from the top of the neck to the shoulder. The handles are often decorated and strengthened with a clay slab that partially fills the space between the handle and the neck. The slab may be perforated in several places. The shape is frequently depicted in vase-paintings as being used for ritual funerary purposes, being placed at the graves of unwed youths.[4]

Some loutrophoroi have open bottoms to allow libations to be poured onto the grave through the vase,[5] or perhaps to prevent rainwater from collecting and becoming stagnant or freezing (FIG. 21.5).[6]

FIG. 21.1

FIG. 21.2

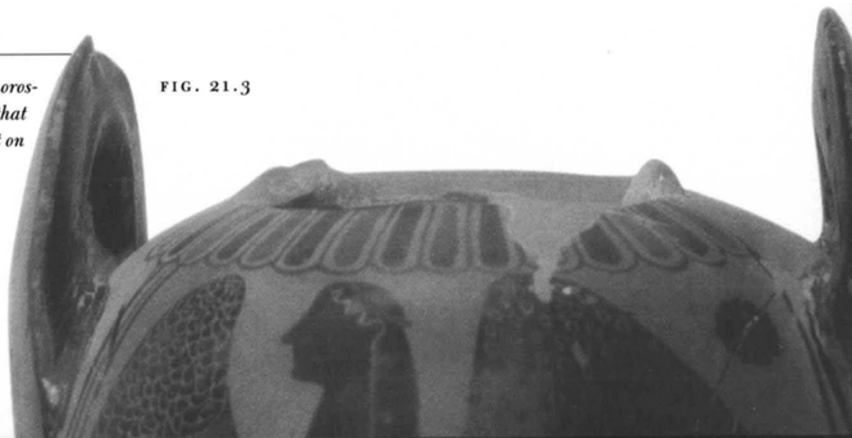


FIG. 21.3

PLATE XV
1. Loutrophoros-amphora
2. Loutrophoros-hydria
3. Loutrophoros-hydria, front and side

FIG. 21.1 *Two-degree loutrophoros foot.*

FIG. 21.2 *Loutrophoros-hydria with pulled side handles that are flat on neck side and fully rounded on outside.*

FIG. 21.3 *Loutrophoros-hydria side handles that are hand molded flat on inside and slightly rounded on outside.*

FIG. 21.4

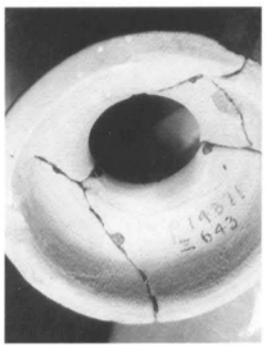


FIG. 21.5

FIG. 21.6

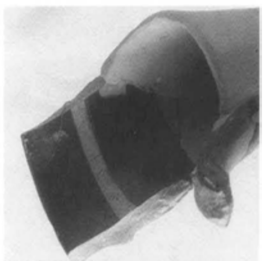


FIG. 21.7

BODY

The body was thrown in one piece. To create the early loutrophoros body, the potter centered a ball of clay on the rotating wheel and thrust his thumbs down into the center to within a few centimeters of the wheel head. He spread the thumbs apart to form the floor of the loutrophoros and pulled up a cylinder, which he widened into an oval shape, then angled back inward to form the shoulder (*ill. 21a*). The bodies of most late fifth- and fourth-century loutrophoroi taper to slender stems. In creating this loutrophoros, the potter spread his thumbs apart only a very short distance, crafted a rather thick-walled stem, and then pulled up a cylinder. He created an oval shape as above and angled the clay back inward to form the shoulder (*ill. 21b*). He then cut the body off the wheel and laid it aside to firm up. Hollow-bottomed vases may have been made with no floor, or the potter may have cut the floor out during the turning process.

ill. 21a

NECK/MOUTH

The neck and mouth of a loutrophoros were made either in one section or separately. To create the neck/mouth in one piece, the potter thrust his thumbs into a new ball of clay clear down to the wheel head, separated the thumbs slightly, and pulled up a somewhat slender cylinder, leaving it thick at the top and flaring it for the mouth. He left the rim rather narrow but created a wide lip by inserting his right thumbnail into the thickened top of the clay below the rim, supporting it on the inside with his left hand (*ill. 21c*). The transition from neck to mouth is smooth on the inside in such vases (FIGS. 21.6–7).

ill. 21b

For the majority of loutrophoroi, however, the potter threw the neck and mouth separately. To create the neck, he pulled up a somewhat slender cylinder, angling it slightly outward, cut it off the wheel, and set it aside to firm up. He made the mouth from a separate, low, thick cylinder, spreading it outward to a rather narrow rim but with a broad lip demarcated by the thumbnail as above. When it was at the soft leather-hard stage, he joined it to the top of the neck with

ill. 21c

FIGS. 21.4–5
[.4] *Loutrophoros-hydria.*
[.5] *Open bottom.*

FIGS. 21.6–7 [.6] *Neck/mouth fragment of loutrophoros-amphora. Outside.* [.7] *Mouth and neck were thrown in one piece.*

FIG. 21.8

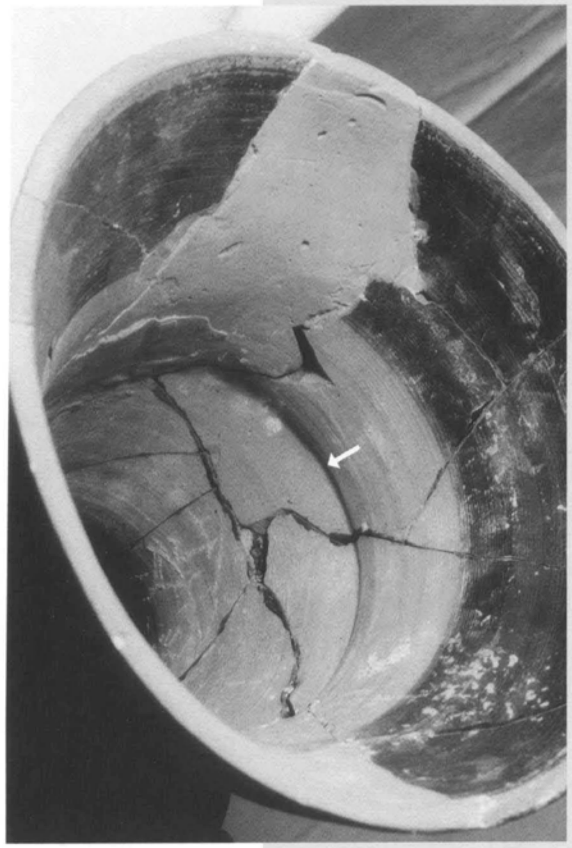


FIG. 21.9

FIGS. 21.8–9 [.8] *Loutrophoros-hydria.* [.9] *Mouth was created separately and joined (arrow) to neck.*

FIG. 21.10

FIG. 21.11

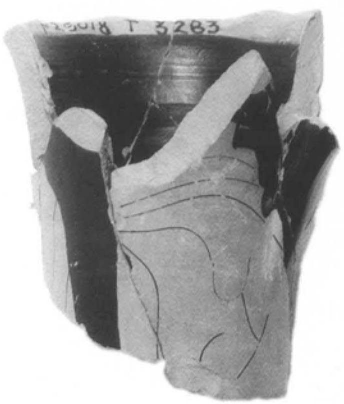


FIG. 21.12

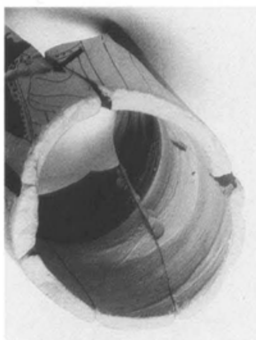


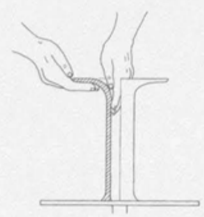
FIG. 21.13

slip. The neck is wide enough for the potter to reach several fingers down into the neck and partially smooth the join, but the telltale bulge remains inside the neck below the glossed area that decorates the inside of the mouth (FIGS. 21.8–15). There may be a slight bulge on the outside of the neck in the join area (FIG. 21.8). The separately made flaring mouth of most red-figured loutrophoroi has an extremely wide, fairly thin rim with a narrow lip edge (*ill. 21d*; FIGS. 21.16–19). It is made upside down. The potter flattened a centered ball of clay on the wheel, opened it with his thumbs, and pulled the clay inward with his fingers toward his thumbs to form a short stem that would be inserted into the neck. He tooled several narrow grooves on the underside of the broad rim (FIGS. 21.17, 19), cut the mouth off the wheel, and set it aside. When the mouth was somewhat firm, he placed it right side up in a chuck, rounded the lip, and sharpened the rim/mouth edge. He then joined it to the neck with slip. The join on the inside was partially smoothed, but the lower part was left rough because of the comparatively narrow neck. The potter smoothed the outside so that the join would not show.

JOINING

When the neck/mouth assembly and the body were at the soft leather-hard stage, the potter joined them with slip in much the same manner as for early lekythoi (p. 175). An exaggerated form of that method of joining can be seen in figures 21.20 and 21. Slip has oozed out at the junction of neck and shoulder. The splits in the base of the neck are caused by uneven drying due to the neck clay being much thicker than the shoulder clay. To seal the neck/shoulder join on the outside of a loutrophoros, the potter formed a narrow neck ring either with his fingers or with a notched rib.

When the joined vase reached the firm leather-hard stage, the potter inverted it and turned the lower body, trimming off any excess clay left around the base during throwing. Potters did only minimal turning on early vases, but on slender-stemmed, later loutrophoroi they removed excess clay from



ill. 21d

FIGS. 21.10–11 [.10] *Loutrophoros-amphora mouth fragment.* [.11] *Mouth and neck were made separately. View from neck up into mouth showing join (arrow).*

FIGS. 21.12–13 [.12] *Loutrophoros-hydria mouth/neck fragment.* [.13] *Mouth was created separately. Join to neck smoothed by potter (arrow).*

FIG. 21.14

FIG. 21.15

FIG. 21.16

FIG. 21.18

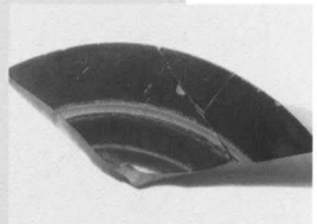


FIG. 21.19

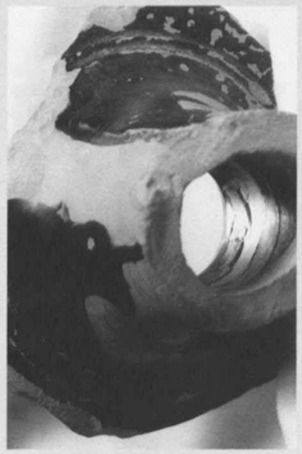


FIG. 21.17

FIGS. 21.14–15 [.14] *Loutrophoros-hydria.* [.15] *Mouth was made separately and joined to neck (arrow).*

FIGS. 21.16–17 [.16] *Loutrophoros-hydria mouth/neck fragment.* [.17] *Broad mouth was joined to slender neck. Viewed from neck up to mouth join.*

FIGS. 21.18–19 [.18] *Broad loutrophoros mouth fragment viewed from above.* [.19] *Underside.*

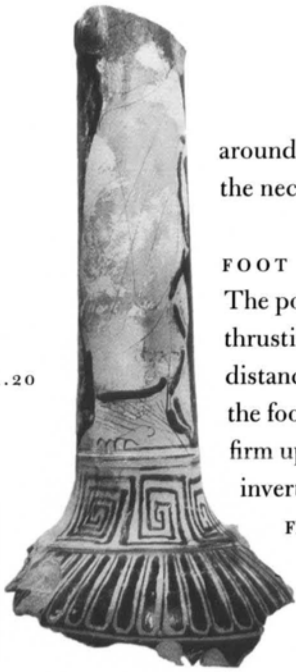


FIG. 21.20

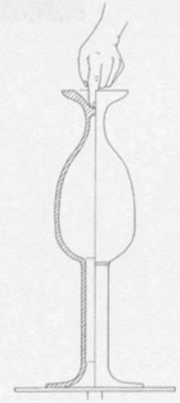
around the stem with a scraper tool, sometimes making it almost as narrow as the neck (*ill. 21e*).

ill. 21e

FOOT

The potter threw the generous foot upside down. He opened the clay by thrusting his thumbs clear down to the wheel head, spread them apart a short distance, then pulled the clay upward and outward, giving the underside of the foot a bowl shape. He then cut the foot off the wheel and set it aside to firm up before attaching it to the body. He joined the firmed-up foot to the inverted base of the body with slip and smoothed the inside join (*ill. 21f*; FIG. 21.22). Righting the loutrophoros, the potter detailed the top of the foot with a tool, sometimes creating a fillet. (The join technique for hollow-bottomed vases was similar.) He brushed on miltos and burnished the entire vase before adding the handles.

FIG. 21.21



ill. 21f

HANDLES

Each loutrophoros-hydria semi-cylindrical side handle was pulled. To create one, the potter pulled a fully rounded handle, let it firm up a bit, then cut it in two lengthwise and bent it to shape. Side handles that are only slightly rounded were not pulled but were cut out of a slab and hand-molded to shape (see FIG. 21.3). The tall strap handles on a loutrophoros-amphora and the back handle on a loutrophoros-hydria were pulled and then flattened between the pads of the potter's thumb and index finger. When the handles were firm, the potter attached them to the vase with slip and turned the completed vase over to the painter (*ill. 21g*).

Potters threw miniature loutrophoroi on the wheel all in one piece. The lower portion of the body and the foot were left solid (FIGS. 21.23–26).

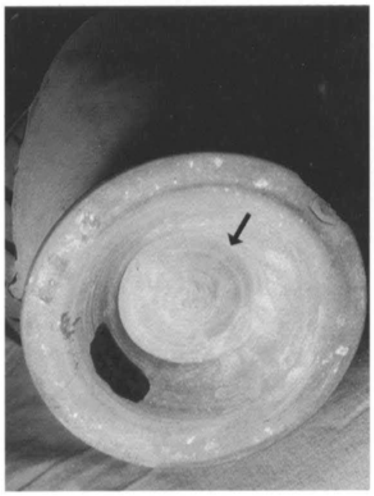
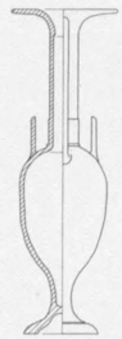


FIG. 21.22



ill. 21g

FIGS. 21.20–21 [.20] *Slender loutrophoros-hydria neck/shoulder fragment.* [.21] *Neck/shoulder join is especially thick.*

FIG. 21.22 *Loutrophoros-hydria foot join, smoothed by the potter (arrow).*

FIG. 21.23

FIG. 21.24

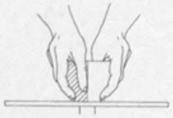
FIG. 21.25

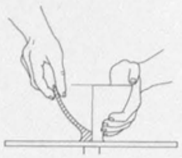
FIG. 21.26

FIGS. 21.23–24 [.23] *Miniature loutrophoros-hydria fragment, 4.2 cm high. (Shown 2:1.)* [.24] *Shoulder view showing stubs of handles.*

FIGS. 21.25–26 [.25] *Miniature loutrophoros-hydria fragment.* [.26] *Inside view. Lower portion is solid clay.*

22. Mastos


ill. 22a


ill. 22b


ill. 22c


ill. 22d

The mastos is a black-figured cup in the shape of a woman's breast. It may or may not have handles. When it does, they are slightly upturned, either horizontally oriented or one horizontal and one vertical, attached on either side near the rim. Mastoi are about 10 cm high. They were used as drinking cups at the symposium. They appeared in late sixth century and lasted into the first quarter of the fifth century B.C. in black-figure.[1]

To fashion the mastos, the potter pulled up a short, slender cylinder, creating a floor about the width of his thumb tips (*ill. 22a*). He spread the walls of the cylinder outward and upward. Supporting the shape with his left hand, he thinned the walls between the thumb and fingers of his right hand. It would take only a few upward pulls to thin the walls adequately and to give the mastos form (*ill. 22b*). He cut the cup off the wheel, and when it was firm, he inverted it for turning. With a scraper tool he peeled off layers of clay from where the cup had rested on the wheel during throwing. This procedure brought the mastos nearly to a point, leaving only enough clay to form a nipple (*ill. 22c*).[2] He pulled a pair of slender handles and, when they had firmed up a bit, cut them to size and attached them a little below the rim of the cup (*ill. 22d*). Because of its shape the cup would be fired upside down.


FIG. 22.1


FIG. 22.2

Mastoid Cup

The mastoid cup is a footless, flat-bottomed version of the mastos with an outturned lip.[3] It was potted in the same manner as the mastos, but the floor of the cup was wider. The potter created a shoulder, then angled the lip sharply outward (FIGS. 22.1–2). He either left the cup handleless or added horizontal handles attached a little below the rim.

PLATE XVI
Mastos, front and side
Mastoid cup

FIGS. 22.1–2 [.1] *Mastoid cup fragment with outward-angled lip.* [.2] *Cross-section.*


1.


3.


4.


2.

23. Oinochoe

The oinochoe is a single-handled jug, whose shape varies greatly. Beazley divided oinochoai into ten different categories, ranging from a comparatively slender-bodied continuous-curved jug (olpe), to one with a bulbous body (chous), to a jug with offset shoulders (oinochoe).[1] It may have a somewhat narrow to somewhat broad neck with round, beaked, or trefoil mouth,[2] and the foot may be stubby or broad, or the vase may be footless. The single-handled, squat mug (shape 8) is sometimes included in the term. Oinochoai generally were not glossed on the inside except for the neck and mouth. Their height is usually less than 30 cm.[3] They are represented in vase-paintings in scenes of libation, ladling, and pouring wine, and as offerings on tombs. The various types of oinochoai date from the early seventh to the early fourth century B.C.

The construction techniques of most types are considered here: the olpe with round mouth (shape 5), the chous (shape 3), the oinochoai with offset neck and trefoil mouth (shapes 1 and 2), and the beak-mouthed oinochoai (shapes 6, 7, and 10).

Olpe (Shape 5)

The olpe, primarily a black-figured jug, appeared early in the seventh century and was common through the sixth century B.C.[4] It is one of the more slender-bodied shapes of oinochoai, and it has a continuous curve from the round or trefoil mouth to the low foot. The handle, rooted to the rim, either curved above the mouth (shape 5A) or reached straight out from the rim (shape 5B), thence downward to the body. The former was generally found on early vessels, the latter mostly on later ones.

OLPE IN ONE PIECE

To create an olpe in one piece, the potter centered a ball of clay on the wheel, opened it, and shaped the floor with his thumbs, leaving adequate clay at the base to contour the foot. He drew up a slender cylinder, then pushed out the belly with

PLATE XVII
1. Oinochoe with offset neck (trefoil), front and side 2. Oinochoe (olpe), front and side 3. Oinochoe with beaked mouth (Shape 10) 4. Oinochoe (chous), top, front, and side

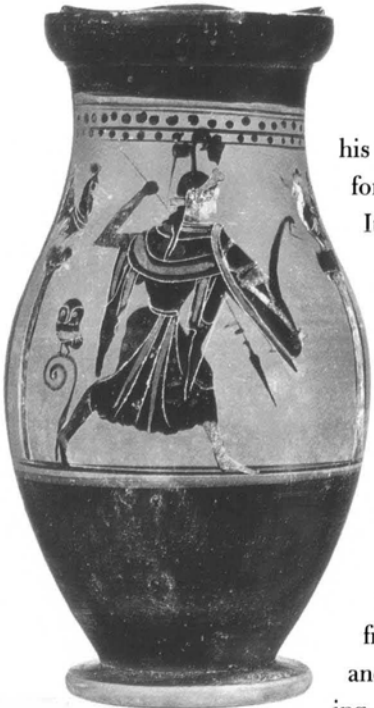


FIG. 23.1

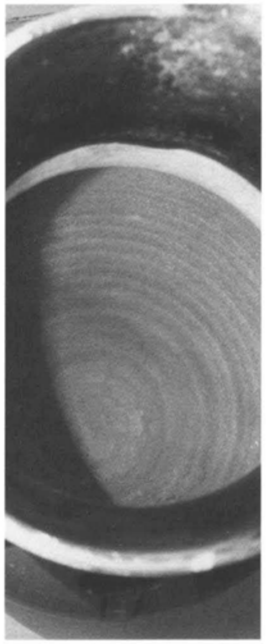


FIG. 23.2

FIG. 23.3

his inside hand, guided the cylinder back inward with both hands to form the neck, and terminated the olpe with a thickened rim (*ill. 23a*). It is a relatively small jug, but its neck is wide enough for the potter's hand to reach easily down to the bottom of the cylinder, push out the wall for the belly of the jug, then angle the cylinder inward to shape the shoulder and neck, thus forming the jug in several upward pulls. The shape should, therefore, leave continuous throwing grooves and striations from bottom to top, without appreciable interruptions or bulges, which is indeed the case with some olpai. An example is found in the vase depicted in figures 23.1–3, which shows throwing grooves from the floor of the olpe up to the shoulder, smoothing out into striations, and finally sponge marks just below the gloss line inside the neck. The fragment in figures 23.4–6 illustrates the shoulder/neck area of another olpe that likely was thrown in one piece. The gradual thickening of the clay as it emerges from the body into the neck (FIG. 23.6) is either the result of the potter collaring-in the neck (*ill. 23b*), or it represents the original thickness of the cylinder.

However, there is considerable evidence indicating that many olpai were thrown in two sections and joined at the base of the neck where it merges into the shoulder. The join can be felt or seen as a slight but well-defined bulge circling the jug on the inside with a depression on the lower side of the bulge. A mirror inserted through the neck opening of intact olpai will show the bulge as seen from inside the vase (FIGS. 23.7–8). It can also be seen through breaks in the body of fragmentary jugs (FIGS. 23.9–10) as well as in many shoulder fragments (see FIGS. 23.15–18).

The neck itself may indicate that an olpe has been thrown in two sections. The wall at the base of the neck is often thicker than that near the lip. When creating an open-bottomed cylinder such as for a neck, the potter left the part immediately adjacent to the wheel head slightly thicker than the rest of the

ill. 23a

ill. 23b

FIGS. 23.1–3 [.1] *Olpe.* [.2] *Throwing grooves rise from base of olpe.* [.3] *Throwing grooves are replaced by sponge marks (arrow) below gloss area inside neck.*

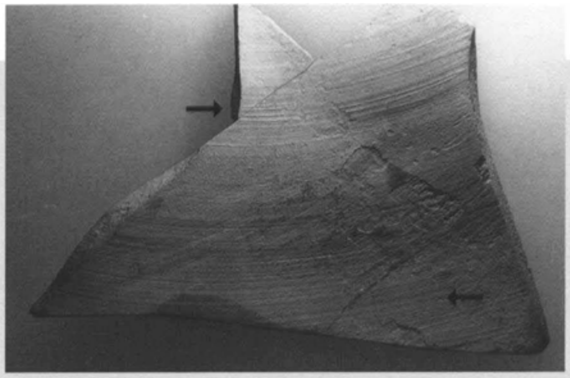


FIG. 23.4

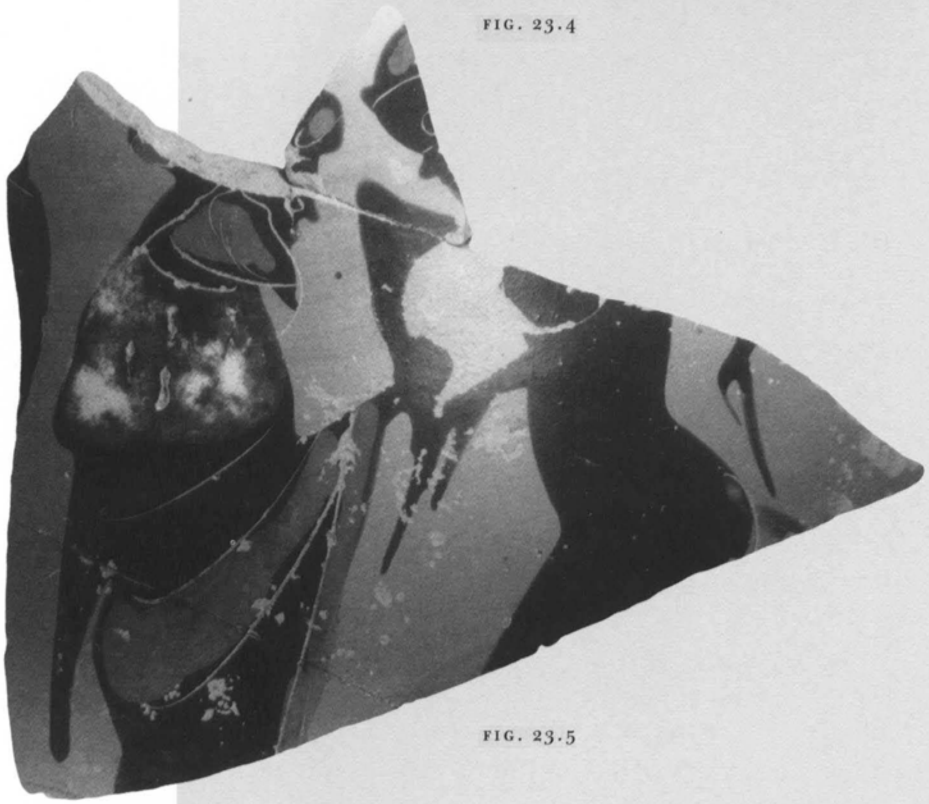


FIG. 23.5

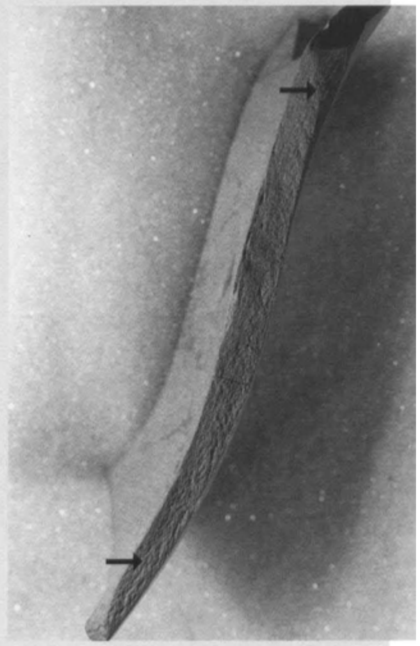
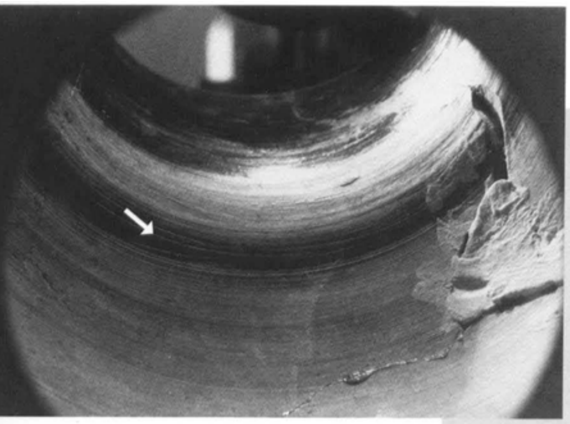
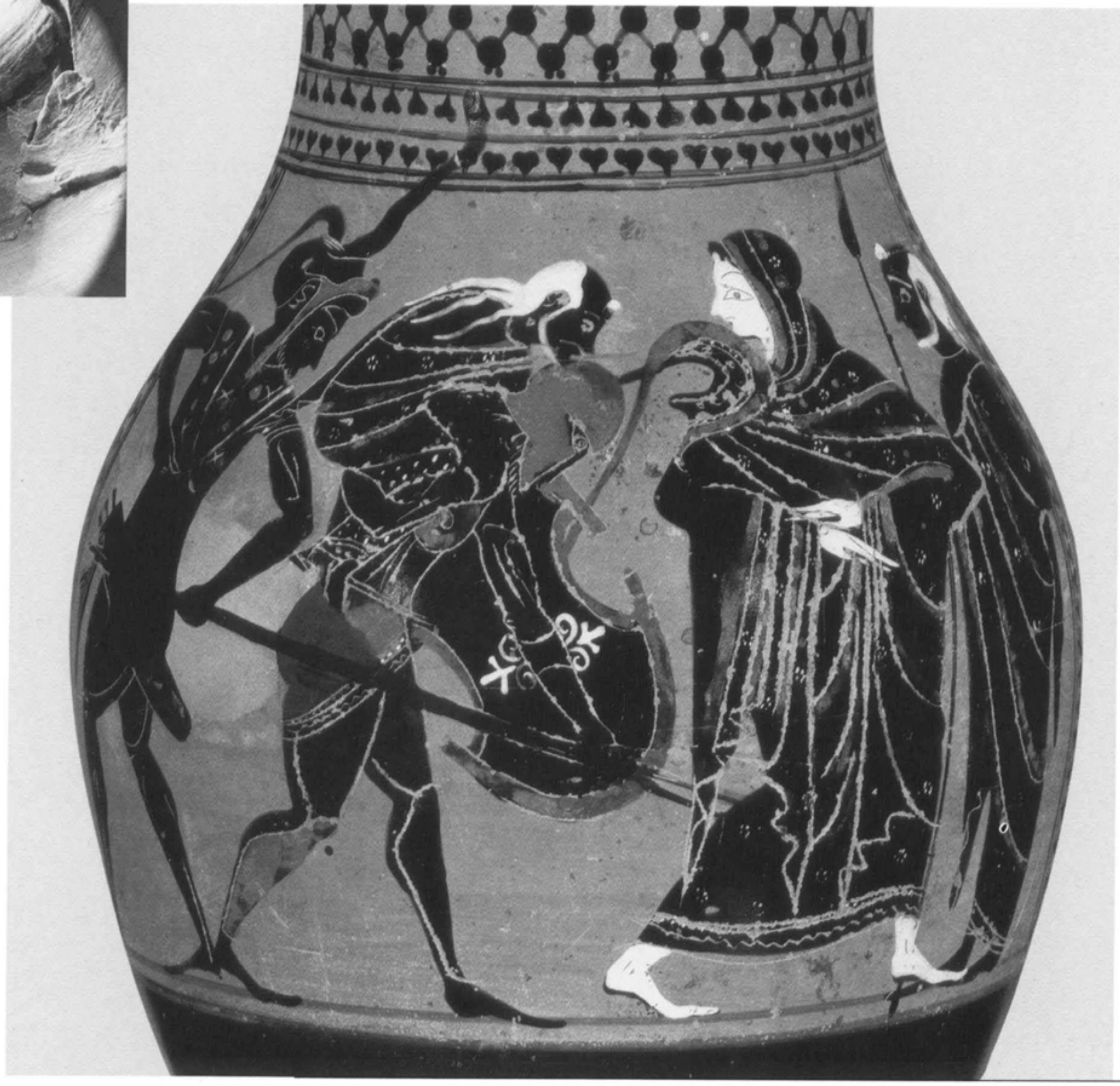


FIG. 23.6

FIGS. 23.4–6 [.4] *Inside of olpe fragment with sequence of throwing striations from body (right arrow) through shoulder and up into neck (left arrow) on inside.* [.5] *Outside.* [.6] *Cross-section shows gradual thickening of clay wall from body (bottom arrow) into shoulder and neck (top arrow).*





FIGS. 23.7–8 [.7] *Bulge at shoulder/neck join (arrow) viewed in mirror placed on floor of olpe.* [.8] *Join is invisible on outside of vase.*

cylinder for the sake of stability and because of the natural tendency of the clay to submit to gravity.

