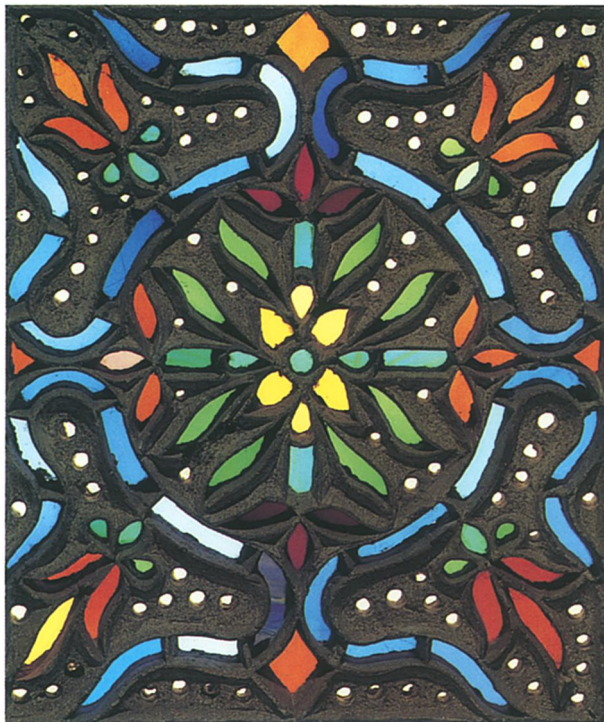


# ISLAMIC GLASS

A BRIEF HISTORY



Marilyn Jenkins

THE METROPOLITAN  
MUSEUM OF ART

Islamic glass has been greatly admired in the West for centuries. During the Crusades, splendid enamel-painted objects found their way to Europe, where they were particularly prized and took their place among precious works of art in the great church treasuries. The Venetian glassmakers and others in Europe were indebted to the Islamic tradition for many of their techniques and designs. Later, in America, Louis Comfort Tiffany's famed Favrite glass, with its shimmering iridescence and flowing contours, also showed the influence of glass from the Muslim world. In fact, 96 of the approximately 580 objects in the Metropolitan's collection of Islamic glass came to the Museum in 1891 as a gift of Edward C. Moore, a designer and director of Tiffany & Co., who shared Louis Tiffany's interest in oriental art and who has been credited with introducing the "Saracenic style" at the firm. Today, as much as ever, Islamic glass continues to command our admiration.

Part of our fascination with this glass lies in the fragility of the medium. We marvel that objects so delicate have

survived through the centuries. In some cases, a subtle and rich patina has been acquired over time: the special iridescence seen on some of the excavated objects is actually part of the disintegrative process caused by their burial. Ironically, this radiant quality has been as inspiring to Western glassmakers as the grace of form, richness of color and decoration, and technical mastery of Islamic glass.

Islamic craftsmen made major contributions to the art of glassmaking—most notably, luster-painted glass (nobly represented by the Museum's spectacular bowl, no. 20), relief-cut glass (see especially nos. 22–27), and the renowned enamel-painted glass of the thirteenth and fourteenth centuries (see cover, nos. 45–49). The original function of surviving examples of Islamic glass cannot always be identified today, but whether the objects served as mosque lamps, jewelry, coin weights, or vessels for wine, cosmetics, or perfume, their universal aesthetic appeal endures.

This *Bulletin*, written by Marilyn Jenkins, Associate Curator in the De-

partment of Islamic Art, presents a brief history of Islamic glass based on ninety-two objects selected from the Museum's collection, one of only a few in the world with the resources to illustrate such a survey. Not only do our holdings offer the requisite geographical, chronological, and stylistic range, but they are also particularly strong in early material and include one of the best collections outside Egypt of the enamel-painted group. Among our Islamic glass pieces are about a hundred finds from two series of excavations sponsored by the Museum at Nishapur, Iran, and at Ctesiphon, Iraq.

The current issue is a welcome companion to the author's Spring 1983 *Bulletin* on Islamic pottery, a subject better known and charted. The scholarly literature on Islamic glass, and on ancient glass in general, is relatively scant, and this volume is the first publication devoted to the Metropolitan Museum's distinguished collection.