The potter used calipers to match the diameter of the bottom of the neck to that of the previously thrown body. When the neck was placed on top of the body section, the slight thickening at the base of the neck showed as a bulge on the inside of the neck with an undercut on the lower side of the bulge. The bulge remained unless the potter trimmed it out. Since the Greeks did not finish the interiors of their olpai, the potter made no great effort to eradicate the bulge, even though the neck opening was large enough (before drying and firing caused shrinkage) for the potter to insert his hand with relative ease. In a partially intact olpe with a portion of the vase missing the join can be viewed through the "window" created by the missing part (FIGS. 23.9–11). The body wall is only 2 mm thick, while the lower part of the neck wall is 4.75 mm (see FIG. 23.11), and originally even thicker, for the inside of the lower neck wall has been scraped with a knifelike tool or a scraper to thin it. A second slight bulge rings this jug just under that of the neck/shoulder join (see FIG. 23.9). It is the result of the potter having left the top edge of the body section thicker for better support in receiving the neck. The potter joined the two sections with slip and smoothed the join. A slight indentation encircles the olpe on the outside painted surface, corresponding to the join bulge on the inside (FIG. 23.12).[5] On two intact olpai in the Getty Museum the join can be seen also on a portion of the outside surface. In figure 23.13 there is a narrow swelling just above the lower handle attachment that runs into an indentation encircling half the vase. In a second olpe (FIG. 23.14), a faint horizontal indent can be noted for 4 or 5 cm in the join area to the left of the shoulder of the male figure in the picture zone. It is opposite an indent on the inside at the end of the glossed neck area. On the interior of an olpe sherd in figures 23.15 and 16 the potter left a thickened top edge of the body section and scraped away the lower part of the

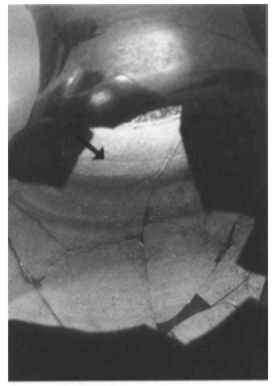


FIG. 23.9

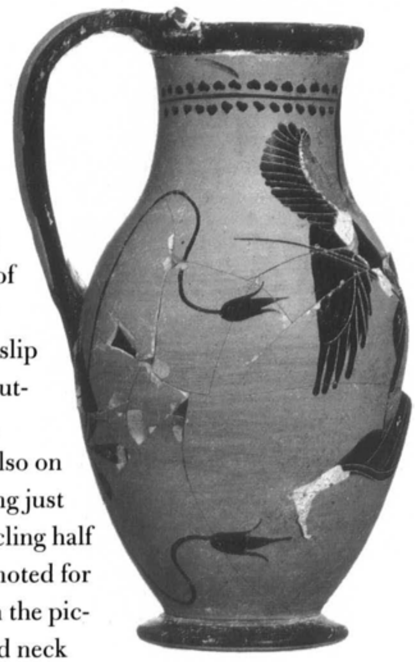


FIG. 23.10

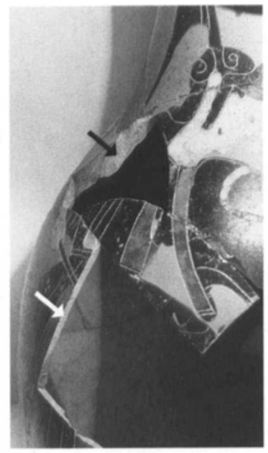


FIG. 23.11

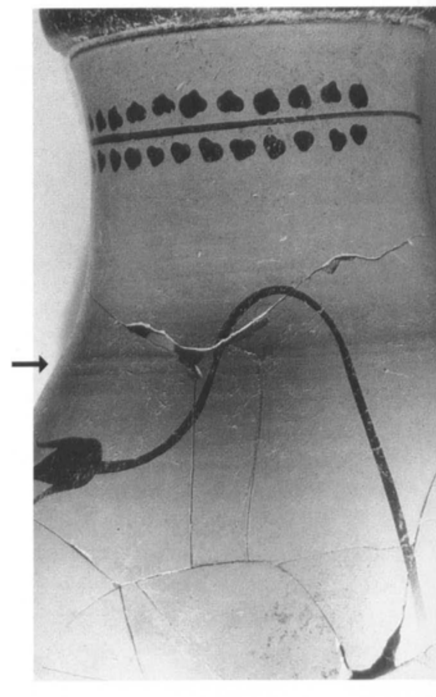


FIG. 23.12

FIGS. 23.9–12 [.9] *Join of neck to shoulder seen through missing wall of olpe. Knife marks visible on lower neck (arrow) indicate clay has been removed to thin neck.* [.10] *Outside.* [.11] *Body wall (white arrow) is 2 mm thick while that of neck (black arrow) is 4.75 mm.* [.12] *Join of neck to body left slight indentation (arrow) on outside.*

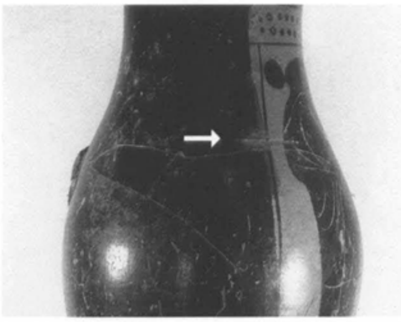


FIG. 23.13

FIG. 23.14

FIG. 23.15

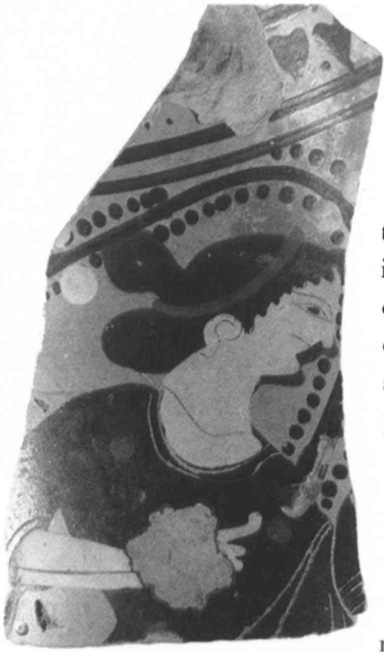


FIG. 23.16

neck below the gloss line, leaving only a small portion of the neck bulge. On another fragment (FIGS. 23.17–18) the bulge is more prominent. No indication of the join is visible on the outside of either of these fragments.

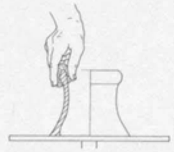
OLPE IN SECTIONS

The potter threw an olpe with a low handle and round mouth (shape 5B) in two sections,[6] first making the body by opening a centered ball of clay with his thumbs, making a concave floor. He drew up a narrow cylinder no wider than that required to admit his hand and pushed the clay outward with his fingers, giving shape to the body while leaving extra clay at the base to contour the foot. He left a thickened rim at the top to receive the neck (*ill. 23c*), then cut this section off the wheel and set it aside.

To make the neck/mouth, the potter opened a smaller centered ball of clay clear down to the wheel head, forming a doughnut shape, the outside dimension matching that of the outside of the top of the body of the olpe. He pulled up a cylinder, slanting it somewhat inward, shaped the neck, and formed the mouth. Round-mouthed olpai have a thickened lip that varies in shape—torus, plain, echinus, ogival, or flaring (FIG. 23.19). Flat-surfaced rims are made by holding a stiffened index finger on top of the mouth of the pot, which is supported between the thumb and index finger of the other hand; arched rims are made by holding a soft leather or sponge over the rim as the wheel revolves (*ill. 23d*). The potter cut the neck off the wheel head and luted it to the body, which he had re-centered on the wheel. Unlike the narrow-necked lekythos, where the potter could not reach down into the neck to conceal or smooth the join, the olpe has a mouth wide enough for him to do so.[7] When the join was smoothed inside, he may have scraped off any excess clay at the base of the neck (*ill. 23e*).

The potter shaped the top of the broad torus foot with a scraper or loop tool, creating a sharp angle at the body/foot junction (*ill. 23f*). He turned

ill. 23c



ill. 23d

ill. 23e

ill. 23f

FIG. 23.13 *Indentation at join (arrow) encircles half the vase.*

FIG. 23.14 *Indented line on exterior indicates join of neck to shoulder (arrow).*

FIGS. 23.15–16 [.15] *The potter scraped off wide area of clay just below gloss inside neck to thin it (arrow).* [.16] *Outside. No evidence of join.*

ill. 23g

ill. 23h

ill. 23i

the olpe upside down and thinned the walls if it were needed. In the example in figure 23.20 the potter turned the outer wall to a thickness of just 2 mm. A potter can check on the wall thickness during turning by tapping the clay wall with a finger and listening to the sound (*ill. 23g*). This percussion technique was most likely known to Attic potters. The potter shaped the underside of the foot with a tool (*ill. 23h*). Like lekythoi, some olpai sit on the narrow standing surface that remains after the potter has angled the underside upward toward the ceiling of the foot. Some potters left a generous standing surface before hollowing out the underside of the foot (see FIG. 6.23). Potters generally followed the contour of the floor of the jug in carving out the ceiling of the foot. This procedure occasionally led to the potter cutting far up into the ceiling, which could result in a very thin floor.[8]

The handle was added after the potter had applied miltos and burnished the vessel. Olpe and oinochoe handles were made in a variety of shapes. Most handles were pulled and were given a round (see FIG. 23.36), concave (FIG. 23.21), or center-ribbed shape (see FIG. 23.37).[9] Some were hand rolled (FIGS. 23.22–23). Whatever the handle type, the potter bent it to shape, set it aside to become fairly firm, cut the ends to fit the vase, and attached it with slip, sometimes adding hand-molded lateral extensions along the rim (*ill. 23i*).

Chous (Shape 3)

The chous is a squat, bulbous oinochoe with a continuous curve from mouth to foot, trefoil mouth (although examples of round-mouthed choes exist), a low handle, and a broad ring foot. The body of the chous ranges in height from about 18 cm to 24 cm. Diminutive forms with childhood scenes of mirth and play have been found in large numbers in the graves of children. The chous was closely associated with the second day of the Anthesteria, the festival celebrated in Athens on the 11th, 12th, and 13th of the month Anthesterion.[10] The chous was used both as a pitcher and as a drinking vessel, and it may have been used as a measure.[11] The invention of the shape, which may have been derived from the Attic olpe,

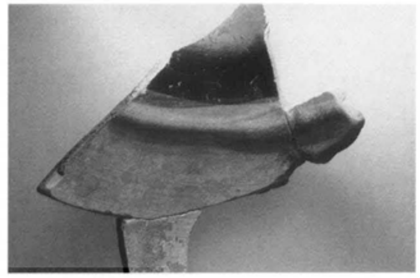


FIG. 23.17

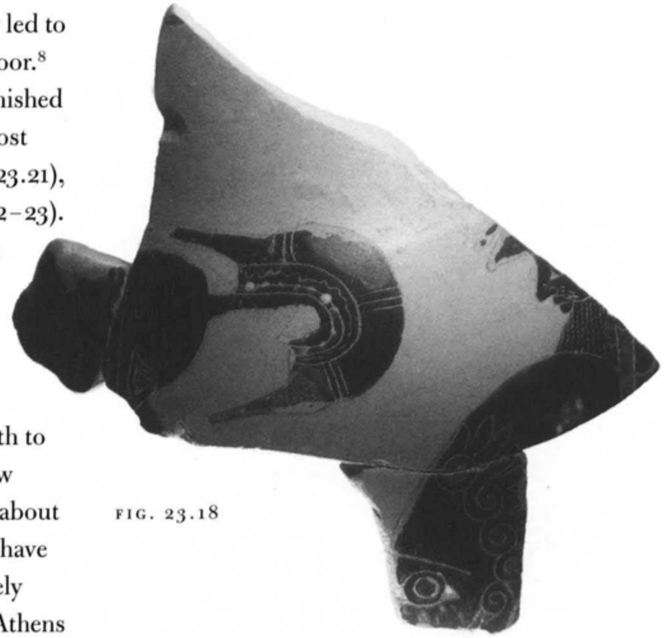


FIG. 23.18

FIGS. 23.17–18 [.17] *Join bulge just below gloss line inside neck.* [.18] *Outside. No evidence of join.*

FIG. 23.19

FIG. 23.19 *Various olpe lip shapes seen in cross-section.*

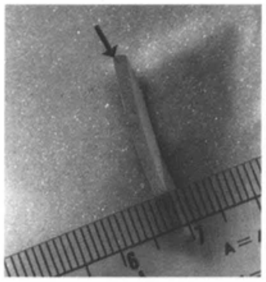


FIG. 23.20

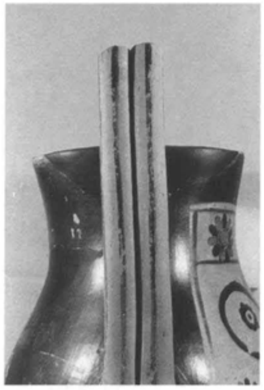


FIG. 23.22

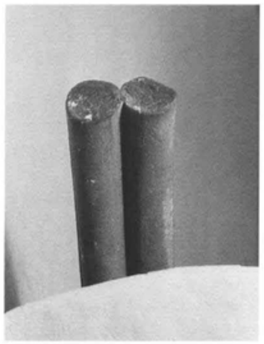


FIG. 23.23

FIG. 23.21

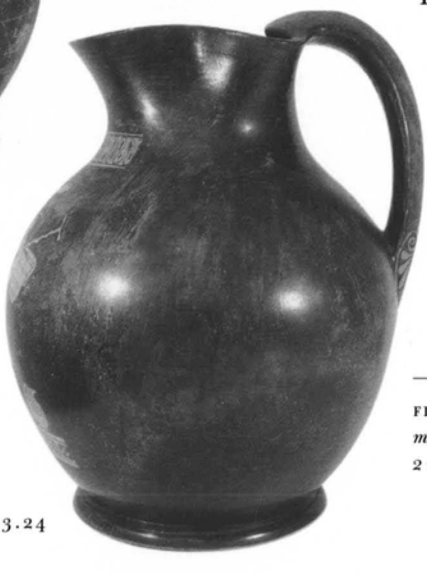


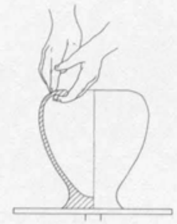
FIG. 23.24

can fairly safely be attributed to Amasis the potter in about 560 B.C.[12] It remained a popular form through most of the fifth century.

Potters created the standard-size chous in much the same way as they did olpai that were thrown in two sections, except for giving the body a more bulbous shape. Diminutive forms were thrown in one piece. The foot has a sturdy standing area, only slightly cut upward on the underside, with the ceiling of the foot following the contour of the inside bottom shape. The handle is usually center-ribbed. The top of the handle of later choes jutted into the mouth and served as a thumb rest (FIG. 23.24).[13]

Oinochoai with Offset Neck (Shapes 1 and 2)

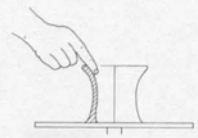
Compared to the olpe, the oinochoe with offset neck (here called oinochoe) has a more generous body, an offset neck with either a trefoil or round mouth, and sometimes a more pronounced foot than found in the olpe and chous. It has either a high handle (shape 1) or a low one (shape 2). The oinochoe is found in Attic pottery from the mid-sixth into the fourth century B.C.[14] Even the smallest of this type of oinochoe was thrown in two sections, the foot/body/shoulder in one and the neck/mouth in another.[15]



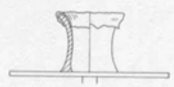
ill. 23j

BODY/NECK

To create an oinochoe body with an offset neck, trefoil mouth, and high handle, the potter opened a ball of clay, shaped the floor with his thumbs while squeezing inward with his fingers to form a rough foot, then pulled up a narrow cylinder. He pushed the cylinder walls out to form a generous body shape, leaving a thickened top edge, the better to receive the neck section (*ill. 23j*; FIG. 23.25). He cut the body off the wheel and set it aside. From a smaller ball of clay he formed the neck/mouth section by opening the centered clay, pushing his thumbs all the way down to the wheel head, then outward, creating a bottomless ring, or doughnut, shape. From this ring he raised a small cylinder



ill. 23k



ill. 23l

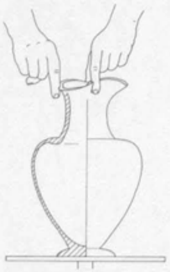
FIG. 23.20 *Wall of this fragment (arrow) was turned to just 2 mm in thickness.*

FIG. 23.21 *Concave handle.*

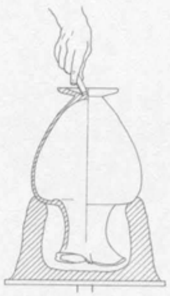
FIGS. 23.22–23 [.22] *Hand-rolled double handle.* [.23] *Cross-section.*

FIG. 23.24 *Chous. Center-ribbed handle juts into opening of trefoil mouth to form a thumb rest.*

ill. 23m



ill. 23n



ill. 23o

wide enough for his hand to fit comfortably inside. He matched the outside neck measurement to that of the shoulder, then shaped the neck. The mouth was flared outward with a finger pressing gently on the inside edge (*ill. 23k*). The potter cut the neck section off the wheel and set it aside. To keep the mouth area soft, he would have wrapped it with a damp cloth (*ill. 23l*).

JOINING/TRIMMING

In joining the two sections, the potter placed the neck on top of the slip-coated shoulder. The neck opening of oinochoai, though not as wide as that for olpai, is wide enough to allow the potter to insert his hand and extend a few fingers under the shoulder to effect a fairly smooth join (*ill. 23m*). For this reason the join in olpai and oinochoai is not as noticeable as in lekythoi (FIGS. 23.26–35).

While the clay was still moldable, the potter made the trefoil mouth. He squeezed the mouth in toward the center at three points, forming three loops of the mouth, the one forming the pouring spout usually being the smallest (*ill. 23n*). Some oinochoai have a rounded rim (FIG. 23.36), others have been flattened, the potter rounding the cusps (FIG. 23.37).

While the oinochoe was still in an upright position, the potter trimmed excess clay from the lower body and fashioned the top of the foot. He also turned the body, thinning the walls and eradicating any join marks at the neck before inverting the jug and placing it in a chuck. (The shape of the trefoil mouth would make it impossible to set the overturned vase on its rim for turning.) The potter secured the vase to the chuck and turned the underside of the foot, generally following the profile of the floor in creating the ceiling of the foot (*ill. 23o*). He applied miltos and burnished the vase before attaching the handle, which was added last.

HANDLE

Potters pulled the handles of oinochoai in a variety of shapes similar to those found on olpai. To form a high handle, he bent it to size, cut it to size, and laid

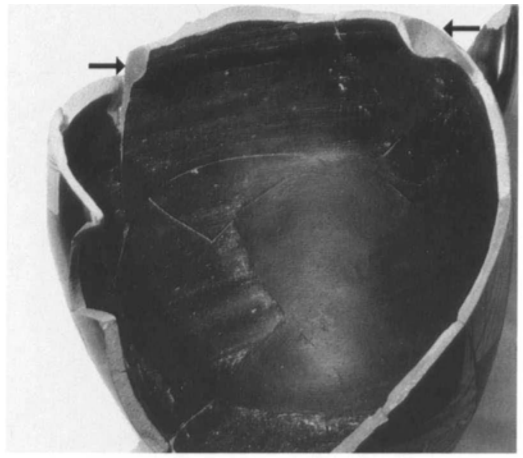


FIG. 23.25

FIG. 23.26

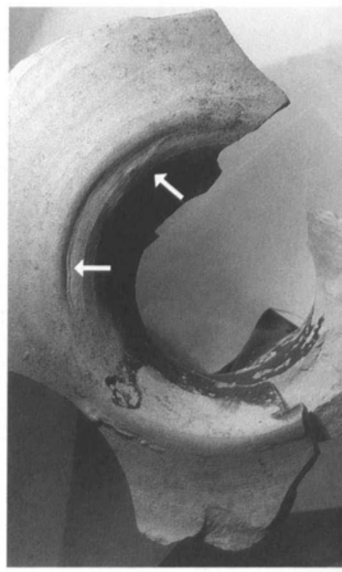


FIG. 23.27

FIG. 23.25 *Thickening at shoulder (arrows) indicates join.*

FIGS. 23.26–27 [.26] *Underside of neck/shoulder join looking obliquely upward. Neck was placed on top of thickened oinochoe shoulder (left arrow) and sealed with slip. Join was not completely blended into shoulder to left of gloss dribble (right arrow).* [.27] *Underside. Slip ooze (arrows) is visible in incomplete blending of join next to gloss dribbles.*

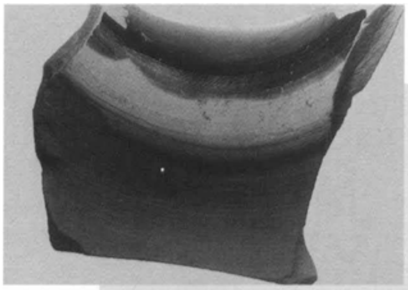


FIG. 23.28

FIG. 23.31

FIG. 23.29

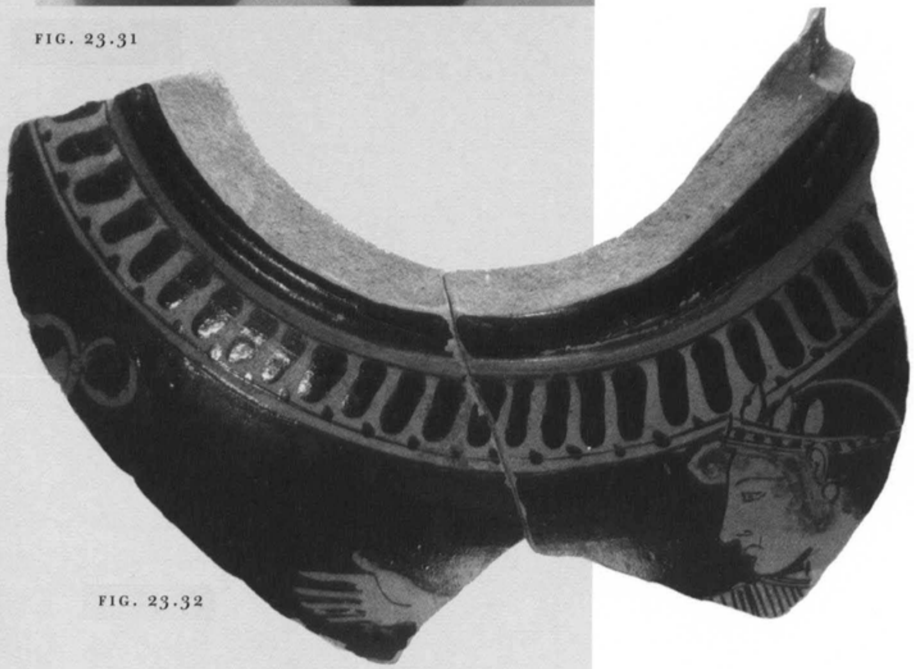


FIG. 23.32

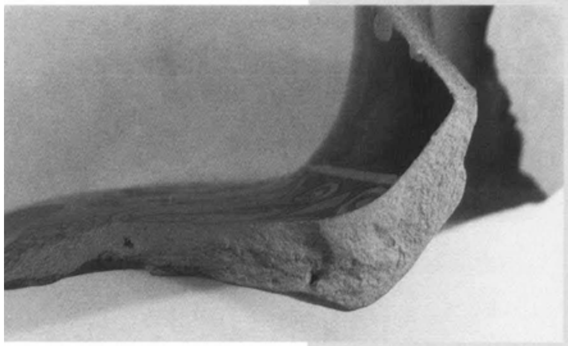


FIG. 23.30

FIG. 23.33

FIGS. 23.28–30 [.28] *Underside of neck/shoulder join. Neck has been blended smoothly into thickened shoulder.* [.29] *Outside.* [.30] *Cross-section.*

FIGS. 23.31–33 [.31] *Underside of neck/shoulder join. Neck clay was not completely blended into shoulder clay (arrows).* [.32]*Outside.* [.33] *Cross-section.*

FIG. 23.34

it aside to firm up. When firm, the handle was rooted to the mouth at the cusp opposite the pouring spout and secured to the shoulder (*ill. 23p*). The potter may have added hand-molded lateral extensions. The vase was then passed on to the vase-painter.

Beak-mouthed Oinochoai (Shapes 6, 7, and 10)

The bodies of shapes 6, 7, and 10 oinochoai—the beak-mouthed form—were created in the same manner as shapes 1 and 2 oinochoai, except that shapes 6 and 7 are footless. The neck/mouth is also formed in the same way as for shapes 1 and 2. However, instead of drawing the flaring mouth inward to form the trefoil shape, the potter left it rounded. When it was somewhat firm, he cut away a generous portion, leaving just the wide "beak" as a pouring spout (*ill. 23q*). The high (shape 10) or low (shapes 6 and 7) handle was rooted to the cut portion of the neck and secured to the shoulder.

ill. 23p

ill. 23q

FIG. 23.35

FIG. 23.36

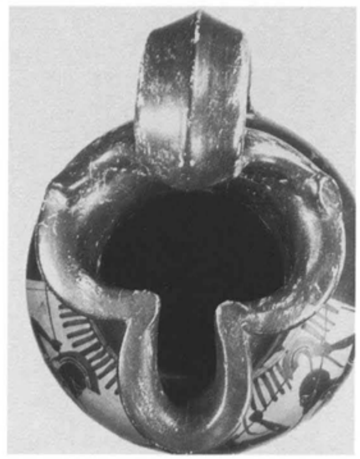


FIG. 23.37

FIGS. 23.34–35 [.34] *Neck has been placed atop thickened shoulder (viewed through missing section of body).* [.35] *Outside.*

FIG. 23.36 *Rounded mouth drawn inward at three places to facilitate pouring from front or sides; round handle.*

FIG. 23.37 *Flattened trefoil mouth with rounded cusps; center-ribbed handle.*

24. Pelike

The typical pelike [1] has a prominent torus lip, a moderate-sized neck that flows in a continuous curve down to a sagging body, maximum diameter below the midline, and a spreading foot with a torus edge. A pair of sturdy, vertically oriented handles are located on opposite sides, rooted at the neck and attached to the body at shoulder level. Pelikai range in height from about 16 cm to 38 cm.[2] They have been identified variously as wine,[3] oil,[4] or water storage containers.[5] The pelike made its appearance during the early red-figure period, at the end of the sixth century, and continued to be potted through the fourth century B.C.[6]

As with the olpe, the shape of the pelike lends itself to being thrown entirely from one piece of clay because it is a continuous-curve vessel (except for a very few neck-pelikai) with a low ring foot. However, for each pelike that has uninterrupted interior construction grooves and striation lines, thus appearing indeed to have been thrown from a single lump of clay, there are many more that have a bulge on the inside at the neck/shoulder area indicating that they have been thrown in two sections—foot/body and neck/mouth.[7] A pelike that appears to have been thrown from a single lump of clay has an inner profile that is smooth and continuous, or almost so, from the floor of the vessel up to its mouth, and there is no bulge indicating a join (FIGS. 24.1–5). Such a vase actually could have been thrown in two sections. Through the ample mouth opening the potter could have smoothed a join bulge with a knife or with his fingers and then sponged the interior to obliterate all, or almost all, signs of a join (see FIGS. 24.14–15). When a bulge does appear, it is an indication that the body was thrown in two sections and joined (FIGS. 24.6–16). The neck section usually is noticeably thicker than the body, even in vases that appear to have been thrown in one piece. The potter would want the neck of his pelike to be relatively thick, for this is the area of attachment for the pair of large, sturdy handles, the attachment covering the greater part of the length of the

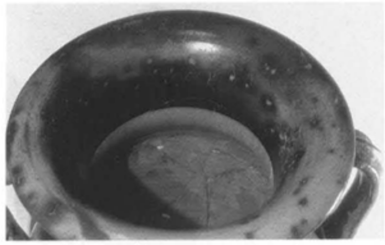


FIG. 24.1

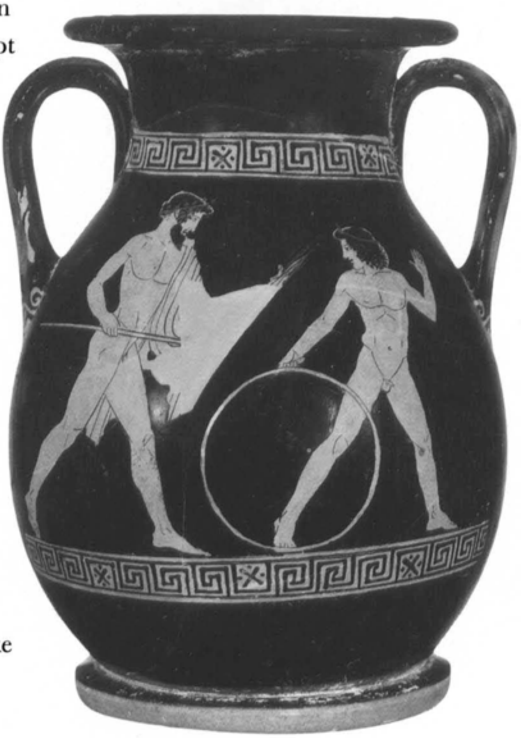


FIG. 24.2

PLATE XVIII
Pelike, front and side

FIGS. 24.1–2 [.1] *Interior of pelike at neck, shoulder, and belly area shows smooth, continuous profile, consistent with vase having been thrown from one lump of clay.* [.2] *Outside.*

FIG. 24.3

FIG. 24.5

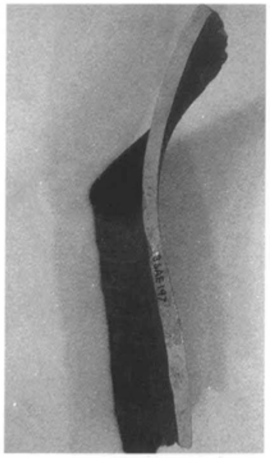


FIG. 24.4

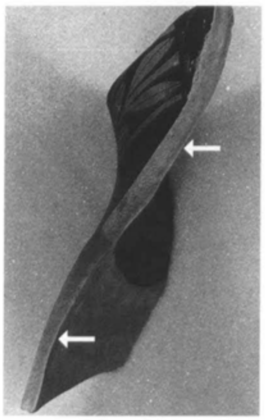
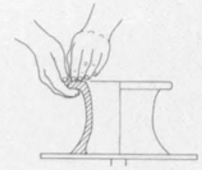


FIG. 24.6

neck. A thin-walled neck would be more likely to break when the big handles were attached.

The pelike has a thick, overhanging lip. If the potter threw a large pelike from one lump of clay, he would have to judge carefully the size and shape of his vase in order to have adequate clay remaining at the top of the cylinder to form the lip. He would also have to make sure the clay was not so wet as to droop when he angled it outward in forming the lip. He could not make the body very thin, or the vase would collapse as he formed the neck and generous lip. For these reasons it would be easier for the potter to create a large pelike in two sections and thus avoid the problems encountered in attempting to throw the vase from a single lump of clay.

ill. 24a



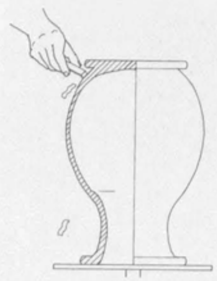
ill. 24b

Pelike in Sections

To create a pelike in two sections, the potter opened a ball of clay with his thumbs, leaving adequate clay from which to form the low foot during the turning process. He spread his thumbs apart to create the floor, then pulled up a cylinder about as wide as the proposed neck opening. He bellied out the cylinder, leaving a slightly thickened rim at the shoulder (*ill. 24a*). Setting this section aside, he pulled up a smaller, hollow-bottomed cylinder, carefully matching the outside diameter to that of the outside diameter of the shoulder opening in the body. From the smaller cylinder, the potter shaped the neck and terminated it in a protruding lip (*ill. 24b*). He joined these sections with slip, smoothing the join on the outside but leaving a bulge on the inside (*ill. 24c*). In pulling up any cylinder (hollow-bottomed or not), the potter tends to leave the clay thicker near the wheel head. This thickened portion nearer the wheel head causes the bulge to appear on the inside of the vase when the neck is joined to the body. Since the bulge is on the inside and not seen, Greek potters tended not to eradicate it.

FIG. 24.7

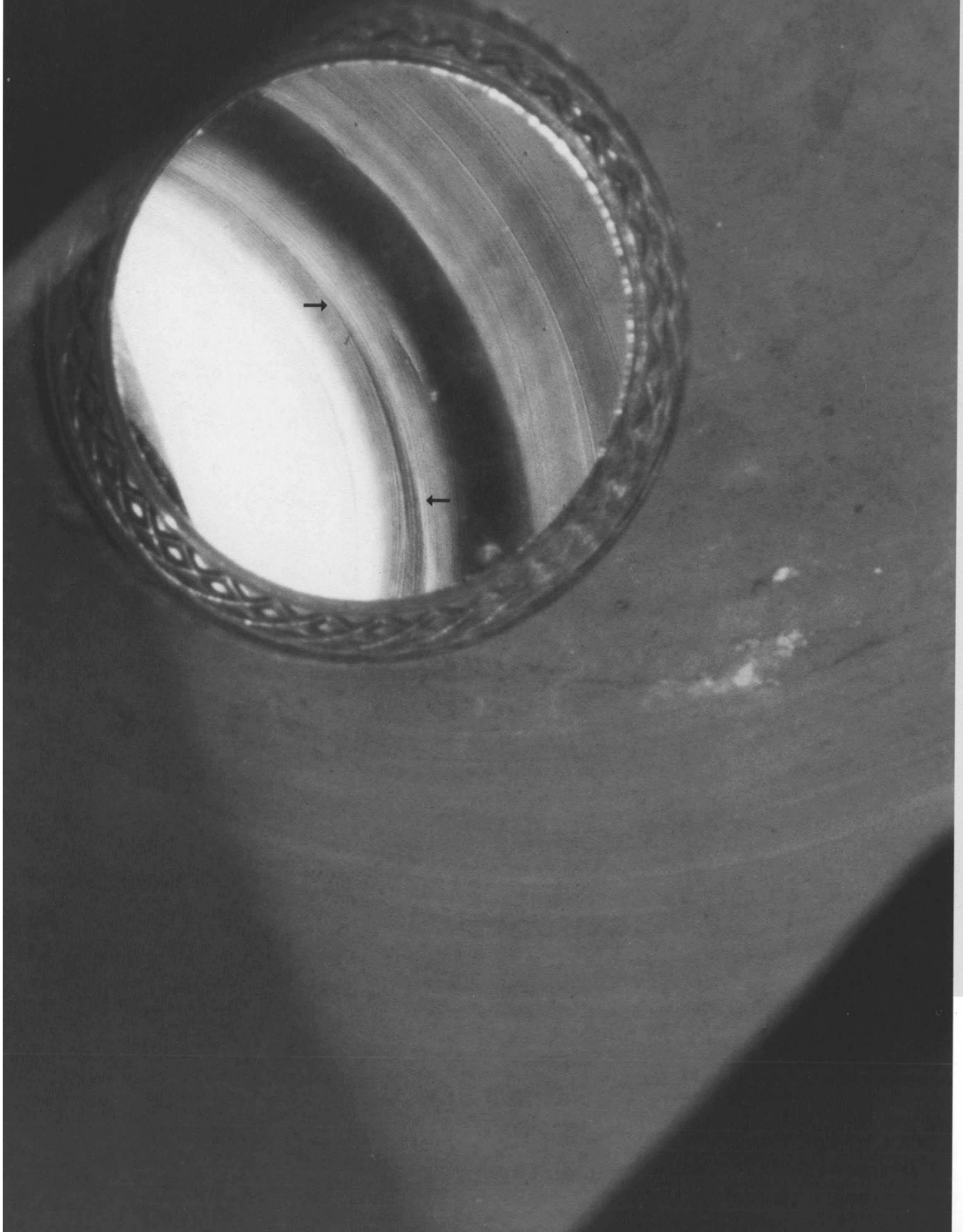
ill. 24c



ill. 24d

FIGS. 24.3–5 [.3] *Inside of pelike shoulder/neck fragment. Transition from body to neck is smooth and continuous.* [.4] *Cross-section showing little change in clay thickness, consistent with no join and with construction from a single ball of clay.* [.5] *Outside.*

FIGS. 24.6–7 *Shoulder/neck fragment thrown in two sections.* [.6] *Cross-section. Neck/shoulder area above slight inner bulge (top arrow) is a bit thicker than that of shoulder (bottom arrow).* [.7] *Outside. Narrow band is opposite inside bulge (arrows).*



FIGS. 24.8–9 [.8] *Bulge of neck section (top arrow) overlaps thickened shoulder at join (bottom arrow), viewed in mirror placed on floor of vase.* [.9] *Outside.*

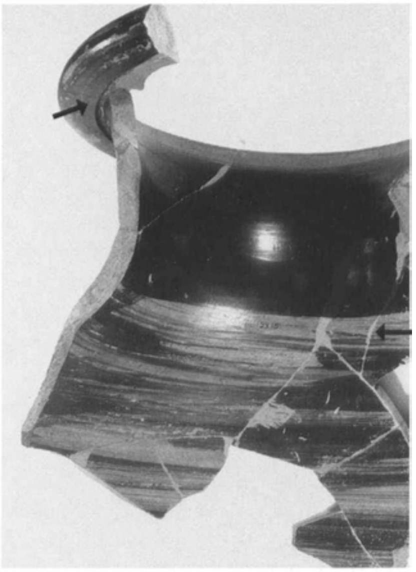


FIG. 24.10

FIG. 24.11

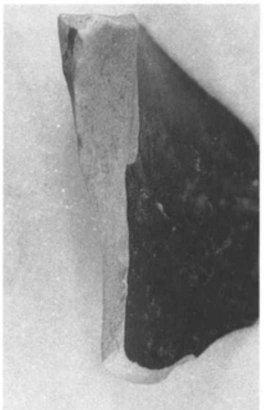


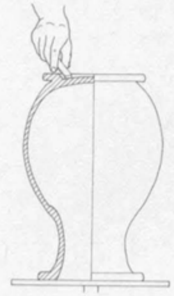
FIG. 24.12

When the joined vase was leather-hard, the potter placed it back onto the wheel in an inverted position for turning. He shaved excess clay off the lower part of the pelike, forming a low torus foot in the process (*ill. 24d*). He then removed clay from the underside of the foot with a tool, giving the ceiling of the foot a rounded shape that follows the contour of the floor of the vase (*ill. 24e*). He sharply defined the underside of the lip where it joined the neck, his tool sometimes undercutting the lip (see FIG. 24.10). The potter righted the vase and gave the top of the foot its final shape, usually concave (*ill. 24f*).

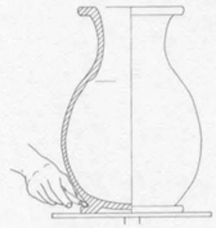
A pair of large, round, center-ridged or oval handles were pulled by the potter, bent, and cut to size. When they firmed up, they were rooted to the neck and attached on opposite sides to the shoulder with slip to complete the pelike (*ill. 24g*). The vase was then ready to be decorated.

Pelike in One Piece

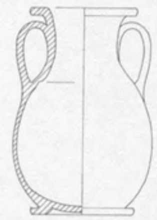
A small pelike may have been created in one section from a single ball of clay, in which case the potter would have pulled up a cylinder as wide as the proposed mouth opening. He would have reached down into the cylinder, bellied out the body, thinning the clay wall in the process, and gradually inclined the wall inward to form the neck and lip from clay remaining at the top of the cylinder. The foot and handles would have been created in a manner similar to that described above.



ill. 24e



ill. 24f



ill. 24g

FIG. 24.10 *Interior of pelike fragment showing thickening at join of neck to body (right arrow). Vase was thrown in two pieces. Carefully turned underside of lip (left arrow) shows an undercut.*

FIGS. 24.11–12 [.11] *Considerable thickening at shoulder area indicates vessel has been thrown in two sections and joined at shoulder.* [.12] *Cross-section. Body clay is 5 mm thick, while neck clay is 10 mm thick.*

FIG. 24.13

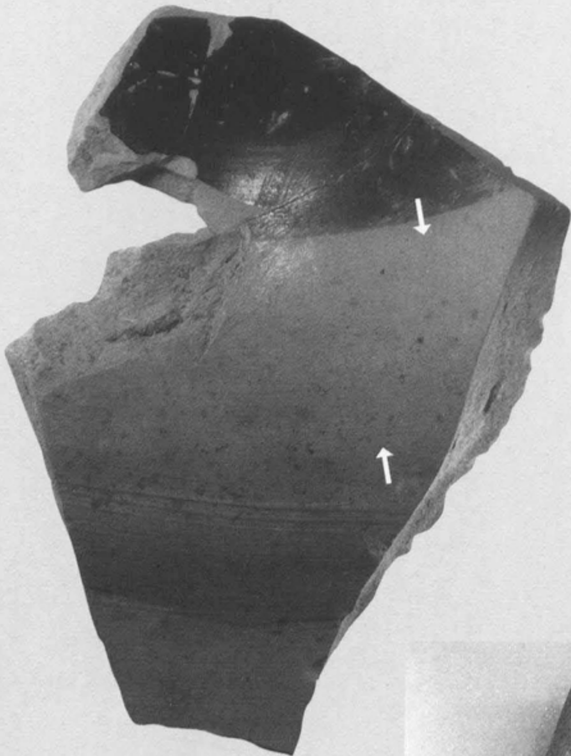


FIG. 24.15

FIG. 24.14

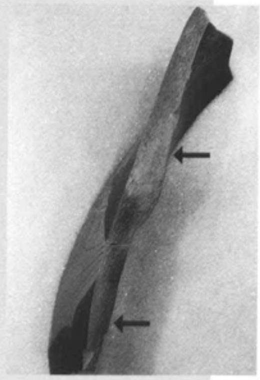
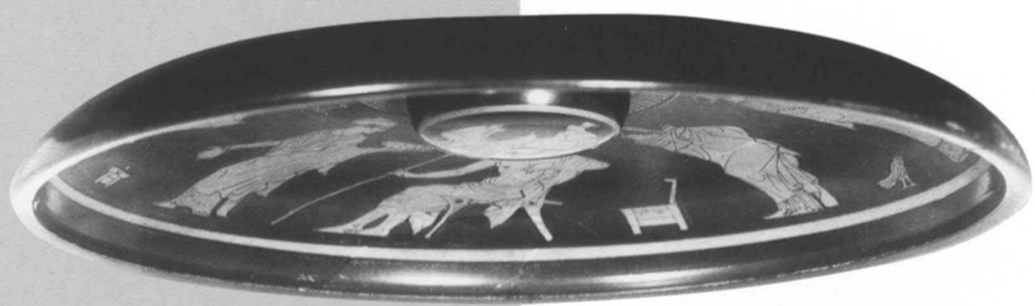


FIG. 24.16

FIG. 24.13 *Outside of same fragment.*

FIGS. 24.14–15 *Vase thrown in two sections.* [.14] *Cross-section. Shoulder is 4 mm thick, while neck is 8 mm.* [.15] *Inside. An area about 2 cm wide just below gloss was originally even thicker (between arrows). It has been shaved down with a knife.*

FIG. 24.16 *Pelike neck/shoulder fragment with neck clay (top arrow) thicker than shoulder (bottom arrow).*



25. Phiale

The phiale is a broad, shallow plate with upturned edges. It has neither handle nor foot but often a hollow boss, called an omphalos, emerging in the center. Such a vessel is called a phiale mesomphalos,[1] the omphalos allowing the bearer a place in which to insert his middle finger on the underside of the plate as his thumb is hooked over the plate edge. The phiale is rarely larger than 25 cm in diameter.[2] It was used primarily for pouring libations,[3] although it is known also to have served as a drinking vessel.[4] Phialai appeared in Athens shortly after the beginning of the sixth century B.C.[5] They were made of metal more often than of clay.[6]

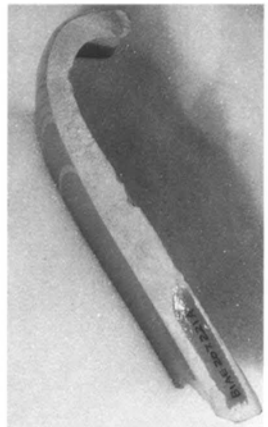
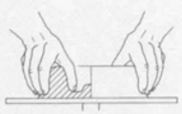


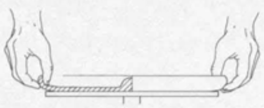
FIG. 25.1

Phiale in One Piece

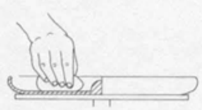
In creating a typical ceramic phiale mesomphalos, the omphalos and plate were made in one procedure. The evidence indicates that larger phialai mesomphaloi were made in two parts, the omphalos being created separately from the plate.



ill. 25a



ill. 25b



ill. 25c

To throw a phiale mesomphalos in one procedure, the potter centered a ball of clay on the wheel and opened it by pushing his thumbs down into the clay only part way to the wheel head. He spread his thumbs sideways then downward, leaving a rounded mound of clay in the center for the omphalos (*ill. 25a*). He pulled the remaining clay outward with his thumbs to form the floor, and then upward with the thumb and finger of his right hand above the height of the omphalos to form the edge of the plate (*ill. 25b*; FIGS. 25.1–2). He smoothed the floor with a flat-sided rib (*ill. 25c*) and sponged the rounded top of the omphalos (FIG. 25.3). He may have made one or two incised, circular lines around the base of the omphalos before cutting the phiale off the wheel to firm up. The potter then inverted the firm phiale onto the wheel. He rested the top of the omphalos on a little wad of clay so the phiale would not sink in the center as he hollowed

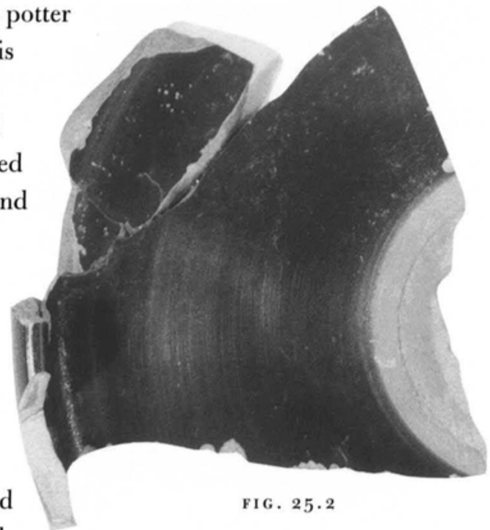


FIG. 25.2

PLATE XIX
Phiale, top view and interior

FIGS. 25.1–2 [.1] *Cross-section of phiale fragment.* [.2] *Inside.*

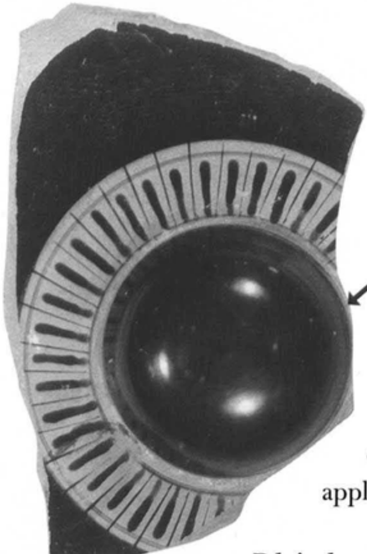


FIG. 25.3

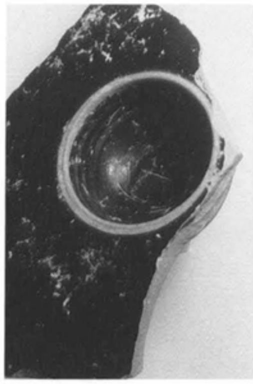
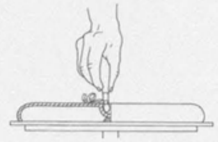


FIG. 25.4

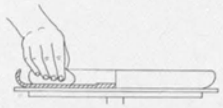
out the underside of the omphalos with a loop-type tool (*ill. 25d*; FIGS. 25.4–5). With each rotation of the wheel he removed a small circle of clay until the omphalos was the same thickness as the rest of the phiale. The phiale needed only gentle sponging prior to the application of miltos and burnishing.



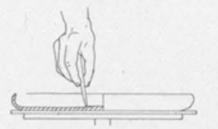
ill. 25d

Phiale in Sections

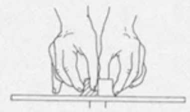
To throw the omphalos separate from the plate, as was done for an unusually large red-figured phiale decorated by Douris in the Getty Museum (FIGS. 25.6–7),[7] the potter first created a flat plate in the above manner leaving off the omphalos. Using a rib to flatten and smooth the floor of the plate, the potter of the Douris phiale left a raised portion about 13 cm in diameter across the center of the floor (*ill. 25e*). He cut several, narrow, U-shaped grooves in that raised portion (*ill. 25f*), possibly as a guideline for cutting out a circle of clay for the omphalos (FIG. 25.8). He then threw the omphalos separately and upside down, as one would in making a tiny, straight-sided bowl (*ill. 25g*). In the Douris example the inside edge of the omphalos slants inward following the natural curve of the thumb that formed the hollow (FIG. 25.9). The potter inverted the omphalos when it was firm and turned it, rounding out the top side (see FIG. 25.6). With slip, he secured it to the center of the floor of the plate just inside the pair of guideline grooves (*ill. 25h*; FIG. 25.10). He then turned the plate upside down, placing a small wad of clay on the top of the omphalos for stability while carefully cutting a hole in the phiale floor to expose the underside of the omphalos (*ill. 25i*). The Douris omphalos wall is almost twice as thick as the plate (FIG. 25.11),[8] and there is a slight bulge circling the top side of the omphalos at the join (FIG. 25.12). The potter smoothed the top-side join and laid the phiale aside to firm up. When it reached the leather-hard stage, he applied miltos and burnished the plate inside and out in preparation for the vase-painter.



ill. 25e

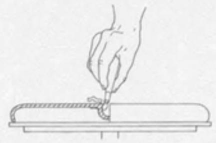


ill. 25f



ill. 25g

ill. 25h



ill. 25i

FIG. 25.6

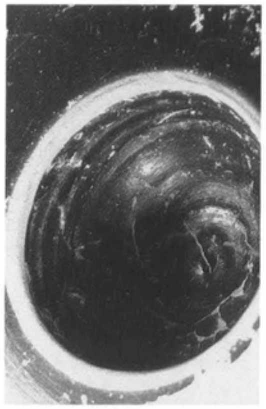


FIG. 25.5

FIG. 25.7

FIGS. 25.3–5 [.3] *Smoothly sponged omphalos (arrow).* [.4] *Underside of omphalos. The potter used a loop tool to hollow out omphalos, leaving tool marks unsponged.* [.5] *Close-up of underside of omphalos.*

FIGS. 25.6–7 [.6] *Inside of very large phiale.* [.7] *Outside.*

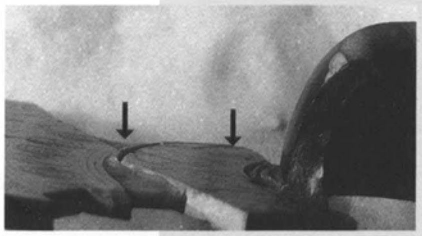


FIG. 25.8

FIG. 25.9

FIG. 25.10

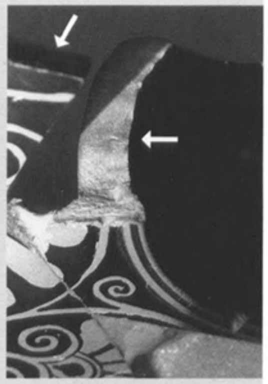


FIG. 25.11

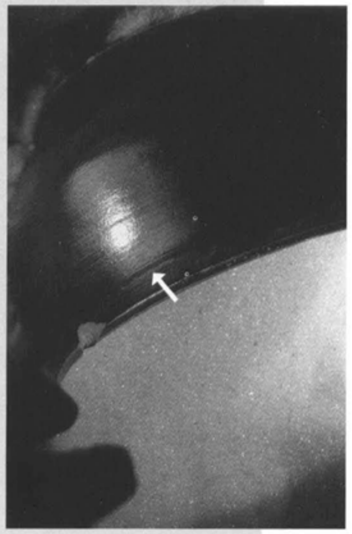


FIG. 25.12

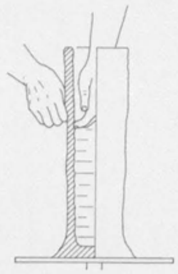
FIGS. 25.8–12 [.8] *Inside. Grooves carved into raised portion of phiale floor (arrows).* [.9] *Omphalos was thrown separately. Inside edge slants inward following natural curve of the potter's thumb (arrow).* [.10] *Residual slip (arrow) remains at join of omphalos and plate.* [.11] *Omphalos (right arrow) is about twice as thick as plate (left arrow). View from outside.* [.12] *Slight bulge encircles top side of omphalos at join (arrow).*

26. Psykter

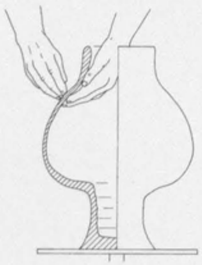
The psykter is a mushroom-shaped vessel. Two types of psykters are known. One has loop or tubular handles through which a cord can be passed to help lift the vase.[1] This type is usually lidded with a flange below the lip over which the cap lid fits. It has a two-degree foot with the upper member stepped. The second type, the psykter without handles or lid, has a sturdy torus foot and a short neck (glossed inside) with a lip that was given a variety of shapes: torus, in two degrees, or overhanging. The vase stands about 30 cm in height.

The psykter is a wine cooler meant to float in a krater. The psykter held the wine and the krater the ice water or snow, as shown in many vase-paintings where the wine is being ladled directly from the psykter.[2] Its shape indicates its use, for the bulging body, rising from a tall, hollow stem, allows a large area of the vessel to come in contact with the cool liquid in which it floats. The shape also prevents it from tipping and spilling its contents while it floats. Drougou[3] refers to the psykter as a luxurious vase, whose floating provided entertainment as well as wine cooling. The psykter made its appearance in the last quarter of the sixth century and went out of fashion by the middle of the fifth century B.C.[4] It had its origin in a double-walled vessel called a psykter-amphora.[5]

Psykters were thrown in one piece. To create a lidded psykter with handles, the potter opened a centered ball of clay, pulling his thumbs apart to create a medium-wide, flat floor. From the resulting fat ring of clay he pulled up a tall, thick-walled cylinder, leaving adequate clay at the base from which to form a foot (*ill. 26a*). The lower third of the cylinder, which became the stem of the wine cooler, was left thick to resist tipping while floating and to add support while the body was being extended outward. Throwing grooves may be evident inside the stem of a psykter (FIGS. 26.1–2). At the top of the stem the potter began stretching out the body to a near-horizontal position. He left the lower portion of the body thick for support as he rounded out the side and angled it back inward toward the neck (*ill. 26b*). He may have used a shaping rib on the outside to give the wine cooler a smooth finish. The transition on the inside from body to neck



ill. 26a



ill. 26b

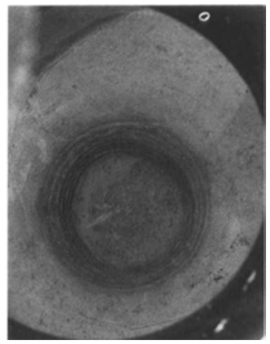


FIG. 26.1

FIG. 26.2

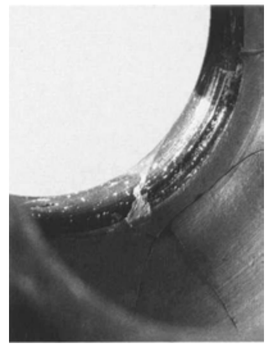


FIG. 26.3

PLATE XX
Psykter

FIGS. 26.1–3 [.1] *Deep throwing grooves inside stem of psykter.* [.2] *Close-up of throwing grooves inside stem.* [.3] *Smooth transition from shoulder to neck, reflected in mirror placed on floor of psykter.*

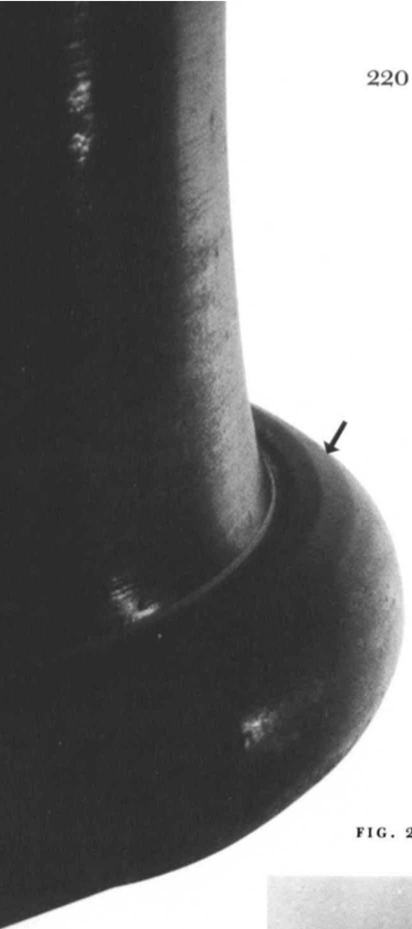


FIG. 26.5

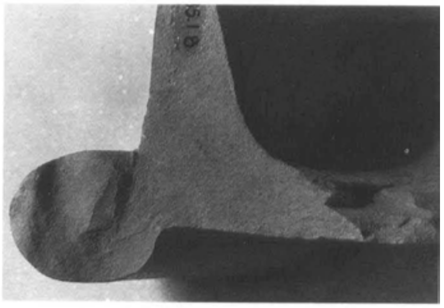


FIG. 26.4

FIG. 26.6

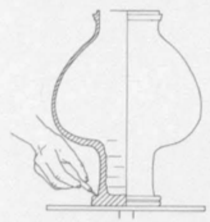
is smooth and flowing (FIG. 26.3). By squeezing the thick-walled cylinder at the neck between his right thumb and middle finger, his index finger on the rim, he created a flange just below the rim on which the cap lid rested (*ill. 26c*). He formed a two-degree foot with a tool from the excess clay at the base of the cylinder (*ill. 26d*) and sharpened the neck/flange angle. He then cut the vase from the wheel head and set it aside to firm up.

When the vase was leather-hard, he re-centered it on the wheel upside down and turned the body only enough to make minor adjustments to the final shape, thinning the lower body and stem as needed. Potters left the underside of the foot either flat or slanted upward toward the center, or they cut up into it, leaving a peripheral resting surface, and then leveled the clay off, making the ceiling of the foot flat (*ill. 26e*). A psykter foot fragment in the Getty Museum is of this latter type (FIG. 26.4). The potter painted on miltos and burnished the psykter. Flattish, adjacent planes from burnishing are visible on the outside of the rounded foot of the psykters in figures 26.5 and 6.