PHILIPPE DE MONTEBELLO  
Director

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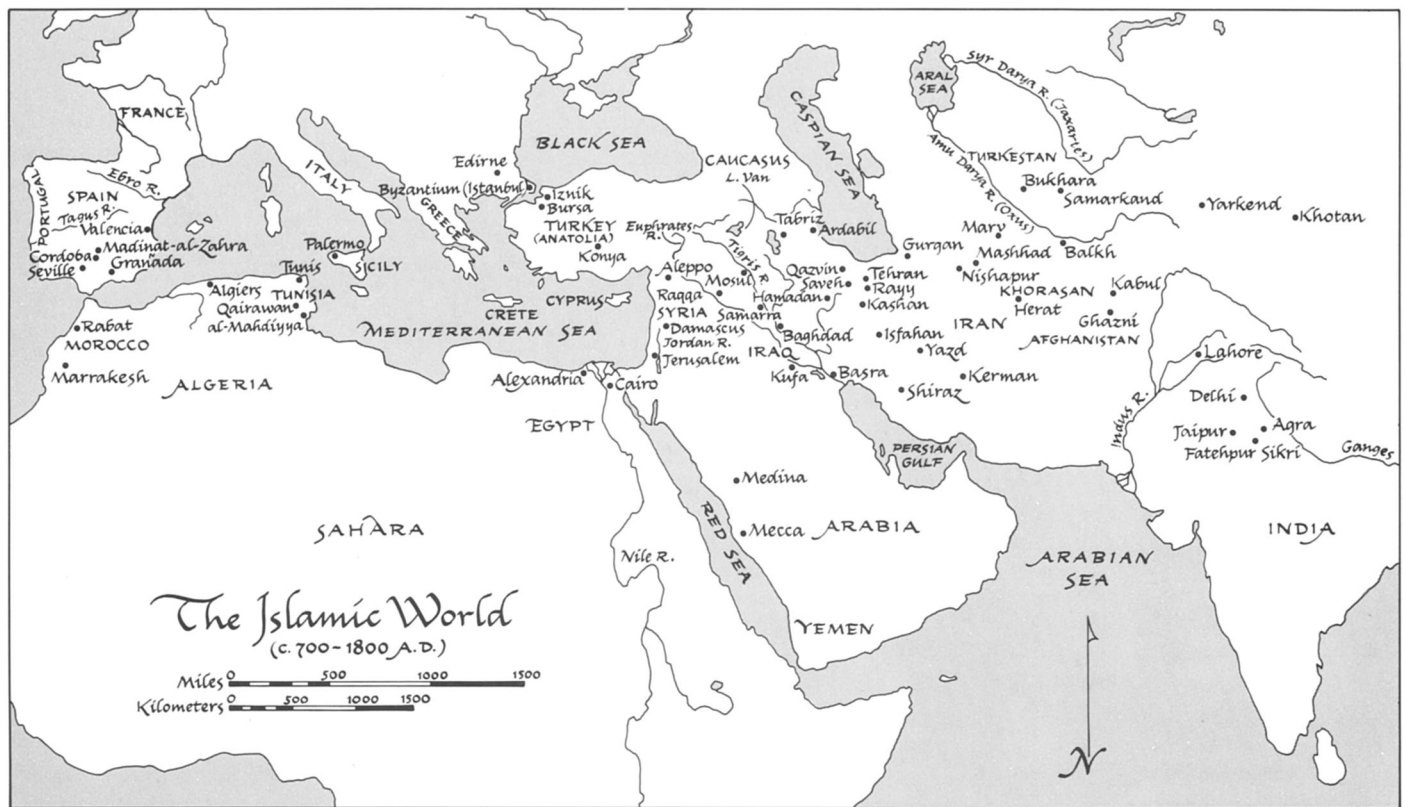
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**Front cover:** Mosque lamp. Free-blown and tooled with applied handles, enameled and gilded. Eastern Mediterranean, 1st half 14th century. Bequest of Edward C. Moore, 1891 (91.1.1530)

**Title page; back cover:** Windows. Colored glass set in molded-and-carved stucco. Egypt, Ottoman period. Gift of William R. Ware, 1893 (93.26.3.15)

**Inside covers:** Parade of the Guild of Glass-blowers. *Sûrnâme-i Humâyûn*. Turkey, ca. 1582. Topkapi Palace Museum library (H. 1344, folios 32b-33a)

Fall 1986



## Introduction

*Congeaed of air,  
Condensed of sunbeam motes,  
Molded of the light of the open plain,  
Or peeled from a white pearl*  
al-Ḥarīrī (d. 1122), Maqāmāt

Glass has become so commonplace that it no longer inspires the wonder expressed in al-Ḥarīrī's poetic recipe for a glass vessel. When we stop to consider that this material is essentially the product of sand and ashes, however, how can we fail to stand in awe of the beautiful objects illustrated here, representing a thousand years of Islamic glassmaking?