Cap lids for flanged psykters are fairly flat.[6] To make a cap lid, the potter proceeded in the same manner as above for making the stem, except the wall was only a few centimeters high and was pulled considerably thinner (*ill. 26f*). The outside diameter of the neck of the vase above the flange was the determining factor for the inside diameter of the cap lid, which rested on the flange. The cylinder was cut off the wheel and allowed to firm up a bit before it was re-centered right side up. The potter shaped the top of the lid following the inside contour and fashioned a low knob from the excess clay (*ill. 26g*).

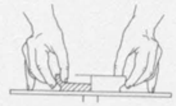
For the lidded psykter the potter threw tubular handles, so-called lugs, as a single, slender cylinder with an interior diameter about as wide as the potter's finger (*ill. 26h*). After firming up, the cylinder was cut into appropriate lengths that were affixed vertically to the psykter with slip (*ill. 26i*). To make double tubular handles, the potter pulled up a single, tall cylinder and cut it into four equal, appropriate lengths. Two of the tubules were placed side by side and attached to

ill. 26c



ill. 26d

ill. 26e

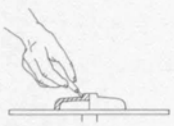


ill. 26f

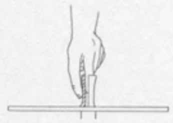
FIG. 26.4 *The potter turned ceiling of this foot flat.*

FIG. 26.5 *Flat, adjacent planes on foot (arrow) are made by burnishing tool.*

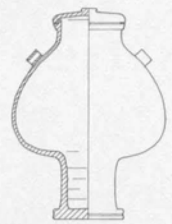
FIG. 26.6 *Flat, adjacent planes on foot (arrow) are the result of a burnishing tool.*



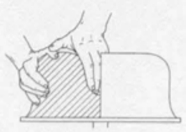
ill. 26g



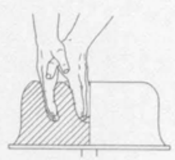
ill. 26h



ill. 26i



ill. 26j



ill. 26k

each other with slip. This pair was then attached with slip to the psykter shoulder in a vertical orientation. The process was repeated for the second handle.

Psykter-Amphora

The psykter-amphora is a double-walled container whose walls are attached at the neck and at the base, the outer vessel having a spout at the shoulder through which ice or ice water was poured into the space between the two walls. It usually had a drain spout just above the foot, directly below the pour spout (FIGS. 26.7–9).[7] The vase was a wine cooler about the same size as the psykter. It was produced only in the sixth century B.C.[8]

The potter made the psykter-amphora in several pieces: the combined bodies, neck, foot, spout, and drain. The handles were pulled. To create the combined bodies, he opened a large, centered ball of clay. With his fingers he formed the inner concave floor of the psykter (*ill. 26j*). He pressed the fingers of his right hand down into the wide doughnut of clay between the opened well and the edge of the clay ball, dividing it into an inner and outer ring (*ill. 26k*). From the inner ring, he pulled up a narrow cylinder to a little above the height of the projected neck (*ill. 26l*). He then proceeded to pull up a second cylinder from the outer ring of clay (*ill. 26m*). He bellied out the wall of the outer cylinder to form the body of an amphora, curving the upper body inward, stopping at the outer edge of the shoulder (*ill. 26n*). While he could still get his hand between the two clay walls, he bellied out the inner cylinder, giving it a contour similar to that of the outer vase, but leaving ample space between the walls for the ice water. He finished the inner wall by bringing the shoulder inward and upward to form a stubby neck (*ill. 26o*). This completed the inner container (psykter). The potter then returned

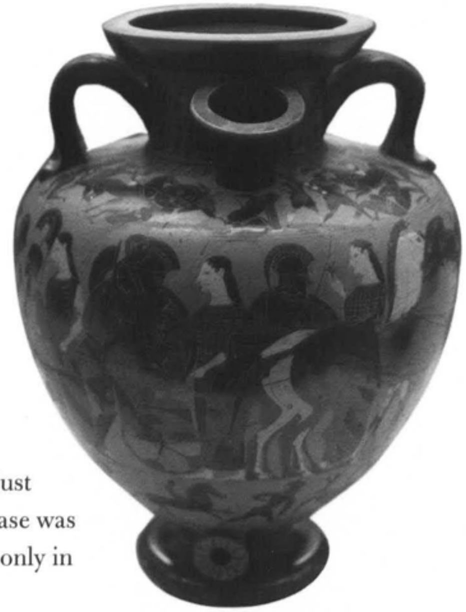


FIG. 26.7

FIG. 26.8

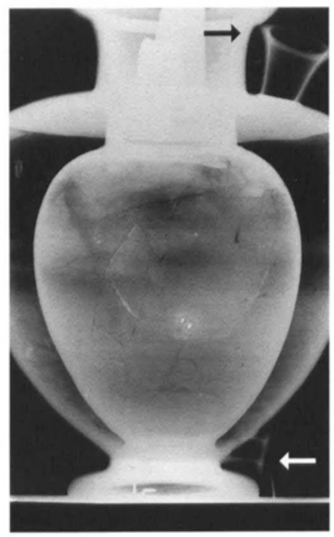
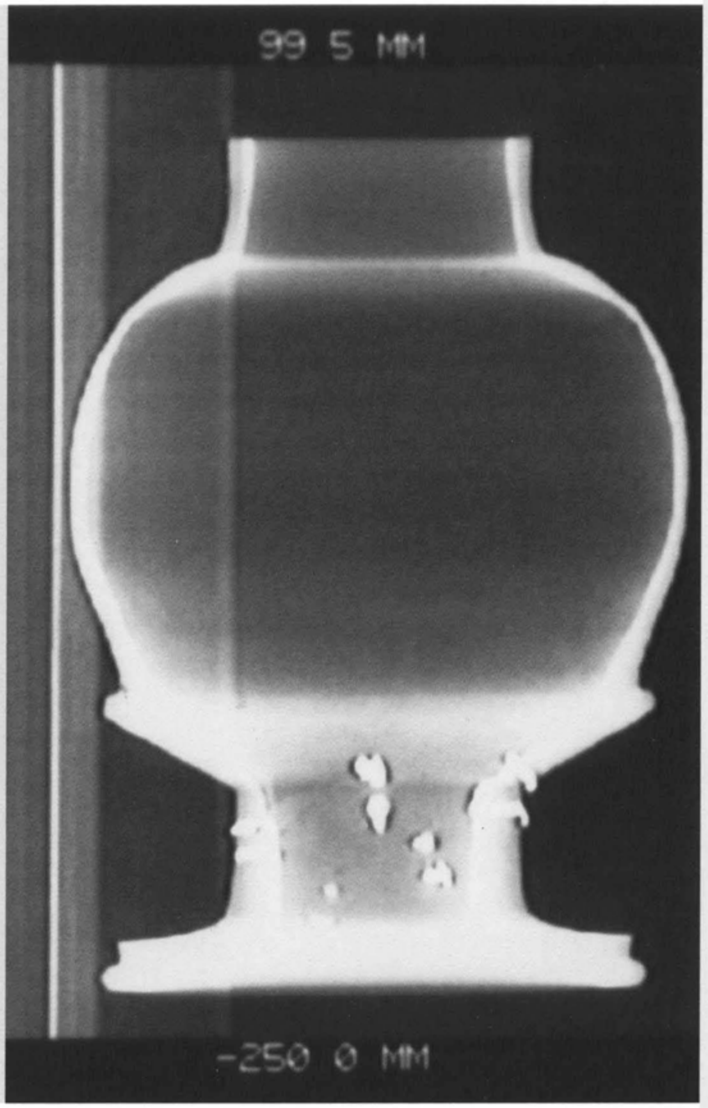
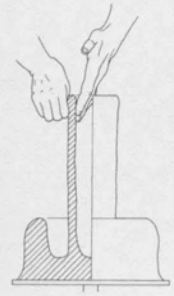
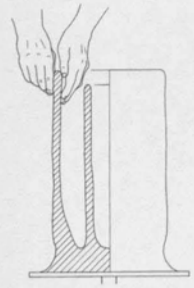


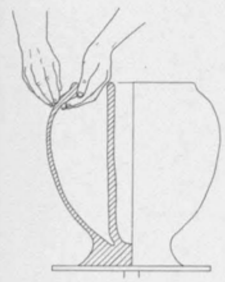
FIG. 26.9

FIGS. 26.7–9 [.7] *Psykter-amphora showing pouring spout and drain spout.* [.8] *View through mouth into interior and through pouring spout to chamber between amphora and psykter walls.* [.9] *X-radiograph showing inner psykter, pouring spout (top arrow), and drain spout (bottom arrow).*

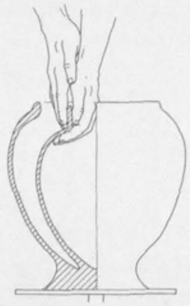


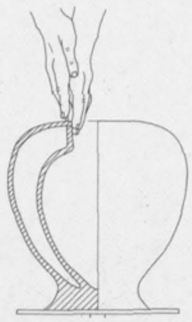

ill. 26l

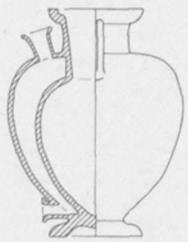

ill. 26m


ill. 26n

FIGS. 26.10–11 [.10] *Psykter-krater (krater missing).*
[.11] *X-ray view of inner vessel (psykter) of psykter-krater.*


ill. 26o


ill. 26p


ill. 26q

to the shoulder of the outer form (amphora) and drew the clay upward and inward until it blended with the stubby neck of the inner vessel (*ill. 26p*).

The neck and foot were thrown separately, in a manner similar to that of the neck and foot of a neck-amphora, and attached to the body when both neck and body had reached the soft-to-firm leather-hard stage. The potter probably created the spout and drain from one slender cylinder, flaring the lip of the spout before severing it from the lower half of the cylinder. He flared the lip of the lower half for the drain and laid the two aside to firm up, after which he applied miltos and burnished them. He pulled and shaped the handles.

The leather-hard psykter-amphora was then inverted and turned to trim excess clay from the base. The potter added the foot, righted the vase, and completed the turning of the top of the foot. At this time he applied miltos to the entire vase and burnished it, unencumbered by appendages. He cut holes in the outer vessel and affixed the pouring spout and drain spout with slip (*ill. 26q*). Lastly, two opposite handles were added atop the shoulder, equidistant from the pouring spout. (The handles may have been attached before the spouts, but the usual procedure in vase-making would be to place the handles last.) The psykter-amphora was ready for the vase-painter.

The Getty Museum has the inner vessel of a rather unusual psykter-krater (FIGS. 26.10–12), probably a psykter-calyx-krater. The inner and outer containers were not attached at the top. As in the psykter-amphora, the double vase was created from one lump of clay. The potter pulled up a single, thick-walled stem, which he separated into an inner and outer ring. He then pulled up and shaped the outer vessel. Since the mouth of a krater is wide, it gave the potter ample room to pull up and then belly out the inner psykter. The neck was made separately and attached with slip.

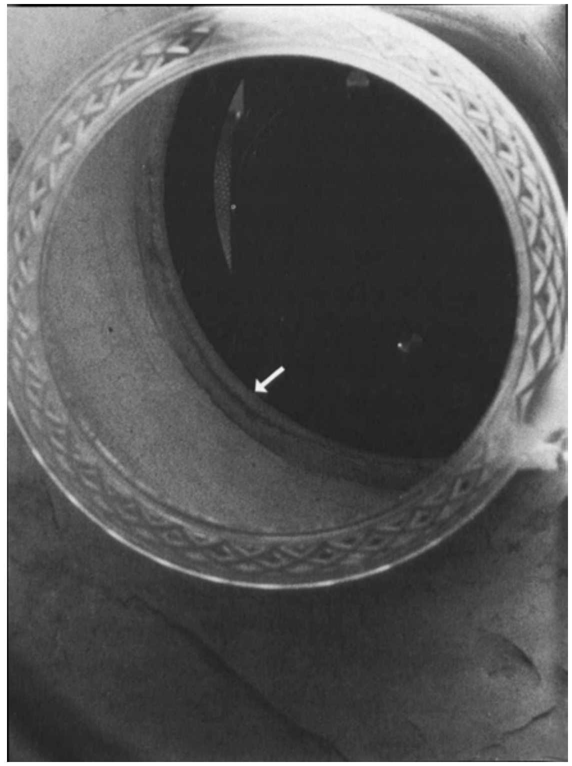


FIG. 26.12

FIGS. 26.12 *View of shoulder/ neck attachment (arrow) reflected in mirror on floor of vase.*


1.


3.


4.


5.


2.

27. Pyxis

The word *pyxis*, which we use for a small, round box, does not appear in Attic literature. Based on the evidence gathered by Milne,[1] the Greeks used the work *kylichnis* for a small, round box that was used for ointment by physicians,[2] for cosmetics, toilet articles, jewelry, and trinkets by women,[3] and probably for incense[4] in the temple during Classical times. The word gradually fell into disuse during Roman times and was replaced by the word pyxis, especially for the physician's box and the ones used by women. The pyxis is a small, handleless, lidded receptacle produced in a variety of shapes.

FIG. 27.1

Tripod Pyxis

The tripod pyxis is a small, shallow, nearly flat-bottomed bowl, the lower half of which tends to mirror the upper half, and which rests on three broad legs. It is usually glossed inside, on the underside of the bowl, and on the inside and edges of the legs (FIGS. 27.1–3). The bowl without lid ranges in height from about 4.5 cm to 8.5 cm. The flanged lid, with knob, is almost as tall as the container. The tripod pyxis was potted only during the sixth century B.C.[5]

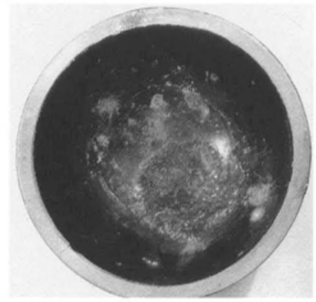
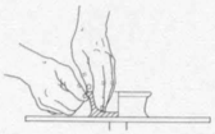


FIG. 27.2

The potter threw the bowl, lid, and the three legs separately, the latter as a single unit. To create the little bowl, he opened a small lump of clay with his thumbs and widened it by pulling his thumbs apart, simultaneously squeezing the clay between his thumbs and fingers upward into a low bowl shape. He flattened the rim with a finger and either rounded the lip into a torus shape or flattened and grooved it with the edge of his thumbnail (*ill. 27a*). After he cut the bowl off the lump of clay with a wire or cord, only the bottom of the bowl would need turning.

FIG. 27.3



ill. 27a

ill. 27b

Possibly from clay remaining on the wheel after cutting off the bowl the potter pulled up a bottomless cylinder about as high and as wide as the bowl and

PLATE XXI
Pyxides.
1. Tripod
2. Type A
3. Type C
4. Type D
5. Nikosthenic

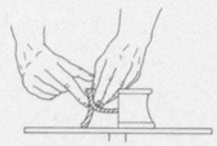
FIGS. 27.1–3 [.1] *Tripod pyxis without lid.* [.2] *Glossed interior.* [.3] *Underside, showing excess slip (arrows).*

FIG. 27.4

slanted it somewhat inward (*ill. 27b*). From this cylinder he formed the legs and feet. He gave the foot of the cylinder a torus shape, reflecting the torus lip of the bowl. Some potters gave the foot an echinus shape. He then slanted the surface of the rim of the cylinder inward at about a 45° angle (*ill. 27c*). The steep angle fit the curve of the bowl. The potter joined the cylinder to the bowl with slip, working the outside and inside clay of the cylinder into that of the bowl to create a smooth, concave outside profile from lip to foot (*ill. 27d*). Figure 27.3, of the underside of a tripod pyxis, shows how the potter left a telltale ring of excess slip when he spread it with his finger around the join.[6] He then applied miltos and burnished the pyxis. To create the tripod legs, he cut out three equally wide sections of the cylinder at regular intervals (*ill. 27e*). The pyxis was then handed over to the vase-painter, who in turn decorated it and glossed the edges of each leg as well as the underside of the bowl.

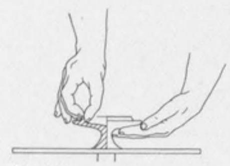
The slightly domed lid, including the flange and knob, was crafted upside down on the wheel. The potter opened the clay with his thumbs, his fingers on the outside squeezing inward to form the solid knob (FIG. 27.4; see also FIG. 3.9). Then he pulled his thumbs and fingers outward and slightly upward until the diameter of the lid matched that of the outside of the bowl rim. With his left hand supporting the lid, he squeezed the clay between his right middle finger and thumb to form a short, upright flange (*ill. 27f*), matching its outside diameter to that of the inside of the bowl. After cutting the lid off the wheel and turning it right side up, the potter shaped and rounded off the knob. When it was leather-hard, he applied miltos and burnished the lid. For a snug fit, the lid was dried and fired in place on the pyxis (*ill. 27g*).

ill. 27c



ill. 27d

ill. 27e



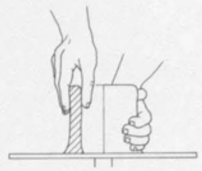
ill. 27f

ill. 27g

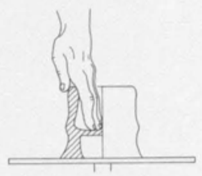
Type A Pyxis

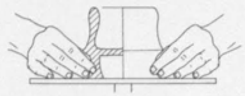
The canonical Type A pyxis with its concave sides, flat floor, and flanged rim was given several different foot shapes. Some rest on a low tripartite, quadripartite, or continuous ring foot; others have no foot. The cap lid, thrown separately, is flat on top with a concave outer edge that continues and completes the curving

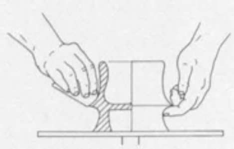
FIG. 27.4 *Top of lid of tripod pyxis.*


ill. 27h


ill. 27i


ill. 27j


ill. 27k


ill. 27l

concave wall of the pyxis body. The vessel is glossed inside. With lid, it averages about 11 cm in height. It was created from the sixth century into the first half of the fourth century B.C.

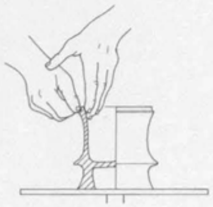
Quite likely the potter crafted the container and low foot in one process from a single lump of clay in the following manner:[7] He opened a centered lump of clay all the way to the wheel head with his thumbs, spread the walls apart, and pulled up a thick-walled cylinder as high as it was wide (*ill. 27h*). With his right hand against the outside and the fingers of his left hand against the inside of the cylinder, he thrust his left thumb into the inside of the clay wall and pushed downward toward his fingers in order to create an inner wall (*ill. 27i*). This maneuver helped give the lower part of the cylinder on the outside a protruding profile. He then bent this inner wall downward, at first using both thumb and fingers, at the end only the fingers, until it formed a horizontal bottom and the hole in the center was closed (*ill. 27j*). This maneuver created a solid floor for the pyxis and a hollow space under the floor. Next the potter shaped the recessed, concave foot by pressing inward with his thumbs and forefingers on the wall surrounding the hollow space (*ill. 27k*). To flare the now-protruding lower edge of the pyxis body, the potter held a curved rib against the outside of the pyxis, a finger of his left hand offering support under the recessed part of the foot on the opposite side of the bowl (*ill. 27l*). He pulled up and shaped the upper body, leaving a thickened rim.

The flange on which the cap lid was to rest was formed when the potter inserted his right thumbnail into the outer edge of the thick rim and pushed the thumb outward, while his left forefinger inside the mouth of the pyxis supported the rim (*ill. 27m*). This simultaneously accented the concavity of the pyxis wall (FIGS. 27.5–6). He cut the pyxis off the wheel with a wire. When it had firmed up, he inverted it and detailed the foot by cutting out sections to make it tripartite or quadripartite (*ill. 27n*; FIG. 27.7), or he left it as a continuous ring. The pyxis would need turning only to accent the profile of the vessel.

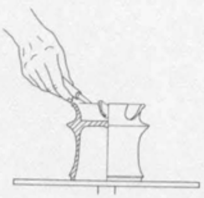
FIG. 27.5

FIG. 27.6

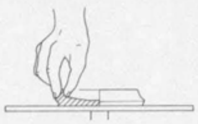
FIGS. 27.5–6 [.5] *Type A pyxis fragment.* [.6] *Cross-section showing flange (arrow).*



ill. 27m

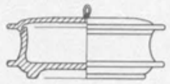


ill. 27n



ill. 27o

ill. 27p



ill. 27q

The potter threw the modified cap lid upside down without a knob. Since the top of the lid was nearly flat, he needed only a small lump of clay. He thrust his thumbs into the clay and spread them apart, creating a flat-floored bowl shape with very low walls. The edge of the lid mirrors the flare of the lower body of the pyxis. To create that flare in the lip, the potter angled the wall sharply inward until the inside dimension matched the outside diameter of the vase rim (*ill. 27o*). Because the walls of the lid slant inward, the edge of the lid, when it was righted and seated atop the receptacle, became a part of the continuous concave form of the bowl, giving the pyxis a symmetric profile (*ill. 27p*). A knob with a short neck was made in one of a variety of shapes. The potter either threw it separately on the wheel, or he hand-modeled it, sometimes into a loop, and attached it to the lid with slip. He placed the lid on top of the vase for drying to insure a good fit and then applied miltos and burnished both the lid and the bowl. The vase-painter glossed the inside of the pyxis and may have glossed the inside of the lid. The lid was fired in place for a good fit.

FIG. 27.7

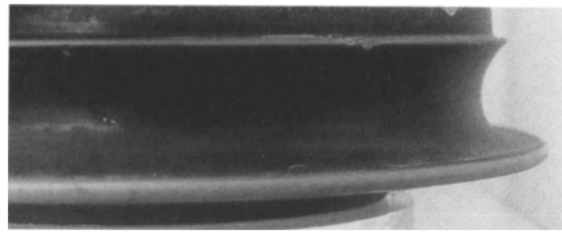


FIG. 27.8

Type C Pyxis

The Type C pyxis, a broad, squat version of the Type A pyxis, has deeply concave sides resting on a low ring foot. The flanged lid is convex, often with a metal-ring handle. The container is usually more than twice as wide as it is high, averaging 6–7 cm in height, and 14–18 cm in diameter. Known as early as the mid-fifth century, it was popular from the last quarter of the fifth through the first half of the fourth century B.C.[8]

In creating the bowl, the potter opened the ball of clay with his thumbs down to within several centimeters of the wheel head. He spread them apart, making the floor of the box flat, and then pulled up a cylinder only a few centimeters high. He slanted the walls inward with the tips of his index fingers, leaving a protrusion at the base of the box, then back outward, giving the wall a deeply concave profile (*ill. 27q*; FIG. 27.8). He terminated the wall in a flange (to receive

FIG. 27.7 *Part of tripartite foot of Type A pyxis.*

FIG. 27.8 *Deeply concave walls of flanged Type C pyxis.*

the lid), creating it in the same way as for the Type A pyxis. When the bowl had reached the soft-to-firm leather-hard stage, the potter upended it and turned a low ring foot[9] of small diameter from clay left on the bottom of the pyxis bowl. Between the ring foot and the lateral protrusion the potter created either a concave or a convex shape, or he left the base flat.

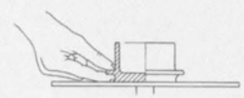
The cap lid was thrown upside down by the potter thrusting his thumbs into a ball of clay to within about a centimeter of the wheel head, pulling them apart and slightly upward to form a shallow bowl shape. He created a flange between his thumb and middle finger, index finger on top, well inside the edge of the lid, which formed a lip that mirrored the lower edge of the bowl. He then cut the lid off the wheel and set it aside to firm up. When it was firm, he centered it on the wheel, resting the lid on its flange, while he turned the top. Because of the shallow bowl shape the lip of the lid was fairly thick. In turning, the potter removed much of this clay, creating a thinner lip, then turned the top to a low dome shape. This shaping gave the lid a broad lip, which mirrored the lower edge of the bowl. He cut a small hole in the center for the metal-ring handle attachment. Some Type C pyxis lids have a clay knob.

FIG. 27.9

Type B Pyxis

The Type B pyxis is characterized by its deep-sided slip-over lid, which fits completely over the straight-sided walls of the pyxis body. The body is seated on a low ring foot of small diameter. The box, with lid, is nearly as high as it is wide. The average lid diameter is about 8–12 cm. The shape was potted from the second quarter of the fifth to the second quarter of the fourth century B.C.[10]

The potter created the body by drawing up a low cylinder (see silhouette, p. 261). He formed the protruding lower edge between his thumb and index finger, giving it a torus shape (*ill. 27r*). When the body was firm, he upended it and turned a low ring foot of small diameter.



ill. 27r

FIG. 27.9 *Deep-sided, flat-topped fragmentary lid of Type B pyxis.*

The lid was thrown upside down in the same manner as the box, with a protruding torus lip. The potter carefully measured so that the inside diameter of the deep-sided lid would slip easily over the outside diameter of the box wall (*ill. 27s*). The lid rested on the torus-shaped protrusion circling the lower edge of the body. During turning the potter grooved the top surface of the lid toward the outside, then left the lid either flat or slightly domed (FIGS. 27.9–10). The potter either rolled out a slender "snake" of clay and bent it into a loop handle, or he pierced a hole through the center of the lid for a metal loop that held a metal ring handle (FIGS. 27.11–12). The pyxis body and lid were generally glossed on the inside (FIG. 27.12). The lid and body were likely dried and fired together for a proper fit.

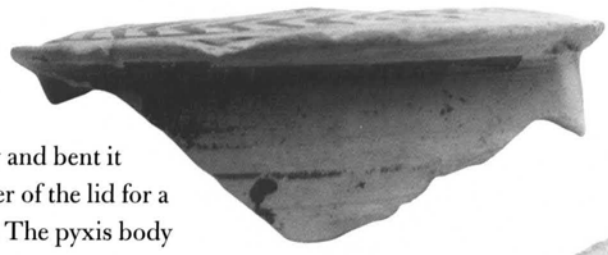


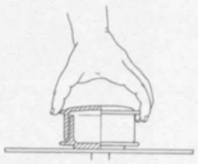
FIG. 27.10

FIG. 27.11

FIG. 27.12

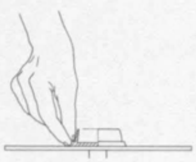
Powder-Box Pyxis

Like the Type B pyxis, the powder-box pyxis has a deep-sided lid that slips over the sides of the box (FIGS. 27.13–16; silhouette, p. 261). Compared to other pyxides, the walls are rather thin—that in figure 27.16 being only 2.5 mm. The box is footless, and the lid is often much deeper than the height of the little bowl. Powder-box pyxides are small, like tripod pyxides, ranging in width from about 4.5 cm to 7 cm, and they can easily be cupped in one hand. The shape was borrowed from Corinth by Athens in the sixth century and was produced there through the fifth century B.C.[11]



ill. 27s

To make the body, the potter opened a small ball of clay with his thumbs almost down to the wheel head. He spread his thumbs apart, making the floor of the box flat (FIG. 27.17), and then drew up the walls of the box to a thin edge, canting them slightly inward. The walls of low bowls are less than half the height of their counterparts (FIGS. 27.18–19). With the edge of his thumbnail the potter created a slightly protruding base on which the lid would rest (*ill. 27t*). When the box was firm, the potter inverted it on the wheel and beveled the underside of the



ill. 27t

FIGS. 27.10–12 [.10] *Deep-sided, slightly domed fragmentary lid of Type B pyxis.* [.11] *Center hole of lid was pierced for insertion of metal-ring handle.* [.12] *Glossed inside.*

FIG. 27.13

protruding edge. With a tool or a fingernail he carved a shallow groove at the inner edge of the bevel, leaving the remainder of the underside either flat or slightly hollowed (FIG. 27.20). The beveled edges and the inside of the box were usually glossed.

The lid was thrown upside down in the same manner as for the Type B pyxis, only smaller. The potter created a narrow, protruding edge with his thumbnail to match that at the base of the box. He then cut the lid off the wheel and set it aside to firm up. When it was firm, he returned the lid right side up to the wheel for turning. He beveled the protruding edge and created a groove on the inside edge of the bevel to match the underside of the box, leaving the top of the lid flat. The lid is small enough to be grasped easily with the thumb and finger of one hand and thus required no knob (*ill. 27u*). It was usually decorated on top and on the sides.

FIG. 27.14

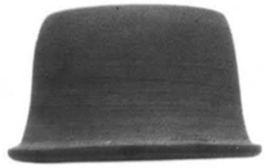


FIG. 27.15

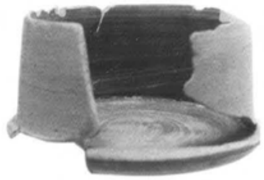


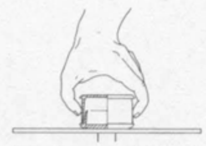
FIG. 27.16

FIG. 27.17

Type D Pyxis

The Type D pyxis is small, like the powder-box pyxis, only of heavier fabric with a lid that covers only the flanged top of the pyxis body wall. The pyxis is about as high as it is wide. The lid shape varies, but it is flat. Early lids are thin, flat disks with thickened edges made to fit inside the mouth of the bowl.[12] The more popular later cap lid has a flat top surface with a groove around it and a rounded edge that protrudes very slightly beyond the box wall when seated on it (FIG. 27.21).[13] Early boxes spread near the base, later boxes have fairly straight sides (FIG. 27.22). Both have a flanged rim and a slightly protruding torus base. Some have a ring foot almost as wide as the base. The diameter of the lid of the Type D pyxis ranges from about 4.8 cm to 7 cm. The shape was popular during the late fifth and fourth centuries B.C.[14]

To create the Type D pyxis body, the potter thrust his thumbs into a small ball of clay, barely spread them apart, then pulled up a cylinder, leaving a smooth concavity at the inside junction of floor and body wall. From clay at the



ill. 27u

FIG. 27.13 *Deep-sided lid of powder-box pyxis.*

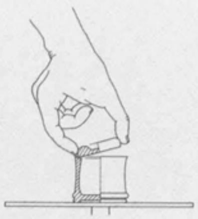
FIGS. 27.14–15 [.14] *Deep-sided lid of powder-box pyxis.* [.15] *Unglossed powder box.*

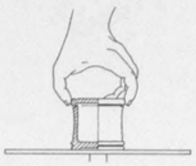
FIGS. 27.16–17 [.16] *Top of powder-box wall comes to a thin edge (arrow).* [.17] *Floor is flat, inside glossed.*

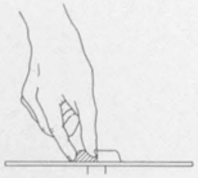
base of the cylinder he created a small protrusion on the outside with his thumbnail. He made a flange at the top of the cylinder. For the early, flat disk lid the potter made a flange on the inside of the body wall with his thumbnail or a tool (*ill. 27v*); for the later cap lid he made a flange on the outside (*ill. 27w*). He cut the little box off the wheel, set it aside until it firmed up, and then returned it to the wheel upside down for turning. Out of excess clay left on the bottom of the vase after cutting it off the wheel he created a ring foot almost as wide as the protrusion at the base of the pyxis box. He then hollowed out the underside of the foot (FIG. 27.23). The inside as well as the outside of the box and most lids were painted with gloss (FIG. 27.24), the underside of the box was reserved. It is not unusual to find that the flange as well as the resting surface on the underside of the lid have been glossed (see FIGS. 27.22, 24). While wet gloss sticks tightly to wet gloss, dry gloss does not stick to dry gloss when fired at the temperatures that the Greeks used for firing their pieces.

The potter probably made the very small, thin, early disk lid from clay left on the wheel head after completing the box. He threw the lid right side up since it was flat on the underside. He gathered up the clay into a low, flattish mound with an outside diameter that would fit the inside flange of the little box. Pressing a thumb down into the center of the clay, he held his index finger on the outside to keep the clay from spreading (*ill. 27x*). This technique forced the clay upward, and the potter rounded it into a thickened edge. He sharpened the junction of edge and center with a fingernail or a tool. When the lid was cut off the wheel, he sponged the underside and laid it aside to dry.

He threw the flat cap lid upside down in a manner similar to that for the Type A pyxis (though much smaller), but he rounded the edge and made the lid wider than the body wall, so it protruded very slightly beyond it when seated on the flange of the little box, thus matching the base. The potter bent the edges upward into a cap shape, measuring the inside diameter so it would fit the out-


ill. 27v


ill. 27w


ill. 27x

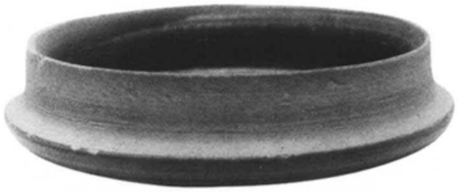


FIG. 27.18

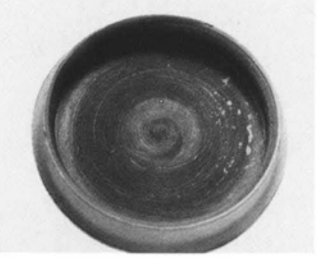


FIG. 27.19

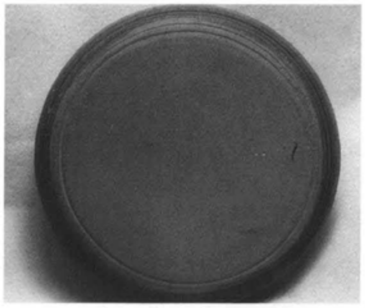


FIG. 27.20

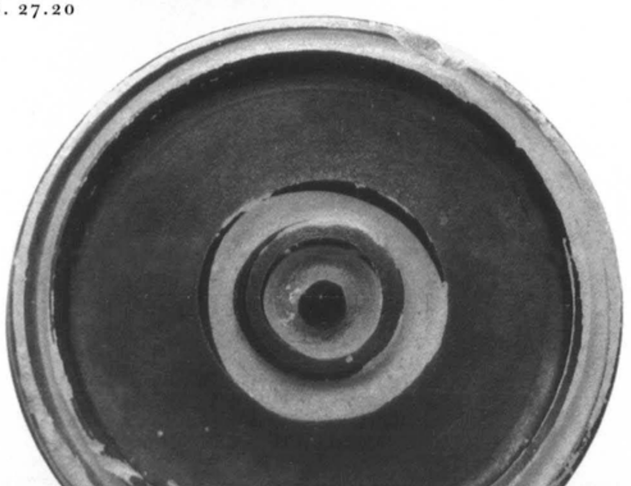


FIG. 27.21

FIGS. 27.18–20 [.18] *Walls of low powder boxes are less than half as high as their counterparts.* [.19] *Inside floor and walls are glossed.* [.20] *Glossed, beveled edge and reserved, flat bottom.*

FIG. 27.21 *Flat-topped cap lid of a Type D pyxis seen from above.*

side lip of the box. Because the lid was made upside down, it had a flat top. He cut it off the wheel, recentered it right side up when it was firm, and grooved and sponged it. The lid is knobless.

Sparkes and Talcott noted that the potter made matching marks on the underside of some lids and bodies (FIG. 27.25).[15] They felt this technique indicated that the lid and body were fired separately in the kiln and that the marks served to match the two again after the firing. It would be more logical and efficient, however, to fire the lid in situ on the vessel to insure a proper fit and to take up less space in the kiln. There is another explanation for the markings. If a number of similar bowls with their lids were created on the same day, the marks would help identify a specific lid for a specific bowl while they were drying separately, waiting to be turned, and again while they were being glossed. No purpose would be served by firing them separately. Uneven heat in the kiln or a draft could make for slight irregularity in the fit of a lid fired separately from the pyxis box in the kiln.

FIG. 27.22

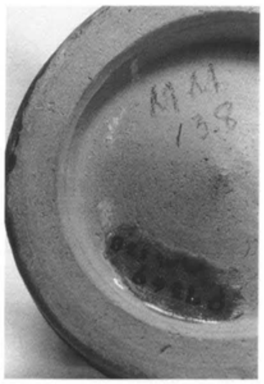


FIG. 27.23

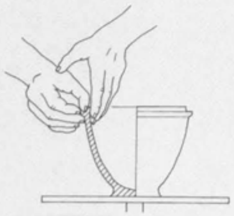
FIG. 27.24

Nikosthenic Pyxis

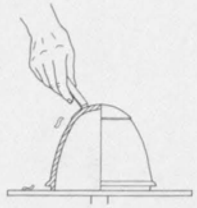
The rarer Nikosthenic pyxis, a product of the Nikosthenic workshop,[16] is a deep bowl with straight or slightly convex sides tapering to and standing on a stemmed, spreading foot with a concave top side and concave or torus edge. The bowl is capped with a domed or sometimes conical lid. The bowl, foot, and lid were fashioned separately. The Nikosthenic pyxis (excluding the lid) ranges in height from about 13 cm to 19 cm[17] and is a bit wider than it is high. It was produced during the second half of the sixth century and into the first years of the fifth century B.C.[18]

Except for the flange and a more concave floor, the bowl was created in much the same manner as the bowl portion of the tripod pyxis, only it was larger

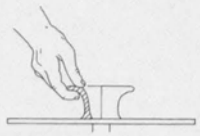
FIGS. 27.22–24
[.22] *Flanged-rim, straight-sided Type D pyxis.* [.23] *Hollowed underside.* [.24] *Inside, outside, and flange are glossed.*



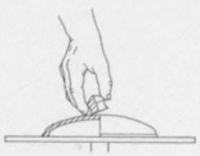
ill. 27y



ill. 27z



ill. 27aa



ill. 27ab

ill. 27ac

and taller. The potter created the flange between his thumb and first two digits, giving the lower half a quarter-round shape (*ill. 27y*), which provided a pleasing transition from bowl to round-edged cap lid (FIGS. 27.26–28). When the bowl reached the soft-to-firm leather-hard stage, the potter placed it on the wheel upside down and turned it, detailing the flange, rounding the bottom, and cutting in a slight offset on the lower body (*ill. 27z*).

He threw the low foot upside down from a separate ball of clay, opening it with his thumbs clear down to the wheel head. With one simple movement he gently squeezed the clay between his thumbs and fingers and guided it outward to shape the foot (*ill. 27aa*). He cut it off the wheel and, when it had firmed up, joined it with slip to the turned body. He then turned the foot to give it a flaring disk shape. He may have added a fillet between the foot and body.

The domed cap lid was formed upside down from a centered ball of clay by the potter thrusting his thumbs into the clay, then pulling it outward and upward between his thumbs and fingers into a shallow or deep bowl shape, measuring the edge so it fit perfectly the flange of the bowl on which it was to rest. When the lid had firmed up, the potter righted it, turned the top to give it a dome shape, and topped it with a hand-built knob, often in the shape of an acorn (*ill. 27ab*). He brushed on miltos and burnished the components of the pyxis.

The vase-painter decorated the vessel and glossed the inside of the bowl. The lid was dried and fired resting on the flange of the pyxis for a good fit (*ill. 27ac*). Since the gloss on the flange was dry when the lid was placed atop it, the glossed surfaces did not stick to one another before or during firing. (See Kylix, p. 159).

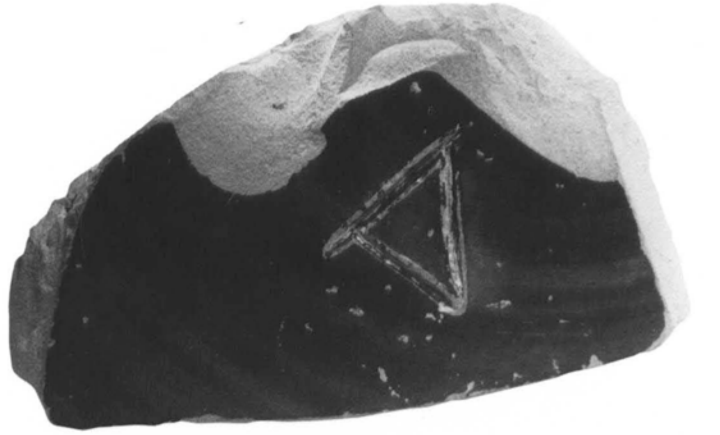


FIG. 27.25

FIG. 27.26

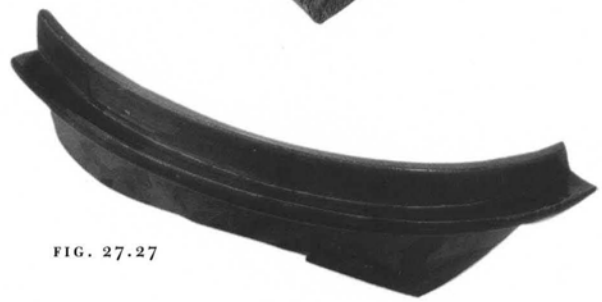


FIG. 27.27

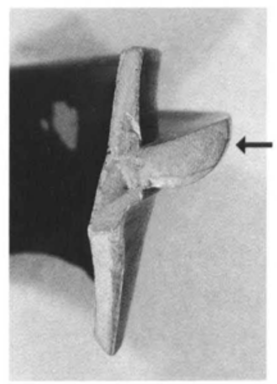
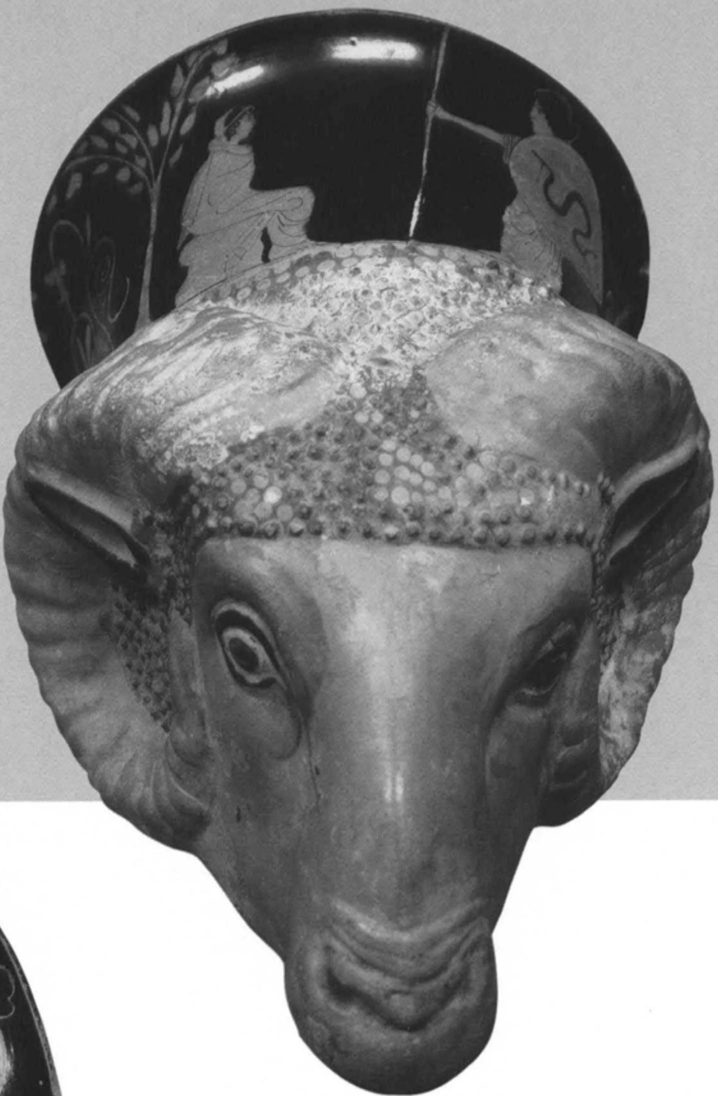


FIG. 27.28

FIG. 27.25 *Mark for matching lid with body during construction.*

FIGS. 27.26–28 [.26] *Fragment of upper body, lip, and flange of large Nikosthenic pyxis showing quarter-round shape of lower half of flange.* [.27] *Fragment.* [.28] *Cross-section showing flange (arrow).*



28. Rhyton

The upper portion of the canonical terra-cotta rhyton is thrown on the wheel, the lower is moldmade in the shape of an animal head.[1] It may have had its origin in an animal horn[2] as there are many extant horn-shaped rhyta made of metal. Most terra-cotta rhyta are straight with the cup jutting out from the back of the animal's head. Some are bent, with the cup surmounting the animal's head.[3] A few, especially early ones, are mounted on stands. Rhyta have a single handle and generally are not glossed inside. They range in height from about 12 cm to 24 cm. The rhyton is a drinking vessel.[4] It is a red-figure innovation, making its appearance in Attic ceramics early in the fifth century B.C.[5]

ill. 28a

ill. 28b

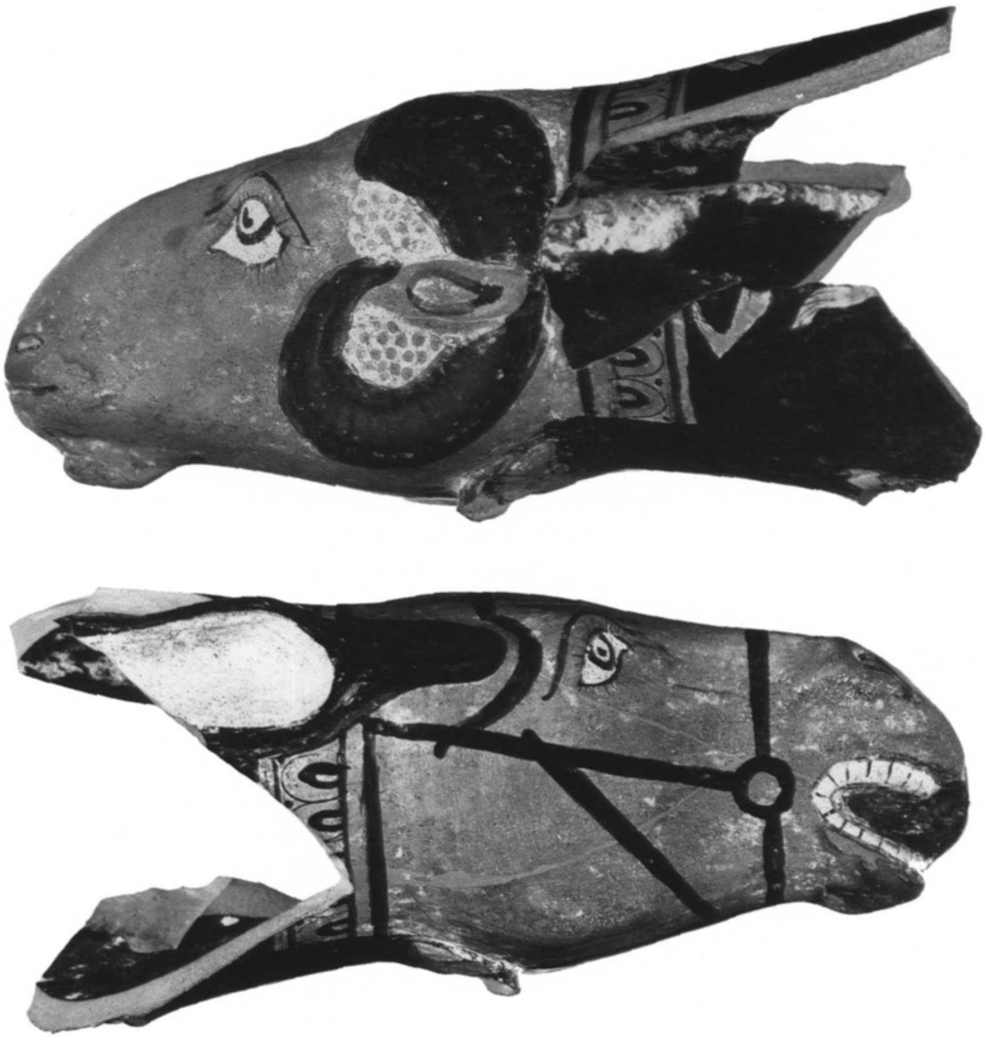
ill. 28c

THE MOLD

The original animal-head model, the patrix,[6] was modeled in clay by a coroplast,[7] who carefully designed the patrix so it was free of many undercuts, or indentations (*ill. 28a*), which would make it difficult to remove the mold from the patrix. Many undercuts require a mold in many pieces. After the clay patrix had been fired, the moldmaker created a clay mold, usually in two pieces. One half of the mold was formed around each side of the patrix. A resist material, such as fat, was applied to the touching surfaces of the two halves of the mold so they could readily be separated (*ill. 28b*). When the mold had firmed up a bit, the moldmaker separated the parts and removed the patrix.[8] He may have done some refining to the mold by hand to accent certain parts, such as the corners of the eyes or mouth, before firing it. This fired, two-part mold could now be used to make many impressions.[9]

To make an impression of the animal head, the potter spread clay thinly and more or less evenly into each half of the mold with his fingers, carefully spreading it up to and slightly above the edge of the mold (*ill. 28c*). He then pressed the two halves of the mold firmly together. The edges of the clay to be joined may have been coated with slip, although that would not have been necessary, for fresh, wet clay adheres readily to other fresh, wet clay. Through the wide

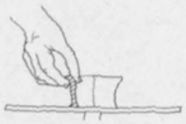
PLATE XXII
Rhyton, front and side



FIGS. 28.1–2 *Dimidiated ram/donkey rhyton.* [.1] *Ram side.* [.2] *Donkey side.*

ill. 28d

ill. 28e



ill. 28f

ill. 28g

ill. 28h

opening at the top of the animal's head the potter melded together the clays at the join inside the mold with his fingers (*ill. 28d*), eliminating any signs of a seam and making a rather smooth interior (FIGS. 28.1–3). As the clay dried, it shrank away from the mold. When the mold was removed, the new piece had a join line on the exterior, which the potter had to smooth with a knife and sponge (*ill. 28e*). Remnants of that seam are still visible on some plastic pieces (FIGS. 28.4–5).[10] The completed protome was set aside while the potter created the cup portion on the wheel.

FIG. 28.3

THE CUP

To make the cup, the potter threw a small wad of clay onto the wheel and drew up a short, bottomless cylinder, flaring the top (*ill. 28f*). Throwing grooves are evident in the Apulian white-ground ewe/goat rhyton in figures 28.6 and 7. He cut the cup off the wheel and trimmed it to fit the opening of the animal head. When both the cup and the protome had firmed up, he applied slip and joined the pieces (*ill. 28g*), smoothing the join both inside and out with a finger or a tool. He applied miltos to the cup and burnished it prior to the addition of any appendages, such as ears, horns, or a handle (FIGS. 28.8–9).

Early handles tended to be ribbon shaped, but after the middle of the fifth century B.C. potters more often pulled the rhyton handle into a concave shape. To create a concave handle, the potter first pulled a cylindrical handle. He then crooked his index finger into a half circle around the back of the handle while the tip of his thumb was placed in opposition to the index finger and gently indented the round handle with the tip of his thumb with each succeeding pull to make the concave shape.[11] The potter bent and cut the handle to shape and, when it was leather-hard, secured it to the vase. Handles generally were rooted at or above the join of the protome to the cup and attached below the join. The rhyton was now ready for the vase-painter (*ill. 28h*).

FIG. 28.3 *Join on glossed inside of the two halves of protome and join of wheel-thrown cup to protome were smoothed by the potter.*

FIGS. 28.4–5 [.4] *Head vase. Inadequately sponged seam is visible on neck.* [.5] *Seam is obvious in close-up view.*

Some potters of later rhyta cut a small hole in the mouth of the animal through which the liquid ran out (FIGS. 28.10–11).[12] The purpose was probably to aerate the wine.

Head-vases, plastic kantharoi, and plastic oinochoai are moldmade in much the same manner as the plastic rhyton. Head-vases may be in the form of single-head, double-head (janiform), or face-only vases, some portraying male and female Africans, heads of Herakles, Dionysos (rare), satyrs, and, at the end of the fifth century B.C., Orientals.[13] They may have single or double handles. Single-handled oinochoe-type moldmade jugs often have trefoil mouths. Double-handled kantharos-type moldmade head-vases have round mouths. Some handles rise above the mouth, others are level with the mouth. More complicated moldmade kantharoi, especially those with a molded donkey,[14] required a multiple-piece mold. Like the rhyton, they have an upper portion that is thrown on the wheel, the body being moldmade.

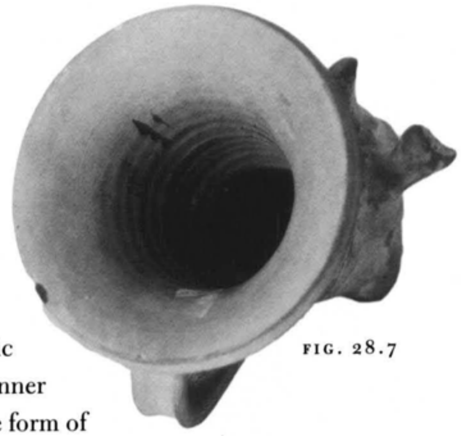


FIG. 28.7

FIG. 28.9

FIG. 28.8

FIG. 28.10

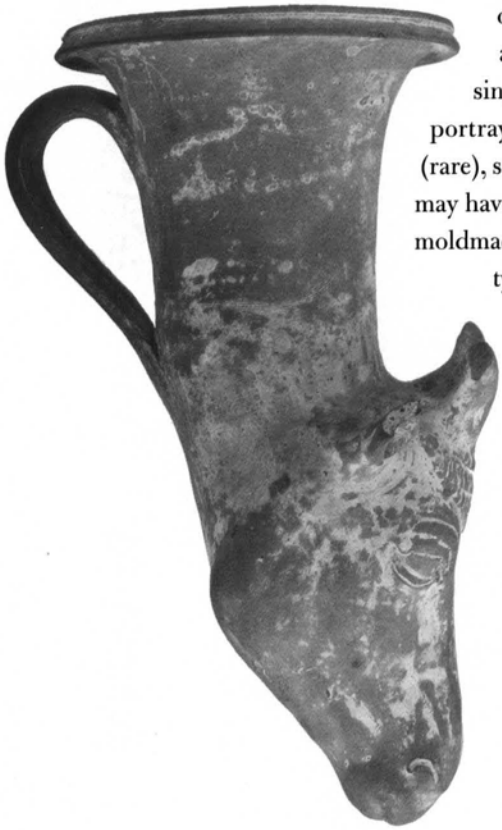


FIG. 28.6

FIG. 28.11

FIGS. 28.6–7 [.6] *Apulian white-ground ewe/goat rhyton.* [.7] *View through mouth shows throwing grooves in cup portion.*

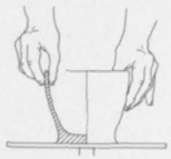
FIGS. 28.8–9 [.8] *Hound's-head rhyton with application of ear and handle.* [.9] *Cup portion has been burnished and glossed.*

FIGS. 28.10–11 [.10] *Spouted ewe/goat rhyton.* [.11] *Oblique nose-on view showing spout (arrow).*

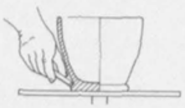
1.

2.

29. Skyphos



ill. 29a



ill. 29b

ill. 29c

ill. 29d

The skyphos is a deep-bodied drinking cup with a plain rim and a low foot—or sometimes no foot—with body and foot created in one section. It has a pair of separately pulled, opposite, horizontal handles attached just below the rim. Later cups show an incurving of the body near the foot.[1] Two styles were made in Athens: Corinthian and Attic. The body of the former has a slightly curved profile and incurving rim, flaring foot, and thinner walls and handles than the Attic style.[2] The latter has fairly straight, moderately thick walls with no incurving at the rim, though the profile varies from workshop to workshop or from potter to potter.[3] It tends to be a bit wider than it is high, with sturdy handles and a robust torus foot. It is glossed on the inside and ranges in height from about 7 cm to 21 cm.

Although revelers on vase-paintings are often shown holding skyphoi, the shape may have originated from a wooden vessel used as a milking pail.[4] Homer and Athenaios describe it as a milk or whey bowl,[5] and Herakles was said to have used it on his expeditions.[6] Its use by the Athenians dates from the mid-sixth to the fourth century B.C.

To create a skyphos, the potter centered a ball of clay and opened it with his thumbs, leaving a rather thick layer of clay between the wheel and the floor of the pot. He pulled his thumbs apart, creating a fairly wide floor, and pulled up a cylinder. Starting from the base of the cylinder, he bulged the walls slightly outward between the fingers of his two hands (*ill. 29a*), leaving the walls somewhat thick for the Attic style. Before the cup was removed from the wheel, he made the foot from the thick layer of clay at the base of the skyphos, either in a torus shape (Attic) or in a flaring shape (Corinthian), forming it with the aid of a tool (*ill. 29b*). He then cut the cup off the wheel and allowed it to firm up. When it was near the leather-hard stage, he returned it upside down to the wheel and hollowed out the underside of the foot, creating a flat ceiling (*ill. 29c*). He painted on miltos and burnished the skyphos before adding the pulled and shaped handles (*ill. 29d*; FIG. 29.1).

PLATE XXIII

1. Skyphos, front and side

2. Cup-Skyphos, front and side

For the vase shown in figure 29.2 the potter appears first to have turned a small foot. He may have felt the foot was too small to accommodate the size of the cup, or he may have attempted to create a "rattling" vase,[7] for he appears to have added a thick roll of clay around the original foot and worked it into the existing smaller foot, leaving a small air space between the two. The potter turned the new foot, shaving off more of the lower body of the skyphos in the process.

Cup-Skyphos

A cup-skyphos is a variant of the skyphos, which is sharply curved inward toward the base of the body and set on a low foot. The handles are situated lower on the body and angle upward, and the lip is canted slightly outward and may be somewhat offset.[8] The cup is thrown as above except that the floor is made narrower and the sides are angled more steeply outward. The potter threw the low foot upside down, either from the excess clay left on the wheel after cutting the cup off or from a separate ball of clay. When it had firmed up, he luted it to the bottom of the turned cup. The potter who turned the underside of the foot of the cup-skyphos shown in figure 29.3 left a small nipple of clay protruding from the center of the ceiling. His turning tool slightly undercut the nipple. The vase-painter accented the nipple with a coat of red pigment.

A glaux (Greek: owl—the cup was usually decorated with an owl between olive sprigs[9]) is a popular fifth-century-B.C. variant of the skyphos, with one handle extending horizontally and attached at the rim, while the other, rooted at the rim, extends vertically and attaches to the body. The glaux was potted like the skyphos.