When and where the making of glass was discovered has yet to be determined. It appears that core-formed vessels were produced in both Mesopotamia and Egypt from about 1500 B.C. and that glass beads and jewelry inlays imitating precious and semi-precious stones were made there even earlier.

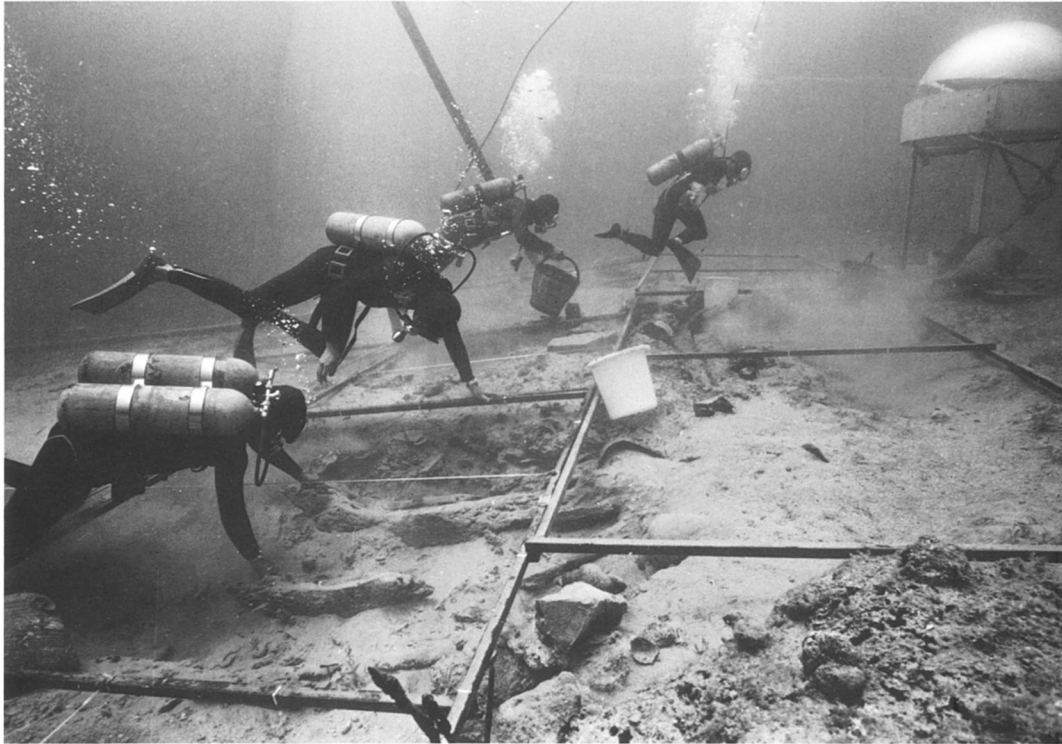
Glassmaking is a long-lived and

very traditional craft; it has been said that if a glassmaker of the second century A.D. from Rome, Alexandria, Tyre, or Cologne were to walk into a nonmechanized, wood-fired twentieth-century glass house anywhere in the world, he would be able to start working immediately, so little have the recipes, furnace types, and tools changed in two millennia.

Basically there are only two ingredients in the recipe for glass. The first is silica, which is usually in the form of sand. The other is an alkali, which came from two principal sources in the Islamic period: plant ash and natural carbonate of soda, or natron. The latter resulted from the evaporation and drying up of lakes and landlocked seas. In the presence of intense heat, the alkalis acted as a flux, causing the silica to fuse. Lime was often added—as a stabilizing substance, increasing strength and durability—as were other ingredients, depending on the type of glass

being made. In its natural state glass has a greenish cast, an accidental coloring due to the presence of iron or aluminum in the raw materials. If crystal clear, colorless glass was desired, a certain amount of manganese oxide was included in the *batch* (mixture of raw materials). In different proportions, manganese oxide colored the glass aubergine purple. Cobalt, copper, and iron oxides were other popular coloring agents, and tin oxide was used as an opacifier.