FIG. 29.1

FIG. 29.1 *Pull marks (arrow) are evident on once-glossed handle.*

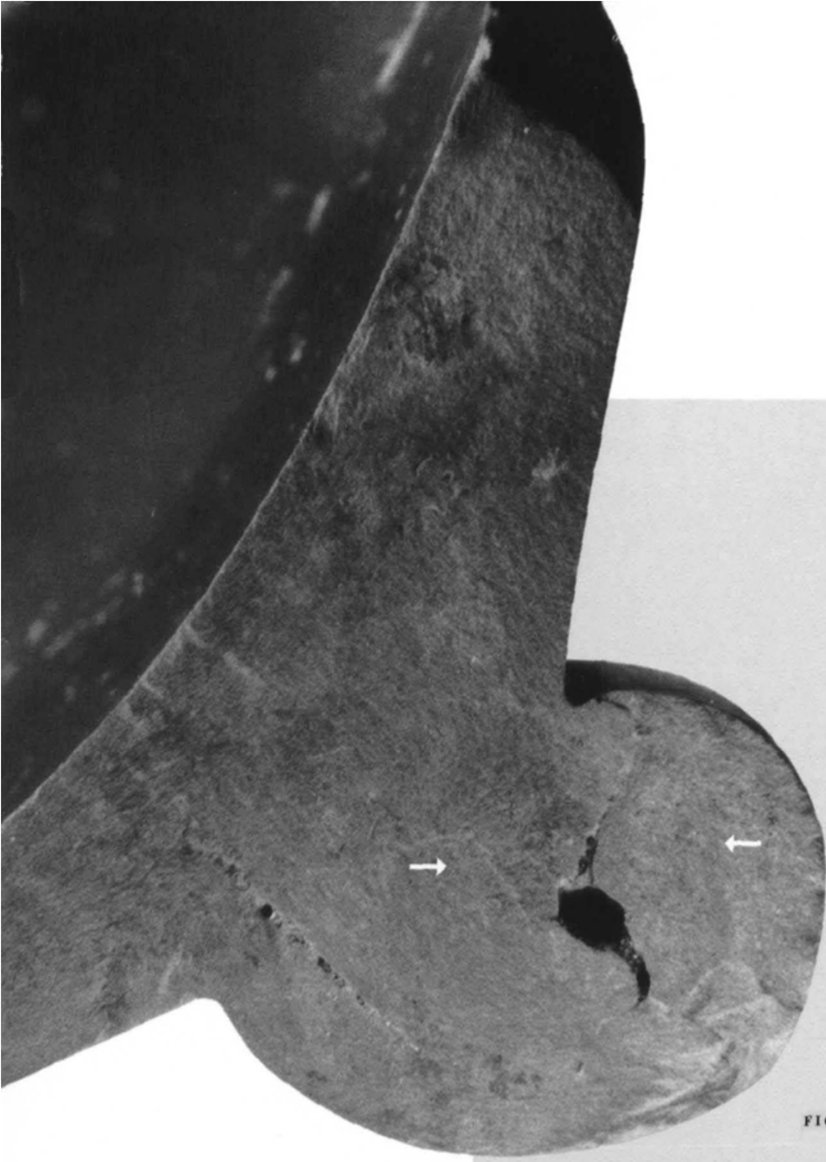


FIG. 29.2

FIG. 29.3

FIG. 29.2 *Foot fragment. Ring of clay (right arrow) that the potter added to original skyphos foot (left arrow) cracked and separated, leaving a visible air hole that encircles fragment.*

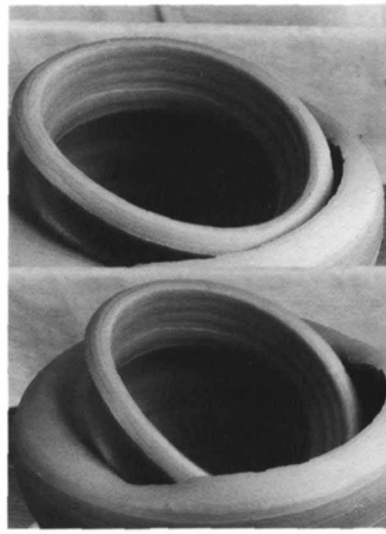
FIG. 29.3 *When turning foot, the potter left nipple protruding downward from ceiling.*

30. Stamnos

The stamnos is a high-shouldered, wide-mouthed vase with a short neck terminating in a flaring rim. It has a pair of pulled, horizontal, upturned handles placed opposite each other high on the body at its greatest diameter. The stamnos has a low foot, often in two degrees or torus shaped. Lids were likely created for stamnoi, though most are now lost.[1] Stamnoi are generally glossed inside except for immediately under the shoulder, an area not easily accessible to the painter's brush. They range in height from about 28 cm to 40 cm. The stamnos was a versatile storage vessel, often depicted on vases as a wine container or a wine mixer.[2] Primarily a red-figure shape, the stamnos was popular in Attica from the end of the sixth century to the end of the fifth century B.C.[3]

A stamnos is an articulated vase made in several sections: body, neck, and foot. Red-figured stamnoi, in particular, have horizontal or almost horizontal shoulders. Very fine-grained Greek clay succumbs to the pull of gravity more readily than a tempered or coarse-grained clay. Consequently, a vase with a horizontal shoulder will not easily support the weight of a neck thrown with the body: the shoulder may slump and break. This is particularly true if the potter uses "tired" clay—clay that has been overly wedged or reused repeatedly without adequate aging between uses (FIGS. 30.1–5). Stamnoi were therefore thrown in sections.

FIGS. 30.1–3



FIGS. 30.4–5

BODY/NECK

ill. 30a

To create a stamnos body, the potter opened a centered ball of clay, formed a somewhat narrow floor with his thumbs, and drew up a cylinder. He bellied out the body with the fingers of his inside hand until it reached the widest point at the shoulder, always supporting the forming vase with his outside fingers and hand. He then turned the clay inward to form the shoulder, ending in a thickened ring of clay at the neck edge, the better to support the neck section (*ill. 30a*). The body was cut off the wheel and set aside.

PLATE XXIV
Stamnos, front and side

FIGS. 30.1–5 *Series of photos of freshly thrown stamnos shape with horizontal shoulder, thrown by author in one piece from fine-grained, modern Greek clay from clay pit in Amarousi, a suburb of Athens. Horizontal stamnos shoulder is too broad to support neck thrown as continuation of body.*

[.1] *Freshly thrown stamnos shape with horizontal shoulders.* [.2] *Neck starts to sink—about five minutes.* [.3] *Neck continues to collapse.* [.4] *Neck breaks along one side.* [.5] *Neck sinks into body of vase—about twenty minutes.*

FIG. 30.6

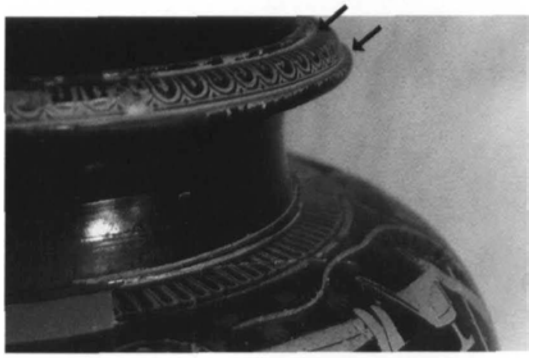


FIG. 30.7

FIG. 30.8

Next the potter threw the neck right side up from either a moderately thick roll of clay centered in a ring on the wheel, or from a ball of clay. He opened it up and stretched it out to the width of the shoulder opening and then pulled up the neck, forming the mouth by angling the top of the neck outward (*ill. 30b*). When creating the lip of a stamnos, the potter incised a groove either near the upper edge (*ill. 30c*; FIG. 30.6) or at both the upper and lower edges (FIG. 30.7), or he simply left the lip rounded and plain (FIG. 30.8). He then cut the neck off the wheel and set it aside to firm up along with the body.

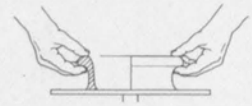
JOINING

When the neck was firm enough to hold its shape and the shoulder was firm enough to support the neck, the potter placed the neck on top of the slip-covered shoulder and worked the lower, inside neck clay down into the shoulder (*ill. 30d*). This technique provided a smooth interior neck surface, an area visible to the viewer. Potters tended either to form a thin neck ring on the outside or to incise a line at the join (see FIG. 30.6). The potter placed the stamnos upside down on the wheel and turned it, which consisted mainly of thinning and rounding the lower body.

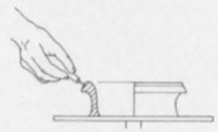
Though the mouth of a stamnos is amply wide, some potters made little effort to eradicate signs of the join under the shoulder (FIGS. 30.9–18). In contrast, the potter who created a stamnos in the Getty collection, now missing the lower part of the vase and the foot, took pains to smooth the transition from neck to shoulder (FIGS. 30.19–20).

FOOT

The potter crafted the substantial two-degree or torus foot (often with a concave top) upside down from a separate ball of clay, opening it clear down to the wheel head. He shaped the underside by pulling his thumbs apart, the pads of his thumbs forming the walls, his fingers rounding the edge. He did not fine-tune the



ill. 30b



ill. 30c

ill. 30d

FIG. 30.6 *Lip with incised groove near upper edge (top arrow) and incised line at neck/shoulder join (bottom arrow).*

FIG. 30.7 *Lip with incised groove at both upper and lower edges (arrows).*

FIG. 30.8 *Rounded, plain lip.*

FIG. 30.9

FIG. 30.11

FIG. 30.12

FIG. 30.10

FIG. 30.13

FIGS. 30.9–11 [.9] *Stamnos with decidedly horizontal shoulder. Tight ring foot was not thrown separately but was created from clay left on lower body during throwing.* [.10] *Same vase.* [.11] *View of shoulder/neck join (arrow) as reflected in mirror on floor of vase. The potter made little effort to eliminate signs of join.*

FIGS. 30.12–13 [.12] *Attic stamnos.* [.13] *View of neck/shoulder join (arrow) reflected in mirror on floor of vase.*

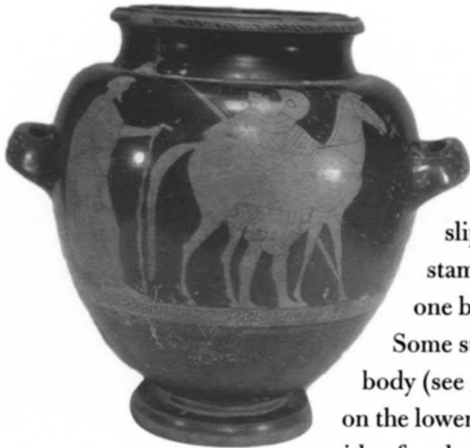


FIG. 30.14

FIG. 30.15

top side of the foot until he had attached it with slip to the turned vase (*ill. 30e*). At the foot/body join stamnos potters either created a foot fillet or simulated one by incising several lines into the gloss (FIG. 30.21). Some stamnoi have a tight ring foot created along with the body (see FIGS. 30.9–10). It was turned from excess clay left on the lower body during throwing. The potter left the underside of such a foot either flat or slanted slightly upward.

Stamnos handles were pulled. They were usually given an oval or cylindrical shape, as seen in cross-section. The potter bent them into a loop, cut them to size, and added them to the body below the shoulder after the vase had been given a coat of miltos and had been burnished (*ill. 30f*).

The potter who created the stamnos in figures 30.22–24, of which only the foot and lower body remain, apparently originally created a two-degree foot. After glossing that original foot, he changed its shape by adding a layer of clay around the upper degree of the foot and working it into the lower body of the vase. This procedure thickened the lower body, which appears originally to have been turned quite thin, and kept the torus foot. The gloss of the original foot is visible all along the break. An air hole separates the original foot from the added clay. The difference in moisture content of the original and the added clay likely caused the separation.

FIG. 30.16

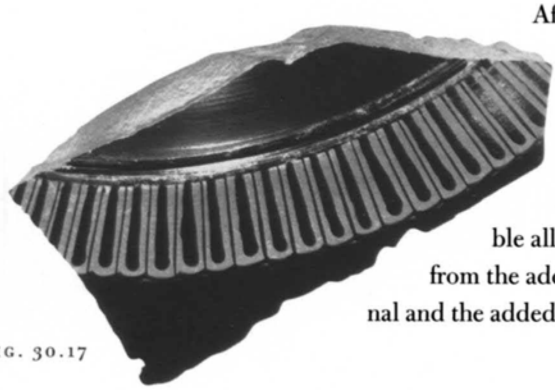


FIG. 30.17

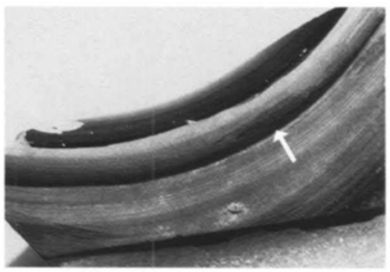


FIG. 30.18

ill. 30e

ill. 30f

FIGS. 30.14–16 [.14] *Stamnos with horizontal shoulder.* [.15] *Same vase.* [.16] *View of shoulder/neck join reflected in mirror on floor of vase. As with many stamnoi where body and neck were made in two pieces, the potter made little effort to eliminate signs of join.*

FIGS. 30.17–18 [.17] *Stamnos shoulder/neck fragment.* [.18] *Underside. The potter smoothed inside neck but made no effort to eradicate join (arrow) of neck to shoulder.*

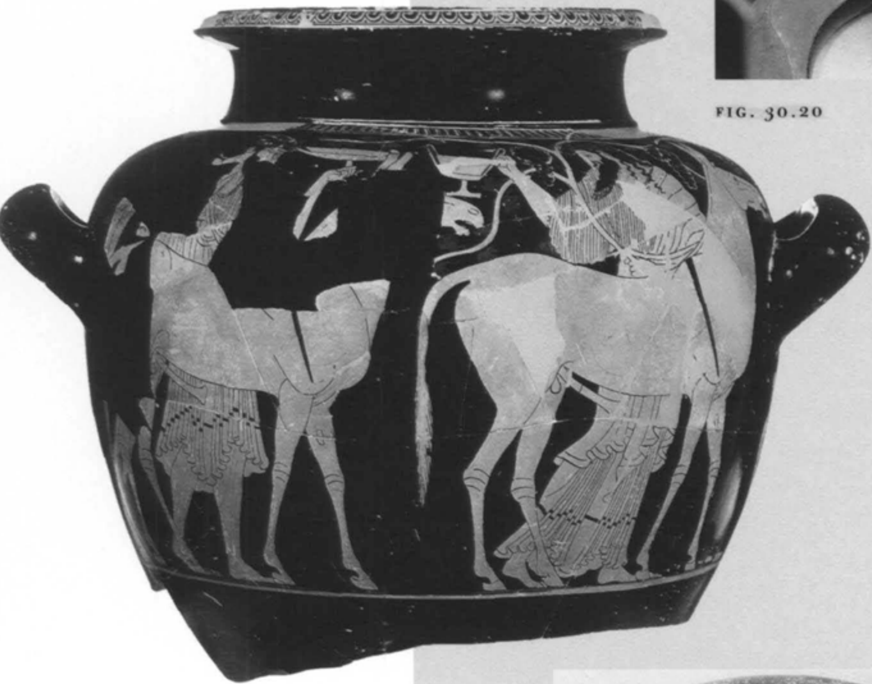


FIG. 30.19

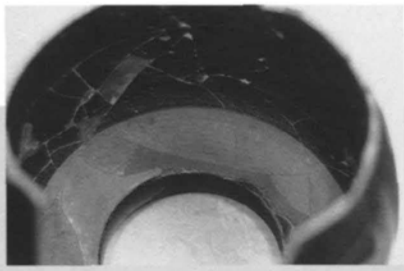


FIG. 30.20

FIG. 30.21

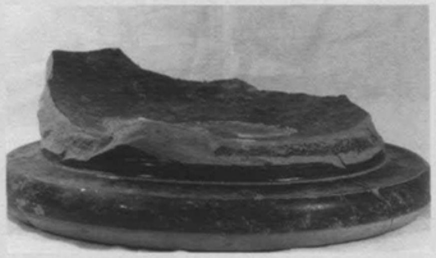


FIG. 30.22

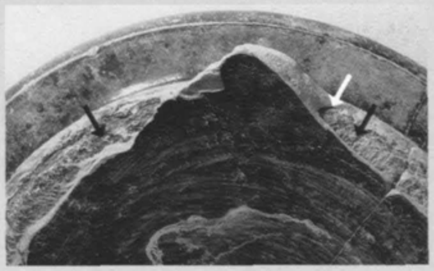


FIG. 30.23

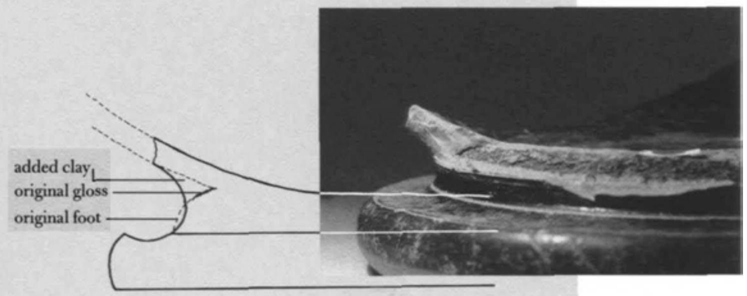


FIG. 30.24

FIGS. 30.19–20 [.19] *Upper body and neck of stamnos (lower body missing).* [.20] *Inside view. Smooth transition from shoulder to neck is visible on inside of vase, with no interruption in profile at join.*

FIG. 30.21 *The potter incised two lines into body/foot join to imitate a fillet (arrow).*

FIGS. 30.22–24 [.22] *Foot and lower body fragment of stamnos.* [.23] *View of floor of vase and top of foot. Break exposes gloss between layers of clay (black arrows). Air space (white arrow), separating body from original upper curve of foot, weakened structure, probably leading to its breakage.* [.24] *Profile view showing added clay, air space, and gloss of original foot.*

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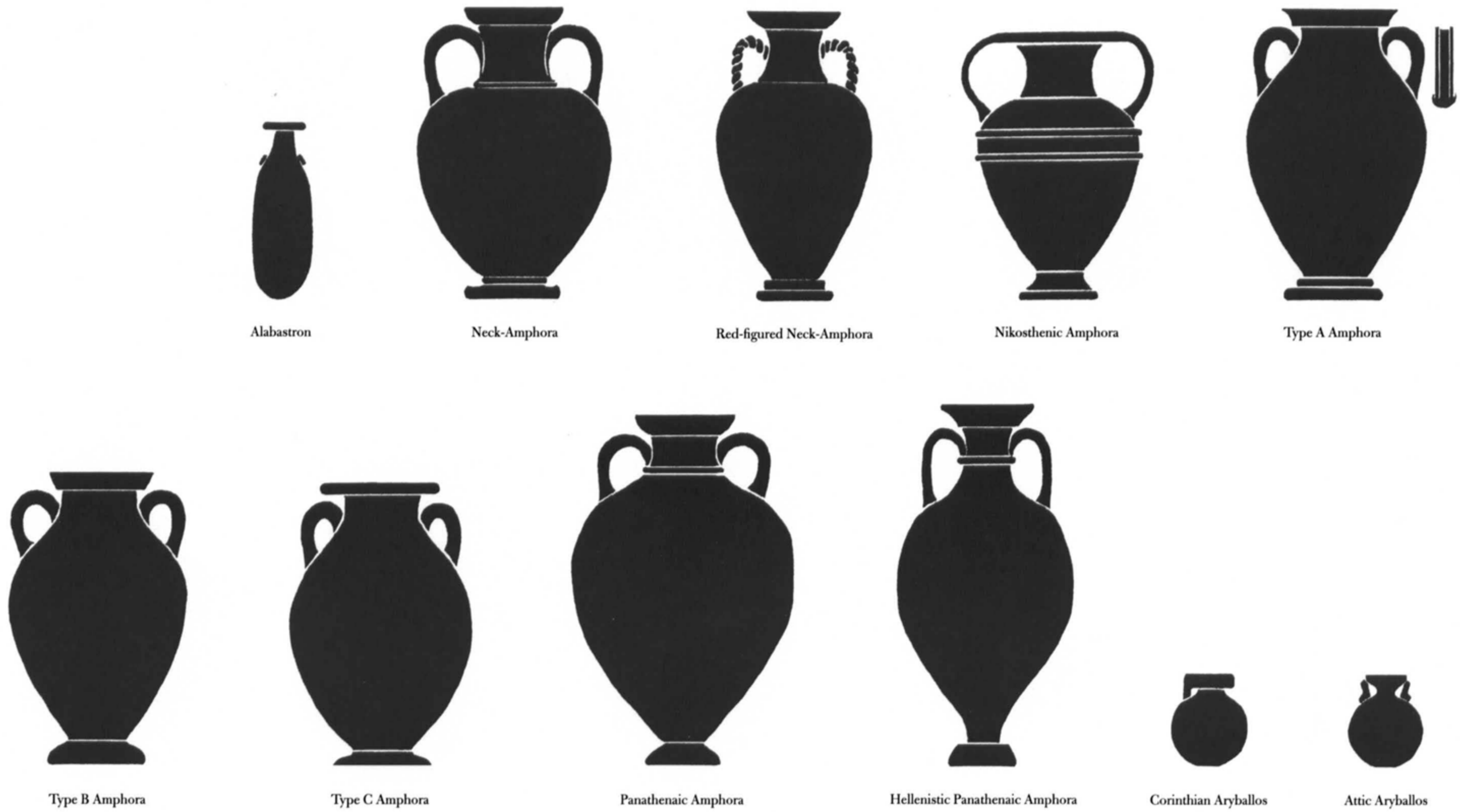
Appendixes

Appendix 1 : Silhouettes of Vase Shapes



Askos

Duck Askos

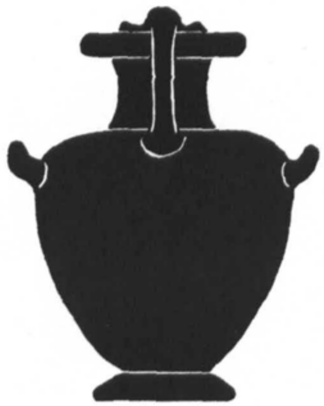
Early Dinos

Dinos and Stand

Type A Exaleiptron

Type B Exaleiptron

Fish Plate



Hydria (Shoulder Hydria)

Kalpis (Continuous-curve Hydria)

Kantharos

Cup-Kantharos

Column-Krater

Volute-Krater

Calyx-Krater

Bell-Krater

Bell-Krater with Lug Handles

Kyathos

Type A Kylix

Band Cup

Cassel Cup

Merrythought Cup

Type B Kylix

Type C Kylix

Offset Type C

Gordion Cup

Lip Cup

Droop Cup

Stemless Kylix

Komast Cup

Siana Cup


Low-footed Lebes Gamikos


Lebes Gamikos on Stand


Deianeira-type Lekythos


Sixth-Century Lekythos


Canonical Lekythos


Lekythos with Inner Oil Cup


Squat Lekythos


Huge Lekythos

Loutrophoros-Amphora (Black-figure)

Loutrophoros-Amphora (Red-figure)

Loutrophoros-Hydria

Mastos

Mastoid cup

Olpe (Shape 5a Oinochoe)

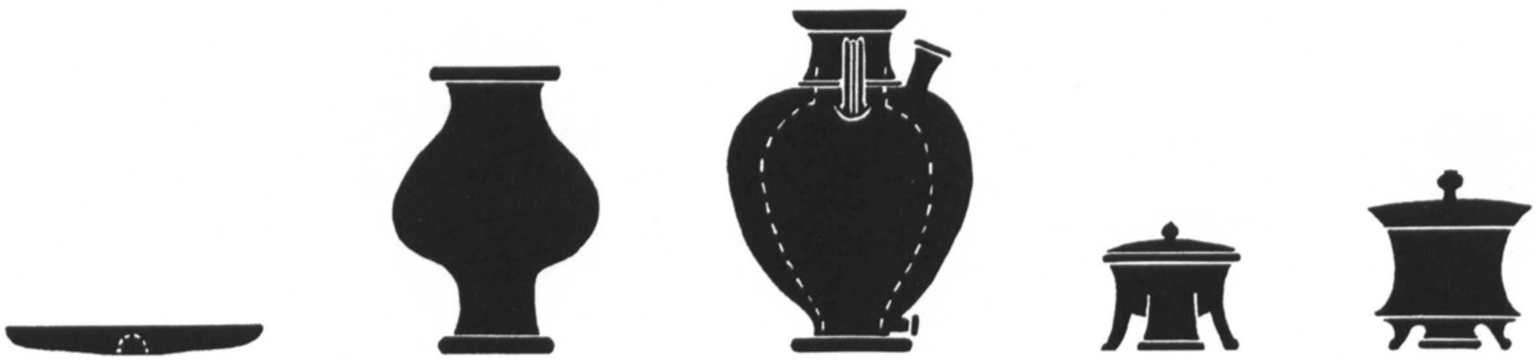
Olpe (Shape 5b Oinochoe)

Chous (Shape 3 Oinochoe)

Oinochoe (Shape 1)

Oinochoe (Shape 2)

Oinochoe (Shape 6) Oinochoe (Shape 7) Oinochoe (Shape 10) Mug (Shape 8 Oinochoe) Pelike



Phiale Psykter Psykter-Amphora Tripod Pyxis Type A Pyxis

Type C Pyxis

Type B Pyxis

Powder-Box Pyxis

Type D Pyxis

Nikosthenic Pyxis

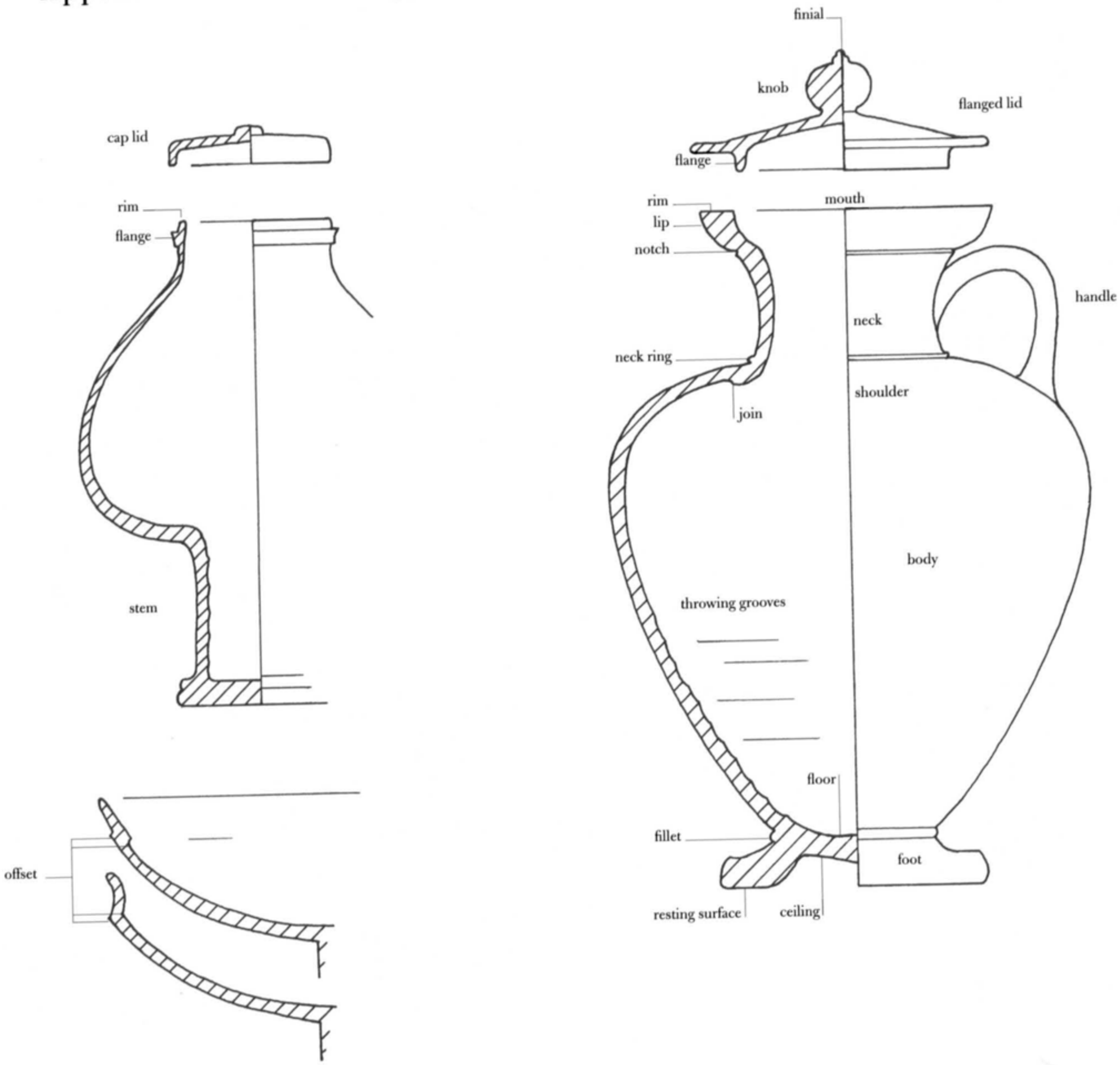
Rhyton

Skyphos

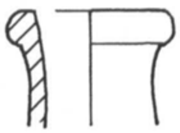
Cup-Skyphos

Stamnos

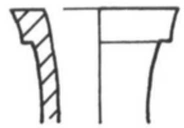
Appendix 2 : Terminology

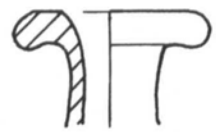


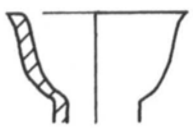
Appendix 3 : Mouth Types

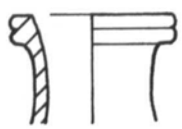

torus

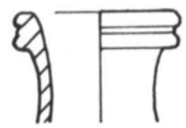

echinus


flaring

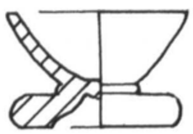

overhanging

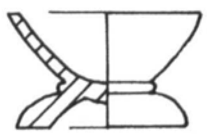

flaring with everted lip

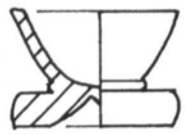

double torus

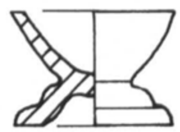

in several degrees

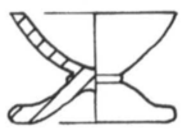
Appendix 4 : Foot Types

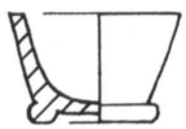

torus

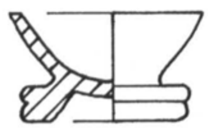

echinus

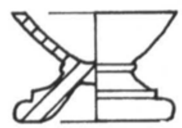

disk


in two degrees

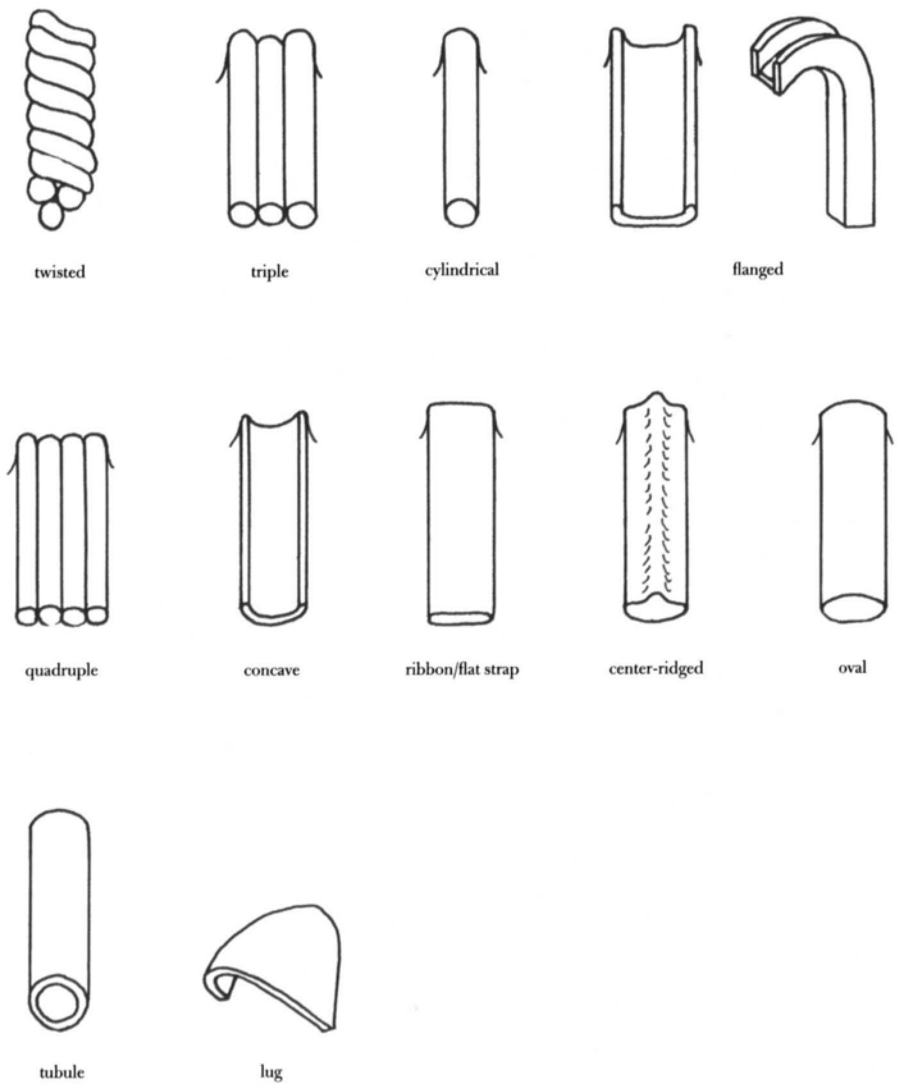

spreading


ring


double torus


spreading disk above a torus

Appendix 5 : Handle Types



Abbreviations

ABV
J. D. Beazley. *Attic Black-Figure Vase-Painters*. Oxford, 1956

Agora 12
B. A. Sparkes and L. Talcott. *Black and Plain Pottery of the Sixth, Fifth and Fourth Centuries.* The Athenian Agora. Vol. 12. Princeton, 1970

Agora 23
M. B. Moore and M. Z. P. Philippides. *Attic Black-Figured Pottery.* The Athenian Agora. Vol. 23. Princeton, 1986

AJA
American Journal of Archaeology

ARV[2]
J. D. Beazley. *Attic Red-Figure Vase-Painters*. 2nd edn. Oxford, 1963

BSA
The Annual of the British School at Athens

Cook, *GPP*
R. M. Cook. *Greek Painted Pottery.* 2nd edn. London, 1972

CVA
Corpus Vasorum Antiquorum

JHS
The Journal of Hellenic Studies

Kanowski, *Containers*
M. G. Kanowski. *Containers of Classical Greece: A Handbook of Shapes.* New York, 1984

Noble, *Techniques*
J. V. Noble. *The Techniques of Painted Attic Pottery*. Rev. edn. London, 1988

OPA
Occasional Papers on Antiquities

Richter, *Athenian Pottery*
G. M. A. Richter. *The Craft of Athenian Pottery: An Investigation of the Technique of Black-Figured and Red-Figured Athenian Vases.* New Haven, 1923

Richter and Milne, *Shapes and Names*
G. M. A. Richter and M. J. Milne. *Shapes and Names of Athenian Vases.* New York, 1935

Schreiber, "Handles"
T. Schreiber. "Handles of Greek Vases." *The J. Paul Getty Museum Journal* 5 (1977): 133–44

Walters, *History*
H. B. Walters. *A History of Ancient Pottery*. Vol. 1. London, 1905

esp.
especially

exh. cat.
exhibition catalog

fig.
figure (in this book: photographs in text)

ill.
illustration (in this book: drawings in text)

n.
note

no.
number

pl.
plate

Notes

Preface

1. J. D. Beazley, *Potter and Painter in Ancient Athens*, Proceedings of the British Academy, vol. 30 (London, 1946), pp. 5f.; Richter, *Athenian Pottery*, p. xi.
2. Ibid., pp. 87ff.
3. Ibid., pp. 64–81, figs. 58–84.
4. Ibid.
5. Walters, *History*, p. 209.
6. Richter, *Athenian Pottery*, pp. xi–xiii.
7. Noble, *Techniques*, p. 7.
8. R. E. Jones, *Greek and Cypriot Pottery* (Athens, 1986), pp. 761, 804–5. The term *gloss* was used by R. J. Charleston in *Roman Pottery* (London, 1955). It was also used by the following, among others: M. Bimson, "The Technique of Greek Black and Terra Sigillata Red," *The Antiquaries Journal* 36 (1956): 200–205; B. A. Sparkes, *Greek Pottery: An Introduction* (New York, 1991), p. 17; T. Rasmussen and N. Spivey, eds., *Looking at Greek Vases* (Cambridge, 1991), pp. 237f.

1. Clay: Origin, Composition, Properties, Purification

1. D. Rhodes, *Clay and Glazes for the Potter* (New York, 1957), pp. 2ff., presents a comprehensive discussion of the geologic origins and chemical composition of clay. See also F. Hamer and J. Hamer, *The Potter's Dictionary of Materials and Techniques*, rev. edn. (New York, 1986), pp. 59–66.
2. P. M. Rice, *Pottery Analysis: A Sourcebook* (Chicago, 1987), pp. 49–50.
3. Noble, *Techniques*, p. 89.
4. C. R. Amberg, "Terra Sigillata," *Ceramic Industry* 51 (1948): 91.
5. A. O. Shepard, *Ceramics for the Archaeologist* (Washington, D.C., 1956), p. 131.
6. Hamer and Hamer (note 1), p. 245.
7. Ibid., pp. 62ff., 246.
8. Ibid., p. 333.
9. Ibid., p. 248.
10. Rice (note 2), pp. 49–50.
11. P. Valavanos, "Ένα αρχαίο εργαστήριο στην εποχή μας," *Archaiologia* (September 1990): 35–36.
12. Ibid.
13. Ibid., p. 35.
14. Ibid., p. 36.
15. Ibid.
16. Ibid.

2. Forming Techniques

1. See D. Rhodes, *Pottery Form* (Radnor, Penn., 1976), pp. 3–9, for a thorough discussion of the wedging process.
2. T. Schreiber, "The Turn of the Wheel," *Greek Vases in the J. Paul Getty Museum* 1, OPA 1 (1983), p. 149. In most countries potter's wheels rotate in a counterclockwise direction, but in parts of the Orient they turn clockwise.
3. Noble, *Techniques*, p. 21.
4. Richter, *Athenian Pottery*, p. 68, fig. 62.
5. For ancient tools pertaining to the pottery industry, see ibid., pp. 84ff.; Noble, *Techniques*, pp. 110–11.
6. Richter, *Athenian Pottery*, figs. 58, 62, 64, 88; Noble, *Techniques*, figs. 1, 6.
7. See R. Hampe and A. Winter, *Bei Töpfern und Töpferinnen in Kreta, Messenien und Zypern* (Mainz, 1962), for photos of modern potters in Crete using this technique.
8. *Agora* 12, p. 52, pl. 2; p. 174, pl. 43.
9. Schreiber, "Handles."
10. V. Tosta and A. van der Woude, "Construction and Shape of the Nikosthenic Neck-Amphora," *Ancient Greek and Related Pottery*, Proceedings of the International Vase Symposium in Amsterdam, Allard Pierson Series, vol. 5 (Amsterdam, 1984), p. 162.
11. Noble, *Techniques*, pp. 81, 84, calls the unfired material used to decorate Attic vases "slip."

3. A Modern Greek Family-run Pottery Shop

1. For information on ancient pottery shops, see L. Hussong, *Zur Technik der Attischen Gefäßkeramik* (Trier, 1928), pp. 62ff.; Cook, *GPP*, pp. 270–74; T. B. L. Webster, *Potter and Patron in Classical Athens* (London, 1972), pp. 8–9; Noble, *Techniques*, p. 12; B. A. Sparkes, *Greek Pottery: An Introduction* (New York, 1991), pp. 10–13.
2. Walters, *History*, p. 151.
3. British Museum, *A Guide to Greek and Roman Life*, 2nd edn. (London, 1920), p. 182, fig. 218.
4. Sparkes (note 1), pp. 8–12, has a possible layout for an ancient pottery workshop.
5. Noble, *Techniques*, p. 204 n. 9. See also R. Hampe and A. Winter, *Bei Töpfern und Töpferinnen in Kreta, Messenien und Zypern* (Mainz, 1962), and idem, *Bei Töpfern und Zieglern in Süditalien, Sizilien und Griechenland* (Mainz, 1965).
6. Noble, *Techniques*, pp. 18, 198.
7. Sparkes (note 1), p. 10: "[In] the smaller, household based industries ... the women of the family were likely to have played a major role in pottery production alongside the men."

4. Surface Treatment

1. C. R. Amberg, "Terra Sigillata," *Ceramic Industry* 51 (1948): 91; M. Bimson, "The Technique of Greek Black and Terra Sigillata Red," *The Antiquaries Journal* 36 (1956): 201.
2. A. O. Shepard, *Ceramics for the Archaeologist* (Washington, D.C., 1956), p. 191.
3. F. Hamer and J. Hamer, *The Potter's Dictionary of Materials and Techniques*, rev. edn. (New York, 1986), pp. 62-65.
4. Amberg (note 1), p. 91.
5. F. H. Norton, *Ceramics for the Artist Potter* (Reading, Mass., 1956), p. 46.
6. Shepard (note 2), p. 123.
7. Noble, *Techniques*, p. 127.
8. Richter, *Athenian Pottery*, p. 19.
9. Sometimes one can feel the difference between burnish marks and miltos streaking.
10. See A. J. Clark, *CVA*, *J. Paul Getty Museum*, fasc. 1 (Malibu, 1988), pp. 21-23, pls. 22-24, for discussion of this neck-amphora.
11. Richter, *Athenian Pottery*, pp. 53-59; pp. 96-98 list the literary references to miltos and the methods of its application on Attic pottery.
12. Noble, *Techniques*, pp. 125-27.
13. Cook, *GPP*, p. 243.
14. Noble, *Techniques*, p. 127.
15. Richter, *Athenian Pottery*, p. 58.
16. Yellow ocher is less intense in color than red ocher but reacts to burnishing in the same manner.
17. Using red clay from two different sources in Amarousi, a suburb of Athens, I created various vases. Half the vases were burnished when they reached the firm leather-hard stage, the other half were not burnished. I applied a thin coat of yellow ocher mixed with various media (watered honey, soap, tap water, alkaline water) in horizontal stripes on each leather-hard vase, both burnished and unburnished. The ocher stripes were then polished with the back of a metal spoon to bring out a sheen on each test stripe. The sheen was enhanced when followed by rubbing. Some sections of each polished stripe were rubbed lightly, others vigorously, for thirty seconds with, in turn, a finger, a soft cloth, and a soft chamois. In general, on both the burnished and unburnished vases, where tap water was the medium, the ocher rubbed off, whereas it did not when mixed with the other media.

    Ocher was also applied on a freshly thrown, wet piece, which was polished when it reached the leather-hard stage. In this case the ocher mixed with the surface clay, resulting in a thinner coating of ocher with less sheen.
18. Under certain conditions firing may also soften or eliminate burnish marks, especially if the firing runs past the optimum point.

5. Greek Gloss and Firing

1. See M. Bimson, " The Technique of Greek Black and Terra Sigillata Red," *The Antiquaries Journal* 36 (1956): 200-205; R. J. Charleston and R. M. Cook, "Greek and Roman Pottery," *Masterpieces of Western and Near Eastern Ceramics*, vol. 2 (Tokyo, 1979), pp. 31f.; R. E. Jones, *Greek and Cypriot Pottery* (Athens, 1986), pp. 761, 804-5; T. Rasmussen and N. Spivey, eds., *Looking at Greek Vases* (Cambridge, 1991), pp. 237ff.; B. A. Sparkes, *Greek Pottery: An Introduction* (New York, 1991), p. 17.
2. T. Schumann, "Oberflachenverzierung in der antiken Töpferkunst: Terra sigillata und griechische Schwarzrotmalerei," *Berichte der Deutschen Keramischen Gesellschaft* 23 (Berlin, 1942): 408ff.; review by C. Weickert in *Archäologischer Anzeiger*, 1942: 512ff.
3. Jones (note 1), pp. 801-5.
4. F. Hamer and J. Hamer, *The Potter's Dictionary of Materials and Techniques*, rev. edn. (New York, 1986), p. 99.
5. Noble, *Techniques*, p. 127, states that water was added to dilute it.
6. Richter, *Athenian Pottery*, pp. 29-31.
7. C. F. Binns and A. D. Fraser, "The Genesis of the Greek Black Glaze," *AJA* 33 (1929): 1-9.
8. Noble, *Techniques*, p. 80.
9. Ibid.
10. Ibid., pp. 80-81.
11. Accounts of various aspects of the Attic gloss and firing can be found in the following: Richter, *Athenian Pottery*; Binns and Fraser (note 7); C. R. Amberg, "Terra Sigillata," *Ceramic Industry* 51 (1948): 77-80; Bimson (note 1); A. Winter, *Die Antike Glanztonkeramik: Praktische Versuche* (Mainz, 1978); Jones (note 1); Noble, *Techniques*; Sparkes (note 1).

6. Flaws and Defects

1. A detailed study of all phases of cracks and dunts can be found in F. Hamer and J. Hamer, *The Potter's Dictionary of Materials and Techniques*, rev. edn. (New York, 1986), pp. 79-87, 110-14.
2. Ibid., p. 285.
3. D. Rhodes, *Clay and Glazes for the Potter* (New York, 1957), p. 15; Hamer and Hamer (note 1), pp. 285-91, have a comprehensive discussion on the subject of silica, including quartz inversion; A. O. Shepard, *Ceramics for the Archaeologist* (Washington, D.C., 1956), pp. 28-29, mentions quartz inversion in low-fired wares; Noble, *Techniques*, p. 165.

4. Professor H. H. Batey, Chemistry Department, Washington State University, Pullman, Washington, personal communication.
5. Rhodes (note 3), p. 47.
6. See A. J. Clark, *CVA, J. Paul Getty Museum*, fasc. 1 (Malibu, 1988), pp. 62–63, pls. 59–60, for discussion of this kalpis.

7. Alabastron

1. For Corinthian, Etruscan, Italo-Corinthian, and East Greek types, see Kanowski, *Containers*, pp. 14–17.
2. Walters, *History*, p. 197.
3. Ibid.
4. Richter and Milne, *Shapes and Names*, p. 17; B. A. Sparkes and L. Talcott, *Pots and Pans of Classical Athens*, American School of Classical Studies at Athens (Princeton, 1976), fig. 47.
5. Walters, *History*, p. 197; Richter and Milne, *Shapes and Names*, p. 17.
6. Ibid.
7. Ibid.
8. Cook, *GPP*, p. 232.

8. Amphora

1. Richter and Milne, *Shapes and Names*, p. xii n. 1.
2. See *Agora* 23, pp. 4ff.; Kanowski, *Containers*, pp. 18–24; *Agora* 12, pp. 47–48.
3. Walters, *History*, p. 159.
4. Ibid., p. 153; Richter and Milne, *Shapes and Names*, p. 3; Kanowski, *Containers*, p. 22.
5. Cook, *GPP*, p. 220.
6. Ibid.
7. See figs. 30.1–5.
8. See the same type of mound in A. J. Clark, *CVA, J. Paul Getty Museum*, fasc. 1 (Malibu, 1988), p. 84.
9. Ibid., pp. 21–23, pls. 22–24.1, 2, for discussion of this vase.
10. Ibid., pp. 6–7, pls. 5–6, 8.5, 6, for discussion of this vase.
11. Ibid., pp. 21–23, pls. 22–24.1, 2, for discussion of this vase.
12. Ibid., pp. 70–73, 81–82, 84, 86.
13. V. Tosta and A. van der Woude, "Construction and Shape of the Nikosthenic Neck-Amphora," *Ancient Greek and Related Pottery*, Proceedings of the International Vase Symposium in Amsterdam, Allard Pierson Series, vol. 5 (Amsterdam, 1984), p. 162.
14. Kanowski, *Containers*, p. 19.
15. *Agora* 23, pp. 4–7; J. D. Beazley, *The Development of Attic Black-Figure* (Berkeley, 1986), pp. 54, 60; *Agora* 12, p. 48. Richter and Milne, *Shapes and Names*, pp. 3–4, used a different classification.
16. Ibid., p. 4, Type I_b.
17. Ibid., Type I_a.
18. Ibid., Type I_c.
19. H. Mommsen, personal communication, corroborated this. See Clark (note 8), pp. 14–15, pls. 13–14, 16.5–6, and pp. 18–20, pls. 18–20, 26.3–4, for discussion and details of these vases.
20. See M. Vickers, "A Note on a Rattling Attic Black Glaze Cup in Dublin," *JHS* 90 (1970): 199–201, pls. 4–5; M. Vickers, "An Ex-Rattling Cup in Oxford," *AJA* 77 (1973): 196–97, pl. 40; M. Vickers and L. Jeffery, "Two More Rattling Cups?" *AJA* 78 (1974): 429–31.
21. Beazley (note 15), chap. 8; *Agora* 23, p. 12.
22. Beazley (note 15), pp. 81, 92.
23. J. Frel, *Panathenaic Prize Amphoras*, Kerameikos book, no. 2 (Athens, 1973), p. 8.

9. Aryballos

1. For varieties of Attic terra-cotta aryballos shapes, see Kanowski, *Containers*, pp. 26–29.
2. J. D. Beazley, "Aryballos," *BSA* 28 (1926–1927): 187 n. 5.
3. Ibid.: 197.
4. C. H. E. Haspels, "How the Aryballos Was Suspended," *BSA* 28 (1926–1927): 216ff.
5. Beazley (note 2): 194–97.
6. Cook, *GPP*, p. 232.

10. Askos

1. J. D. Beazley, "An Askos by Macron," *AJA* 25 (1921): 326–27 n. 3, lists eleven different variations of the shape: (1) Small, shallow, round-bodied vase with spout set on one side of the top, an overarching handle reaching from the spout to the opposite side—by far the most common type in Attic pottery. (2) Like 1, but the middle of the top molded like a lid. (3) Like 1, but with a tubular body (ring askos). (4) A higher type with flattened top and usually a small cylindrical passage sunk vertically through the body. (5) Like 4, but no passage, with two spouts, one a trefoil shape. (6) Like 1, but handle is a ring, set vertically at the side of the vase. (7) Like 6, but with a circular filling hole in the upper surface, often with a sieve bottom. (8) Like 7, but the spout is shaped like a lion's head. (9) Vase in the shape of a crab claw. (10) Vase in the shape of a duck. (11) Black vase in the shape of a knucklebone with twisted and knotted overarching handle.

   The authors of *Agora* 12, p. 160, add a lidded askos with an opening in the center of the top in place of the strainer. They also list a vase with a tall pouring spout in the center of the top called a guttus type. See also Kanowski, *Containers*, pp. 30–32.
2. Richter and Milne, *Shapes and Names*, p. 18.
3. *Agora* 12, p. 157.
4. A suggestion from D. von Bothmer, in D. M. Buitron, *Attic Vase Painting in New England Collections*, exh. cat. (Harvard University, Fogg Art Museum, 1972), p. 93.

5. H. Hoffmann, *Sexual and Asexual Pursuit: A Structuralist Approach to Greek Vase Painting*, Royal Anthropological Institute of Great Britain and Ireland, Occasional Paper, no. 34 (London, 1977), p. 1 n. 8.
6. Noble, *Techniques*, p. 77.
7. Richter and Milne, *Shapes and Names*, p. 18.
8. M. True, "Pre-Sotadean Attic Red-Figure Statuette Vases and Related Vases with Relief Decoration" (Ph.D. diss., Harvard University, 1986). For reconstruction drawing, see p. 206, fig. 3b.
9. Ibid., p. 204, fig. 2b, for reconstruction drawing. The mouth measures 6.6 cm inside, 8.4 cm outside.
10. Ibid.

11. Dinos

1. See *Agora* 23, pp. 33–35; Kanowski, *Containers*, pp. 86–88; *Agora* 12, p. 57.
2. A few red-figured dinoi do have feet: see Getty Museum 89.AE.73, attributed to the Syleus Painter, and a dinos at Princeton, inv. 86.34, by the Copenhagen Painter.
3. Richter and Milne, *Shapes and Names*, pp. 9–10.
4. Construction information on *tsoukali* is from a slide lecture at the Getty Museum on November 21, 1974, by Professor Frederick R. Matson, Pennsylvania State University. See also R. E. Jones, *Greek and Cypriot Pottery* (Athens, 1986), p. 861.
5. See M. Robertson, "Fragments of a Dinos and a Cup Fragment by the Kleophrades Painter," *Greek Vases in the J. Paul Getty Museum* 1, OPA 1 (Malibu, 1983), pp. 51f., for discussion of these dinos fragments.
6. See P. E. Arias and M. Hirmer, *A History of 1000 Years of Greek Vase Painting* (New York, 1962), pls. 35–37: dinos with stand, Paris, Louvre E 874; D. Williams, "Sophilos in the British Museum," *Greek Vases in the J. Paul Getty Museum* 1, OPA 1 (Malibu, 1983), pp. 9–34: dinos with stand in London, British Museum 1971.11; J. Boardman, *Athenian Black Figure Vases* (New York, 1974), pls. 11, 24; F. Lissarrague, *The Aesthetics of the Greek Banquet: Images of Wine and Ritual*, trans. A. Szegedy-Maszak (Princeton, 1990), p. 23, fig. 10.
7. Richter and Milne, *Shapes and Names*, fig. 70: dinos with stand, Boston, Museum of Fine Arts 90.154.

12. Exaleiptron

1. Richter and Milne, *Shapes and Names*, p. 21. See also Kanowski, *Containers*, p. 119.
2. *ABV* 348–49. Beazley referred to the vase as a kothon.
3. Kanowski, *Containers*, p. 35. See also I. Scheibler, "Exaleiptra," *Jahrbuch des Deutschen Archäologischen Instituts* 79 (1964): figs. 1–4, for early design derived from Corinth that has a low ring foot.
4. Kanowski, *Containers*, p. 35; Richter and Milne, *Shapes and Names*, pp. 21–22.
5. Kanowski, *Containers*, p. 34.
6. Richter and Milne, *Shapes and Names*, pp. 21–22, pls. 146–48.

13. Fish Plate

1. I. McPhee and A. D. Trendall, *Greek Red-Figured Fish Plates* (Basel, 1987), pp. 21–22, state: "That these red-figured plates were intended to hold fish or parts of fish is, of course, suggested by the decoration which normally shows edible marine creatures." They suggest the ancient name for the fish plate might have been *ὀξύβαφον*. Walters, *History*, p. 194 n. 3, mentions a South Italian plate with ΙΧΘΥΑΙ inscribed underneath.
2. Walters, *History*, p. 194.
3. *Agora* 12, pp. 147–48; McPhee and Trendall (note 1), p. 22, suggest that the central well of South Italian fish plates may have held a small sauce bowl.
4. Marit Jentoft-Nilsen, personal communication.
5. Cook, *GPP*, p. 238.
6. A. G. Woodhead, "A Political Potsherd," *BSA* 48 (1953): 192.
7. Cook, *GPP*, p. 238.
8. McPhee and Trendall (note 1), p. 20, "the high stemmed foot which sometimes occurs . . . on South Italian . . . plates is avoided by the Athenian potter."
9. Ibid., p. 20.

14. Hydria

1. See *Agora* 23, pp. 35–38; Kanowski, *Containers*, pp. 38–42; *Agora* 12, p. 53.
2. Walters, *History*, pp. 165–67; Richter and Milne, *Shapes and Names*, pp. 11–12; Kanowski, *Containers*, pp. 38–42.
3. Cook, *GPP*, pp. 223–24.
4. Schreiber, "Handles," p. 140, figs. 13–15.
5. Ibid., 138–39, figs. 10–12.
6. Richter and Milne, *Shapes and Names*, p. 12.
7. See A. J. Clark, *CVA, J. Paul Getty Museum*, fasc. 1 (Malibu, 1988), pp. 62–63, pls. 59, 60.1, for discussion of this vase.

15. Kantharos

1. L. D. Caskey and J. D. Beazley, *Attic Vase Paintings in the Museum of Fine Arts*, vol. 1 (London, 1931), pp. 14–18, list seven varieties of kantharoi as follows: (1) Type A_1: high, incurving, concave handles; shallow bowl with tall, upper body, high foot with fillet between stem and bowl. (2) Type A_2: like A_1, but handles are flat and have struts and spurs; heavier, ridged stem. (3) Kantharos by Teisias: like A_2, but no spurs; handles triangular in cross-section and flat on top; fillet replaces ridge on stem. (4) Stemless: like A_2, but stemless; ring foot in two degrees. (5) Type B: like A_1, but with low handles and low, stemmed foot. (6) Type C: high handles like A_1; body is hemispherical with no division between bowl and upper body; foot is low and stemmed. (7) Type D: like C, but with squat body and stemless ring foot (called Sotadean in *Agora* 12, p. 116). Ibid., pp. 113–24, pls. 27–29, 47, 56, add several other shapes, notably (1) Sessile with low handles: like B, but on a stemless foot. (2) Tumbler: like D, but with low handles. Plastic kantharoi are discussed in M. True, "Pre-Sotadean Attic Red-Figure Statuette Vases and Related Vases with Relief Decoration" (Ph.D. diss., Harvard University, 1986). See also Kanowski, *Containers*, pp. 48–51.
2. Caskey and Beazley (note 1), p. 14.
3. Ibid.
4. *Agora* 12, p. 113 n. 1.
5. Potters of Type C kantharoi did not flare the lip but incurved it. They made no distinction between the bowl and the upper body of a Type C kantharos, although the vase-painter did.
6. The low, stemmed foot of the Type B or Type C kantharos was thrown upside down in a manner similar to the Type A kylix (p. 155). When creating the body of a stemless, sessile, or Type D kantharos, the potter left a thicker floor, from which he turned the low foot.
7. Struts and spurs found in Type A_2 and stemless kantharoi were hand molded.
8. *Agora* 12, pp. 117–19.
9. M. Vickers, "A Note on a Rattling Attic Black Glaze Cup in Dublin," *JHS* 90 (1970): 199–201, pls. 4–5; M. Vickers, "An Ex-Rattling Cup in Oxford," *AJA* 77 (1973): 196–97, pl. 40; M. Vickers and L. Jeffery, "Two More Rattling Cups?" *AJA* 78 (1974): 429–30, pl. 88.

16. Krater

1. See *Agora* 23, pp. 23–27; Kanowski, *Containers*, pp. 60–70; *Agora* 12, pp. 54–55.
2. F. Lissarrague, *The Aesthetics of the Greek Banquet: Images of Wine and Ritual*, trans. A. Szegedy-Maszak (Princeton, 1990), p. 6, notes that the name *krater* derives from the Greek word *kratos*, which denotes a mingling.
3. Richter and Milne, *Shapes and Names*, p. 7.
4. Lissarrague (note 2), pp. 8, 87, 91.
5. Noble, *Techniques*, p. 50.
6. Cook, *GPP*, p. 228; D. A. Amyx, *Corinthian Vase-Painting of the Archaic Period* (Berkeley, 1988), vol. 2, pp. 504–5; *Agora* 23, pp. 23–24; *Agora* 12, pp. 54–55.
7. Richter and Milne, *Shapes and Names*, p. 7.
8. Schreiber, "Handles," pp. 135ff.
9. *Agora* 23, pp. 25–26; Kanowski, *Containers*, p. 69.
10. J. D. Beazley, *The Berlin Painter* (Mainz, 1974), p. 6.
11. D. von Bothmer, "Observations on Proto-Volute Kraters," *Corinthiaca: Studies in Honor of Darrell A. Amyx* (Columbus, MO, 1986), pp. 107–16. See also *Agora* 23, p. 26.
12. Ferrara T. 436 (*ARV*[2] 511.2) is 29.3 cm tall; Ferrara T. 19 C VP (*ARV*[2] 628.1) is 80 cm tall.
13. Richter and Milne, *Shapes and Names*, p. 7.
14. The potter angled the cylinder *sharply* inward on later volute-kraters, which have a more spreading mouth.
15. See S. Frank, *Attische Kelchkratere: Eine Untersuchung zum Zusammenspiel von Gefäßform und Bemalung* (Frankfurt am Main, 1990).
16. J. Boardman, *Athenian Black Figure Vases* (New York, 1974), p. 57; *ABV* 145.19.
17. Richter and Milne, *Shapes and Names*, p. 8.
18. See M. Robertson, "The Berlin Painter at the J. Paul Getty Museum and Some Others," *Greek Vases in the J. Paul Getty Museum* 1, OPA 1 (1983), pp. 69–72, for discussion of this vase.
19. J. Boardman, *Athenian Red Figure Vases: The Archaic Period* (New York, 1975), p. 209.
20. A few bell-kraters have no foot: e.g., Paris, Louvre G 175 (*ARV*[2] 206.124) and Palermo V 779 (*ARV*[2] 496.5).
21. South Italian bell-kraters have higher stems and a top-heavy look, though they sit on a sturdy disk foot.
22. Richter and Milne, *Shapes and Names*, p. 8.

17. Kyathos

1. J. Boardman, *Athenian Black Figure Vases* (New York, 1974), p. 189.
2. M. M. Eisman, "The Theseus Painter, the Marathon Tumulus and Chronology," *AJA* 75 (1971): 200.
3. Idem, "Nikosthenic Amphorai," *The J. Paul Getty Museum Journal* 1 (1974): 52.
4. Walters, *History*, p. 179; Kanowski, *Containers*, pp. 72–75.
5. Richter and Milne, *Shapes and Names*, pp. 30–31.
6. Ibid., p. 31.

7. It could be argued that the potter created the handle by extruding it from a flattened slab of clay using a form similar to that in figure 3.10, though Bernard Leach (*A Potter's Book* [New York, 1949], p. 89) believes extruded handles did not come into use until the beginning of industrialization. Extrusion would have left a ridge down the entire kyathos handle, which would have necessitated the potter removing it from either end of the handle. It does not seem likely that this technique was used, for the typical unevenness in the cross-section of the handle (one side thick, the other thin) in figure 17.3 is indicative of a pulled handle (see Schreiber, "Handles," p. 137, fig. 7). Extruded handles lack vitality; they have a stilted appearance (see figs. 3.12 and 18.29). Another argument might be for laying a very thin roll of clay on top of the handle to form the ridge. If that were the case, one would expect to find a more angular junction between ridge and adjacent handle.
8. *Agora* 12, pp. 22ff., has a good discussion of stamped patterns.
   An alternate method would be for the potter to impress clay into a metal form, remove it, then sprig it onto the inward end of the stem with slip, a technique similar to that used in the production of Wedgwood pottery today. If this were the case, one might expect to find a number of handles with the palmette above the level of the stem, which has not been my experience.