The cooking of the batch, or *melting*, was done in a three-part furnace much like that depicted in the miniature on the inside front cover of this publication. The process was often accelerated by adding *cullet* (broken glass), a practice that was also economical because it recycled the waste from the glass house. Wood was burned in the furnace's lowest compartment. The crucibles were placed on the floor of the middle storey, the oven, so that they were



*Nautical archaeologists explore the mapping grid during excavations of the shipwreck in the Aegean Sea at Serçe Limani, off the southwest coast of Turkey.*

accessible through the arched openings called *boccas*, two of which can be seen in the miniature. The upper, annealing, compartment was where the finished glass vessels were placed to cool gradually.

Once the melting was completed and the *metal*, or melted batch, was viscous and extremely ductile, the actual manufacture of the vessels could begin. The tools of the trade were, and still are, very simple in form and few in number. Using a blowpipe (a tool invented in Syria near the end of the first millennium B.C. that revolutionized glassmaking by making mass production possible), the gaffer “gathered” a portion of the metal on the end of the hollow tube by repeatedly dipping the instru-

ment in the crucible and twisting it. This *gather* was rolled into a preliminary form on a *marver*, or flat slab, and then inflated into a *parison*, or glass bubble. The glassblower in the right foreground of the miniature can be seen using a *marver*, and the craftsman immediately above him is swinging a *parison* to elongate it. Once the desired shape was achieved, the *parison* was removed from the blowpipe and transferred to a *pontil*, or rod, for further shaping and decorating. The former refinement was accomplished with one basic metal spring tool, the *pucellas*, four of which can be seen in the miniature.

Glass is one of the least-studied me-

dia in Islamic art. The main sources on Islamic glass are still two books by Carl Johan Lamm published in 1928 and 1930. Why have Islamicists over the last sixty years, a period during which the field has greatly matured, largely refrained from undertaking a scholarly investigation of glass?

A number of factors may have contributed to this phenomenon. First, there is very little information inherent in the Islamic glass objects themselves. Only a few pieces bear inscriptions containing either personal names that can be historically placed or city names that can be geographically located.

Moreover, terrestrial excavations during the past century have contributed very little to our knowledge of



*An overhead view of tables covered with fragments to be sorted gives an idea of the complexity of the glass puzzle yielded by the excavations at the wreck.*

Islamic glass that is conclusive and unequivocal, with only two exceptions. In 1965 excavations in Fustât, Egypt, yielded an undisturbed pit that was very carefully bracketed in time by, at one end, a coin weight bearing the date 750 and, at the other, a fragmentary glass measuring vessel datable to between 762 and 774. Thus, its contents provide a guideline for the placing of similar objects in the third quarter of the eighth century. The date of the founding of Samarra, north of Baghdad, as the temporary capital of the Abbasids provides us with a terminus post quem of 836 for the many objects found there during German and Iraqi excavations, but contrary to what was previously thought, there