18. Kylix

1. On the shapes, see esp. *Agora* 23, pp. 62–68; Kanowski, *Containers*, pp. 78–84; and *Agora* 12, pp. 88ff.
2. A red-figured kylix in the Getty Museum (86.AE.285) signed by Euphronios as potter and attributed to Onesimos as painter has a bowl diameter of 46.5 cm. A black-figured Type A cup in the British Museum (B 426: *ABV* 256.20) by the Lysippides Painter has a bowl diameter of 53.0 cm. A Type B cup in Ferrara (T. 18 C VP: *ARV*[2] 882.35), the work of the Penthesilea Painter, has a bowl diameter of 56.6 cm.
3. Cook, *GPP*, pp. 234–35.
4. Richter and Milne, *Shapes and Names*, p. 25.
5. Cook, *GPP*, pp. 234–35.
6. Noble, *Techniques*, p. 57.
7. Walters, *History*, p. 180.
8. A few band cups are large, even huge. See J. D. Beazley, "Little-Master Cups," *JHS* 52 (1932): 188.
9. Ibid.: 187, 191.
10. See A. J. Clark, *CVA, J. Paul Getty Museum*, fasc. 2 (Malibu, 1990), pp. 45–46, 89, pls. 89.3, 90, 91.1 for discussion of this lip cup.
11. Walters, *History*, p. 112, speaking of modeling details, states, "The modeling of details was done partly with tools, partly with the finger. The use of the fingernail for this purpose became proverbial, as in the saying attributed to Polykleitos: 'When the clay has reached the fingernail stage, then the real difficulty begins.'"
12. See Clark (note 10), pp. 43–45, pls. 86–88, 89.2, for discussion of this Siana cup.
13. J. D. Beazley and H. G. G. Payne, "Attic Black-Figured Fragments from Naucratis," *JHS* 49 (1929): 259, 265, pls. xv, xvii.
14. Noble, *Techniques*, p. 31, no. 47. See ill. 23g in this book.
15. M. Elston, "Ancient Repairs of Greek Vases in the J. Paul Getty Museum," *The J. Paul Getty Museum Journal* 18 (1990): 53–55.
16. Beazley (note 8): 167ff. See also Beazley and Payne (note 13): 265.
17. See Noble, *Techniques*, pp. 27–30, for photographic demonstration of the creation of a lip cup stem and foot.
18. Beazley (note 8): 168.
19. Beazley and Payne (note 13): 265; J. Boardman, *Athenian Black Figure Vases* (New York, 1974), fig. 108.1.
20. J. P. Droop, "Dates of the Vases Called 'Cyrenaic,'" *JHS* 30 (1910): 21–22; Beazley and Payne (note 13): 270; Boardman (note 19), fig. 128.
21. P. N. Ure, "Droop Cups," *JHS* 52 (1932): 55–71.
22. H. A. G. Brijder, *Siana Cups I and Komast Cups*, Allard Pierson Series, vol. 4 (Amsterdam, 1983), p. 35.
23. Ibid., in referring to both Komast and Siana cups.
24. Ibid., p. 23.
25. Ibid., pls. 74, 75, 78, 83, 85, 89.
26. Unlike Greek gloss, glaze sticks firmly to glaze during firing, damaging pieces in the kiln when they accidentally touch.
27. See D. M. Buitron, *Attic Vase Painting in New England Collections*, exh. cat. (Harvard University, Fogg Art Museum, 1972), no. 54, for a footless kylix.
28. Schreiber, "Handles," p. 139, figs. 13, 17.

19. Lebes Gamikos

1. See *Agora* 23, pp. 27–29.
2. *Agora* 12, p. 54. See also Kanowski, *Containers*, pp. 86–88.
3. Cook, *GPP*, p. 230.
4. Schreiber, "Handles," pp. 135–40.
5. P. E. Arias and M. Hirmer, *A History of 1000 Years of Greek Vase Painting* (New York, 1962), p. 384, pls. 225–28.

20. Lekythos

1. D. C. Kurtz, *Athenian White Lekythoi* (Oxford, 1975), p. 77.
2. Richter and Milne, *Shapes and Names*, pp. 14–15.
3. Walters, *History*, p. 195.
4. Richter, *Athenian Pottery*, p. 60.
5. Richter and Milne, *Shapes and Names*, pp. 14–15, figs. 91–93; *Agora* 23, p. 43; Kanowski, *Containers*, p. 95; *Agora* 12, pp. 151–52; C. H. E. Haspels, *Attic Black-Figured Lekythoi* (Paris, 1936), pp. 1–5.
6. *Agora* 23, p. 44; *Agora* 12, pp. 152–53; Haspels (note 5), pp. 6–7.
7. Richter and Milne, *Shapes and Names*, pp. 14–15, figs. 91–102; *Agora* 23, pp. 45–47; Kanowski, *Containers*, pp. 94–97.
8. The workshop of the Beldam Painter produced a large group of little lekythoi with "chimney" necks and flaring mouths: Haspels (note 5), pp. 170–72, pls. 53–54.
9. Richter and Milne, *Shapes and Names*, p. xii.
10. Kurtz (note 1), pp. 198ff.; Cook, *GPP*, p. 231.
11. John Oakley informed me that he has discovered a lekythos with the foot made separately.
12. Sherds indicate that clay at the junction of neck and mouth has a uniformity of texture with no telltale join lines, no cracks at mouth/neck junction, no slip or glaze used for luting, no signs of added clay to secure a sturdy join. Lekythoi tend to break not at the mouth/neck junction but further down the neck. The evidence thus indicates the neck and mouth were thrown as one section and not separately as has been suggested by Noble, *Techniques*, p. 66.
13. Schreiber, "Handles," pp. 133–44.
14. Ibid., pp. 137–38.
15. Richter and Milne, *Shapes and Names*, pp. 14–15, figs. 91–102; *Agora* 12, p. 153.
16. Haspels (note 5), p. 176. It was first made by the Beldam Potter.
17. Noble, *Techniques*, p. 68.
18. J. V. Noble "Some Trick Greek Vases," *Proceedings of the American Philosophical Society* 112, no. 6 (1968): 375–78.
19. As seen by the author in the National Archaeological Museum, Athens.
20. Noble, *Techniques*, p. 68.
21. See J. R. Mertens, "A White Lekythos in the J. Paul Getty Museum," *The J. Paul Getty Museum Journal* 2 (1975): 27ff., for discussion of this vase.
22. Kurtz (note 1), pp. 68–73.
23. Ibid., p. 68.
24. R. Olmos Romera, *Catálogo de los vasos griegos en el Museo Arqueológico Nacional*, vol. 1, *Las lécitos áticas de fondo blanco* (Madrid, 1980), pp. 130–34; Kurtz (note 1), p. 69.
25. Ibid., p. 70.
26. Olmos Romera (note 24), pp. 130–34.
27. Ibid.; ill. 20u here is based on figure 139, p. 130, there; see also Kurtz (note 1), p. 70.

21. Loutrophoros

1. *Agora* 23, p. 18.
2. Kanowski, *Containers*, p. 102.
3. Noble, *Techniques*, p. 73.
4. Ibid.
5. Richter and Milne, *Shapes and Names*, fig. 40.
6. Kanowski, *Containers*, p. 101.

22. Mastos

1. *Agora* 23, p. 57; Kanowski, *Containers*, pp. 104–6.
2. J. R. Mertens, "Some New Vases by Psiax," *Antike Kunst* 22 (1979): 23, mentions three hollow mastos nipples with a small pellet inserted to create a rattling sound.
3. See D. von Bothmer, *The Amasis Painter and His World: Vase Painting in Sixth-Century B.C. Athens*, exh. cat. (Malibu, 1985), pp. 198–99, for a special type of mastoid cup with foot and vertical handles.

23. Oinochoe

1. See silhouette drawings, pp. 259–60, for illustrations of different shapes. ARV^2, pp. xlix–l.
2. Richter and Milne, *Shapes and Names*, p. xii, "The round or trefoil mouths of the wine jugs are so formed that the liquids can be poured without spilling."
3. Cook, *GPP*, p. 224, speaks of many oinochoai larger than 30 cm, especially prior to the sixth century B.C.
4. Cook, *GPP*, p. 227.
5. There are other possible explanations for a thick neck. Vases thrown in one piece may have thicker neck walls than body walls if the potter collars-in the neck. However, collaring-in leaves a gradual thickening from thin body wall to thick neck wall, not a bulge. Secondly, if the clay comprising the bulbous body of a vase has been stretched and thinned out from the original cylinder and the neck clay retains the thickness of the original cylinder, then the neck clay will be thicker; but here again the transition from thinner body to thicker neck is gradual and leaves no bulge.
6. Construction of the trefoil mouth is discussed under oinochoai with offset neck, pp. 204–5.
7. Shrinkage caused by drying and firing will narrow the neck somewhat.

8. See D. von Bothmer, *The Amasis Painter and His World: Vase Painting in Sixth-Century B.C. Athens*, exh. cat. (Malibu, 1985), pp. 139, 144, 149, 151, 165.
9. Schreiber, "Handles."
10. G. van Hoorn, *Choes and Anthesteria* (Leiden, 1951), pp. 15ff.
11. *Agora* 12, p. 60.
12. A. J. Clark, "The Earliest Known Chous by the Amasis Painter," *The Metropolitan Museum of Art Journal* 15 (1981): 46.
13. *Agora* 12, p. 61.
14. Cook, *GPP*, pp. 224–25.
15. *Agora* 12, p. 58, notes that the ring, or rings, on ring-collar oinochoai masks the join of neck to body; Noble, *Techniques*, p. 55.

24. Pelike

1. See *Agora* 23, p. 20; Kanowski, *Containers*, pp. 112–15; *Agora* 12, pp. 49–51.
2. D. von Bothmer, "Attic Black-Figured Pelikai," *JHS* 71 (1951): 44–45.
3. Ibid., p. 44 n. 19: "As shown by the oil and wine vending scenes on pelikai nos. 19, 20, 21, 41, 53."
4. Ibid.
5. Kanowski, *Containers*, p. 113.
6. Richter and Milne, *Shapes and Names*, p. 5.
7. R.-M. Becker, *Formen attischer Peliken von der Pionier-Gruppe bis zum Beginn der Frühklassik* (Böblingen, 1977), has numerous cross-sectional drawings of pelikai. Some illustrate, on the inside of the vessel, the smooth, continuous line of a pot thrown from one lump of clay, while many others illustrate an inward bulge at the shoulder, indicative of a neck section having been thrown separately and added to the body.
   Bothmer (note 2): 47, suggests that potters may first have developed a neck-pelike, potted in two sections, before settling on the continuous-curve shape.

25. Phiale

1. Walters, *History*, p. 191; *Agora* 23, pp. 56–57; Kanowski, *Containers*, pp. 116–17; *Agora* 12, pp. 105–6.
2. M. Robertson, "A Fragmentary Phiale by Douris," *Greek Vases in the J. Paul Getty Museum* 5, OPA 7 (1991), pp. 75–98.
3. Walters, *History*, p. 192.
4. Richter and Milne, *Shapes and Names*, p. 30.
5. Cook, *GPP*, p. 237.
6. Walters, *History*, p. 191; Richter and Milne, *Shapes and Names*, p. 30; *Agora* 12, p. 105.
7. Robertson (note 2), pp. 75ff. The largest piece of the Douris phiale measures 20.5 cm from the edge of the plate to the center of the omphalos. The outside diameter of the omphalos is 7.0 cm.
8. The omphalos is 7 mm thick; the plate is 3.75 mm thick.

26. Psykter

1. Noble, *Techniques*, p. 54; *Agora* 12, p. 52.
2. *Agora* 23, p. 21 n. 4.
3. S. Drougou, *Der Attische Psykter*, Beiträge zur Archäologie, vol. 9 (Würzburg, 1975), p. 125.
4. *Agora* 12, p. 52.
5. Walters, *History*, p. 172; G. Karo, "Notes on Amasis and Ionic Black-Figured Pottery," *JHS* 19 (1899): 141.
6. *Agora* 12, p. 52, pl. 2, nos. 41–43.
7. There is a black-figured psykter-amphora in the British Museum (B 148) painted by Lydos, possibly potted by Amasis, whose walls are connected only at the neck. Its drain is at the bottom of the outer amphora, under the foot. See D. Williams, *Greek Vases* (London, 1985), pp. 32–33.
8. A fifth-century-B.C. red-figured psykter-column-krater, attributed to the Troilos Painter, has been acquired by the Metropolitan Museum of Art.

27. Pyxis

1. M. J. Milne, "Kylichnis," *AJA* 43 (1939): 247–54.
2. S. R. Roberts, *The Attic Pyxis* (Chicago, 1978), p. 4.
3. Walters, *History*, p. 198; *Agora* 23, pp. 49–50; Kanowski, *Containers*, pp. 126–29.
4. *Agora* 12, pp. 173ff.; Roberts (note 2), p. 3.
5. Richter and Milne, *Shapes and Names*, pp. 20–21.
6. See A. J. Clark, *CVA, J. Paul Getty Museum*, fasc. 2 (Malibu, 1990), pp. 18–19, pl. 71, for details of this pyxis.
7. Personal communication from potter Michael Frimkess.
8. Roberts (note 2), pp. 5, 144.
9. A few have a tripartite foot like contemporary marble and glass pyxides; see *Agora* 12, p. 176.
10. Ibid., p. 175.
11. Ibid.
12. Ibid., p. 177.
13. Ibid.
14. Ibid.
15. Ibid., p. 178.
16. C. L. Lyons, "Nikosthenic Pyxides" (M.A. thesis, Bryn Mawr College, 1979), pp. 1, 4.

17. Ibid., p. 1.
18. Ibid., p. 113.

28. Rhyton

1. Typical shapes include ram, donkey, hound, lion, eagle, boar, goat, griffin, panther, cow, stag, bull, and cat. See M. True, "Pre-Sotadean Attic Red-Figure Statuette Vases and Related Vases with Relief Decoration" (Ph.D. diss., Harvard University, 1986), for head vases and other plastic vases, likewise moldmade with the upper portion thrown on the wheel. See also Kanowski, *Containers*, pp. 130–34.
2. Noble, *Techniques*, p. 60.
3. H. Hoffmann, "The Persian Origin of Attic Rhyta," *Antike Kunst* 4 (1961): 21–26, includes bent, horn, and animal-head rhyta in his discussion.
4. Idem, "Rhyta and Kantharoi in Greek Ritual," *Greek Vases in the J. Paul Getty Museum* 4, OPA 5 (1989), pp. 131–66, raises some interesting questions on the function of various shapes of rhyta, indicating that ritual use was prominent.
5. Idem, *Attic Red-Figured Rhyta* (Mainz, 1962), p. 47.
6. See photo of a deer-head patrix in Noble, *Techniques*, fig. 157.
7. Ibid., p. 75, suggests that the patrix was made by a sculptor. H. Hoffmann, *Tarentine Rhyta* (Mainz, 1966), p. 1, states that the modeler (presumably of the patrix) was the potter.
8. As an alternate method, a cord may have been wrapped around the patrix, clay packed around both the patrix and the cord, and the cord pulled through the clay to separate the pieces of the mold into two parts.
9. Hoffmann (note 5), pp. 23, 47–48, states that early fifth-century-B.C. rhyton molds were made in the Brygan and Sotadean workshops. In the second half of the fifth century many rhyta derived from Brygan and Sotadean molds, or old Brygan and Sotadean rhyta were revitalized and used as patrices for new molds.
10. See Hoffmann (note 3), pl. 8, no. 3.
11. Schreiber, "Handles," pp. 135–37.
12. Hoffmann (note 5), p. 4.
13. J. D. Beazley, "Charinos," *JHS* 49 (1929): 39.
14. True (note 1), pp. 64ff., pls. 8–10.

29. Skyphos

1. *Agora* 12, p. 84; *Agora* 23, p. 61.
2. See J. H. Oakley, "Attic Red-Figured Skyphoi of Corinthian Shape," *Hesperia* 57 (1988): 165–75, for details of Corinthian style.
3. *Agora* 23, p. 59.
4. Walters, *History*, p. 185.
5. Ibid., p. 184.
6. Ibid.
7. See above, note 9 in Kantharos.
8. See A. J. Clark, *CVA, J. Paul Getty Museum*, fasc. 2 (Malibu, 1990), pp. 38, 87, pls. 80.3–4, 81.3, for discussion of such a cup-skyphos.
9. Kanowski, *Containers*, p. 138.

30. Stamnos

1. F. Causey-Frel, *Stamnoi: An Exhibition at the J. Paul Getty Museum* (Malibu, 1980), introduction.
2. Walters, *History*, p. 163; Richter and Milne, *Shapes and Names*, pp. 8–9; B. Philippaki, *The Attic Stamnos* (Oxford, 1967), pp. xviii–xix.
3. Richter and Milne, *Shapes and Names*, p. 9.

Glossary

Bat A removable slab on which vessels are thrown. Often made of plaster of paris or wood and formed to fit the wheel head.

Bisque Firing, Biscuit Firing The term *bisque* tends to be associated with a hard first firing, one hotter than the succeeding glost firing, used mostly in industrial ceramics production. The term *biscuit* tends to be reserved for a softer, or lower-temperature, first firing rather than the succeeding higher-temperature glost firing. The two terms are, however, often used interchangeably.

Bound Water Chemically combined water. Water that is part of the chemical structure of kaolinite.

Burnish To give a leather-hard vessel a smooth and often polished finish by vigorously rubbing the surface with a hard, smooth object while simultaneously applying pressure.

Cap Lid A lid that fits over the outside of the mouth of a vessel and rests either there, on a narrow ledge, or on the vase shoulder.

Channel A long groove.

Chattering A series of parallel depressions occurring on a turned, leather-hard piece, caused by the bouncing of a turning tool that is dull or is held incorrectly. It leaves a corrugated effect.

China Clay See *kaolin*.

Chuck A thrown, unfired cylinder of clay centered and secured on a wheel head. It grips a previously thrown vase, holding it securely on the wheel during the turning process. It is particularly effective for holding the shoulder of an inverted, slender-necked vessel.

Clay Body A blend of different clays.

Collar, or Collar-in To narrow the circumference of a vessel being thrown on the wheel by gradually squeezing inward and upward with the thumbs and fingers of both hands held equidistant apart.

Colloid Mixture of particles of a very finely divided substance dispersed throughout another substance. Colloidal particles exhibit characteristics different from those associated with the same substance as larger particles.

Coroplast A modeler of clay figures of ancient Greece.

Cul (from Old French, meaning *bottom*). The lower, bulbous section of a calyx-krater.

De-air To remove air from clay by running it through a de-airing pug mill, which removes the air by passing the clay through a vacuum chamber.

Deflocculate To disperse fine clay particles (so that they do not cling together) in slip in order that the slip becomes more fluid. This is achieved by the addition of suitable alkalis.

Dunt Crack in pottery caused by stresses during firing and cooling.

Echinus Quarter-round shape.

Engobe White or colored slip applied to surface of ware as decoration or to conceal an inferior clay.

Fines Particles in a clay that are smaller than average.

Flocculate To collect fine clay particles into larger particles (so that they cling together), thus thickening a clay suspension. This is achieved by adding an acid to the suspension.

Gauge Stick Stick used as a gauge to throw duplicate forms on the wheel. One end is secured on a table or wall conveniently near the wheel head, the other end angled toward the wheel head and positioned where the rim or the widest part of the vase is to be copied. The potter then raises or widens succeeding pots to match the end of the gauge stick.

Glaze Highly siliceous mixture containing fluxes, which cause the mixture to fuse onto clay wares when subjected to sufficient heat, thus creating a vitreous, or glassy, layer.

Gloss The fired black material on decorated Greek vases. It is the result of a particular manner of firing a very finely levigated and probably deflocculated clay slip.

Glost Firing Glaze firing, as opposed to *bisque* or *biscuit firing*.

Green Ware Unfired pottery. May be in the leather-hard state, though potters tend to refer to green ware as completely dry, unbaked pottery.

Grog Fired clay that has been ground to varying degrees of fineness. It gives texture and porosity to a clay body, prevents excessive shrinkage, speeds drying, and prevents cracking during firing.

Handle Plate Rectangular plate added to the rim and lip of a column-krater for the attachments of handles.

Janiform Having a face on each of two sides.

Kaolin, or Kaolinite Nonplastic, coarse-grained, primary clay, a hydrated aluminum silicate, used to whiten and often to harden a clay body. It is a main ingredient of porcelain bodies.

Leather-hard Condition in which clay has dried enough to be stiff but not enough for proper firing. Leather-hard clay has lost much of its water of plasticity and can no longer be modeled but may be dented and may be joined to another leather-hard piece with slip.

Levigate To separate from coarser material by suspending in a liquid.

Levigated Slip Mixture of water and clay that has been very finely separated from coarser clay by suspension in alkaline water. It is the material the Greeks used to paint on their vases; it becomes gloss after firing.

Luster Natural sheen that appears when illite-loaded clay in the leather-hard stage is rubbed. The sheen of black gloss (consisting of illite-loaded clay) is often referred to in the literature as lustrous.

Luting Process of joining parts, such as feet or handles, to a clay vessel (usually in the leather-hard condition), using slip, slurry, or water as "cement."

Matrix Recessed mold from which a relief surface is cast.

Miltos Ocher wash painted on Attic vases and burnished to enhance the natural color of the clay.

Ogival Shaped like an S.

Patrix Pattern used to form a matrix. The form around which a mold is created.

Plastic Adjective used with "ware" in referring to pieces made in a mold.

Plasticity Property that allows a solid mass of wet clay to be reshaped to a new form (without shattering) and to retain that new form without returning to the original shape.

Pore Water Water that is locked inside the pores (channels) of dry, unfired clay.

Porosity in Clay Extent of tiny channels in clay through which water can escape in drying and in firing.

Protome Decorative three-dimensional device in the shape of the head or bust of a human, animal, or mythical creature.

Pug Mill Wedging machine that repeatedly augers and compresses clay, making it plastic.

Raw Clay Clay in its natural condition as mined. Sometimes it means an unfired clay body.

Reserved Left undecorated by the vase-painter and hence the color of the fired clay.

Rib Tool Flat, wide tool of wood, metal, or other firm or hard material fashioned with a straight or curved edge, used to help shape a wheel-thrown vessel.

Ripple Spiral folds developing in a piece being thrown on the wheel.

Sintering Partial fusion of particles, which occurs at temperatures below the melting point. The levigated slip painted on Greek vases reaches only the sintering point, not the melting point.

Slip Mixture of clay and water with the consistency of heavy cream, used for luting or for slip casting. It may be finely levigated for painting onto the surface of a clay.

Slip-Casting Process of using slip in a porous mold to create moldmade wares. This technique was not used by Attic potters.

Souring Aging clay in wet storage in order to improve its strength and plasticity.

Spiral Upward-spiraling lines on the inside of a vase.

Sprigging Adding a shaped piece of clay, usually as a decorative feature, to a clay pot.

Stress Lines Stemming from overstressing of the clay on the rotating wheel. The lines may appear when a potter collars-in a piece, for instance, for a neck.

Temper Nonplastic material, such as sand or grog, added to a clay to bring it to the proper texture and consistency in order to improve its workability.

Throwing Hand-forming a vessel of clay on a rotating potter's wheel, using water as lubrication.

Throwing Grooves Upward-spiraling grooves made by the pressure of the potter's fingertips moving the clay upward in the process of throwing a vessel on the wheel.

Throwing off the Hump Throwing one small piece after another (usually duplicates) from the top of a lump of clay.

Throwing Striations Narrow, fine parallel lines, or channels, left on the surface of a thrown piece of clay. They are created when the potter's fingers move across the wet clay applying minimal pressure.

Tired Clay Clay that has lost its strength by being overworked. Resting, aging, and souring help rejuvenate tired clay.

Torus Half-round shape.

True A pottery piece runs true, or turns true, when it is well centered on the wheel.

True up Make a pottery piece run true on the wheel.

Turning Trimming, shaving off unwanted clay, thinning a clay wall, refining the profile of a foot or decorative offset or trim while the piece turns on the wheel. It applies to thrown ware and is done on leather-hard clay.

Vitrification Hardening, tightening, and glassification of clay during firing.

Water of Plasticity Lubricating water that allows clay particles to slide past one another in wet clay, enabling the potter to form clay into an endless variety of shapes.

Wedging Mixing and compressing clay in order to expel air bubbles and to bring it to a uniform texture.

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For abbreviations of journals, see p. 266.

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Plate I
Round-bottomed alabastron. New York, The Metropolitan Museum of Art, Rogers Fund, 1908, 08.258.27.
Footed alabastron. JPGM 86.AE.437.

Plate II
Neck-amphora. JPGM 86.AE.73.
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Plate V
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Plate IX
Kantharos. Boston, Museum of Fine Arts, Catharine Page Perkins Collection, 95.36. © 1995. Museum of Fine Arts. All rights reserved. Courtesy Museum of Fine Arts, Boston.
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Plate X
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Rhyton. Boston, Museum of Fine Arts, Catharine Page Perkins Fund, 95.38. Courtesy Museum of Fine Arts, Boston.

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Fig. 1.1	Attic red-figured kylix fragment in the Manner of the Antiphon Painter. Boston, Museum of Fine Arts 01.8073, H. L. Pierce Fund.
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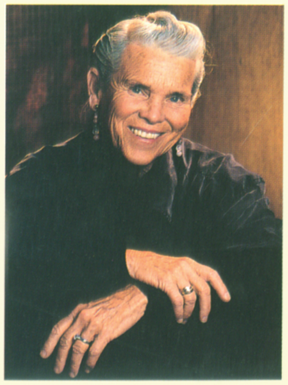
About the Author

Toby Schreiber is a master potter who became fascinated with the construction techniques used by the potters who created the classic Greek vases. An art graduate of Cornell College with a major in ceramics, she spent years creating and selling her pottery. In the mid-1970s, after the Getty Museum had been built only a few miles from her seaside studio in Malibu, California, she became associated with the Museum as a gallery teacher, and she had the opportunity to see and examine the Museum's collection of Greek vases and their fragments. She soon realized that there was a need for a seasoned potter to analyze systematically the construction techniques used in the creation of these magnificent pieces. She therefore gradually tapered off her own creative work and spent more time analyzing her study objects, publishing several articles along the way. While the majority of her research was done at the Getty Museum, she also pursued her project in major museums all over the world. She participates in Getty Museum educational projects, helping conduct workshops, making videos demonstrating potting techniques, and working as a gallery teacher. Her enthusiasm, talent, analytical prowess, technical knowledge, and love of her subject are all reflected in the text and illustrations she has created for this book.



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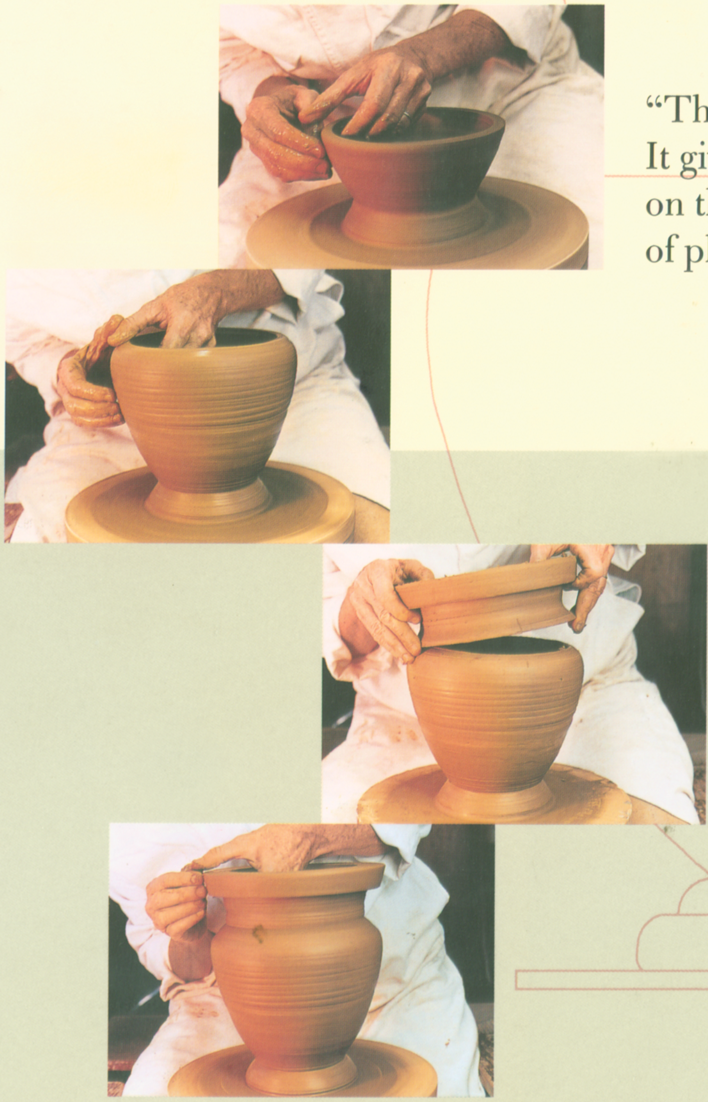

"This is an excellent book that only a practicing potter could write. It gives us detailed insight into the practical procedures of forming pottery on the potter's wheel in ancient times in Athens, as well as today. Hundreds of photographs and drawings illustrate every step."

—Joseph Veach Noble, Former Vice Director, The Metropolitan Museum of Art; President Emeritus, American Association of Museums

"This is a fascinating book. The author brings to her subject a unique combination: practical experience as an accomplished potter and scholarly expertise in the field of Greek vases. Profusely illustrated with detailed photographs and elegant drawings, this handsome volume will be the standard reference for the craft of ancient Athenian pottery for a good long while to come."

—Mary B. Moore, Professor of Art History, Hunter College, CUNY

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