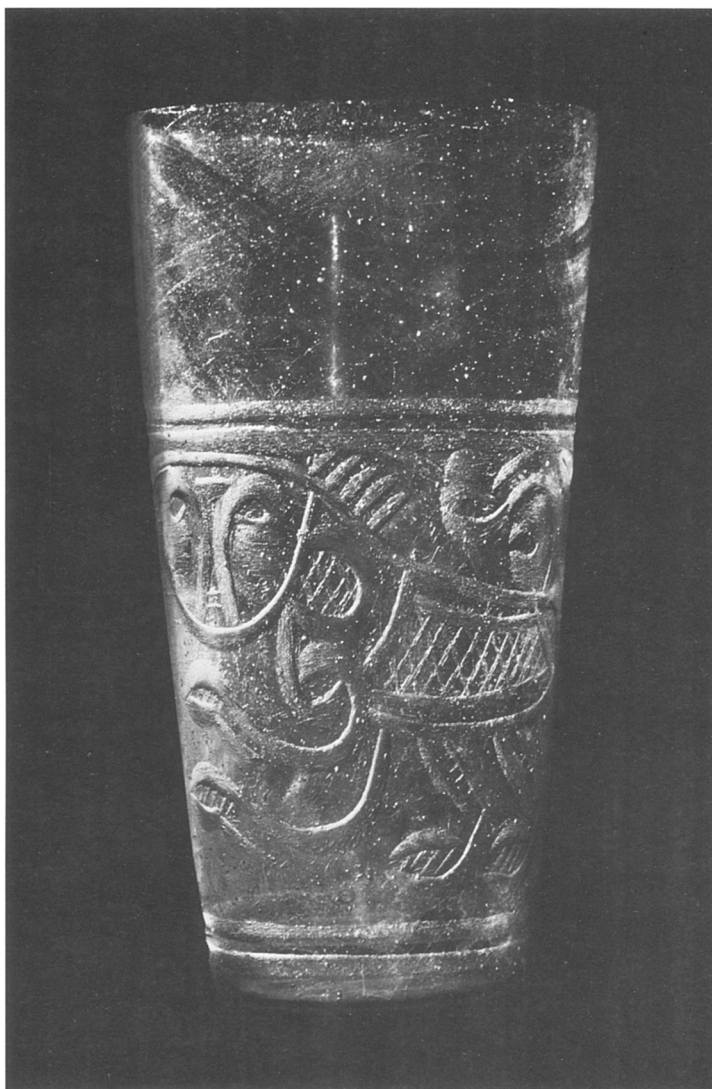
is no definite terminus ante quem for the site.

The study of Islamic glass is further complicated by the fact that glassmakers in the Muslim world seem to have moved from one place to another. For example, documents from the Cairo Geniza (literally a repository of discarded writings), an invaluable source for Mediterranean history from the eleventh through the mid-thirteenth century, mention that in the eleventh and twelfth centuries glassmakers from Greater Syria, fleeing the almost permanent state of war there, came to Egypt in such masses that they were competing with local artisans. Such emigrations would account for the numerous international styles in the shape and

ornamentation of glass objects encountered in different countries and on different continents; it is only natural that craftsmen would have created familiar products in their new venues.

Not only the glassmakers but also the glass products themselves moved from country to country. The Geniza contains a document dated 1011 in which it is noted that thirty-seven bales of glass were sent from Tyre, presumably to Egypt; in the Early Medieval period (eleventh to mid-thirteenth century), as today, such imports fostered new vogues. Various products were also packaged in glass vessels for export.

Another factor contributing to the dearth of scholarship on the subject



*Among the objects found intact at Serçe Limani are a beaker (left) and a carafe (opposite), both with wheel-cut decoration, that are very closely related to objects excavated by the Metropolitan Museum at Nishapur, Iran (see nos. 28, 29).*

may be the background in Roman glass needed to scientifically examine products of the same medium made in the Islamic world. Glass-making under Muslim aegis was greatly indebted to the Roman Imperial glass industry, and glass manufactured during the Early period (seventh to tenth century), especially, shows a great deal of Roman influence in its shapes and decorative techniques.

Also discouraging to scholars might have been the many glass-making centers and their products mentioned in contemporary texts that have defied identification.

A final and very major deterrent, however, must have been the complete lack of glass scientifically dat-

able to the Early Medieval period; except for a few pieces that scholars labeled "Iran, twelfth century," very few glass objects were even attributed to this period. The Early Medieval period, having witnessed the rise and fall of such major dynasties as the Fatimids and Ayyubids in Egypt and Syria and the Saljuqs in Iran and Turkey, was of great political and artistic importance in the Near and Middle East. The decorative arts produced under these houses were legendary in the West as well as the East. Where, then, was their glass?

Three metric tons of it were lying under 110 feet of water off the southwestern coast of Turkey until the spring of 1977.

The story of the recovery of this

find began in 1973, when a retired Turkish sponge diver directed George Bass, then president and now archaeological director of the Institute of Nautical Archaeology at Texas A&M University, to a spot where he had seen sponge divers bringing up pieces of glass. It was located in a natural harbor known as Serçe Limani (Sparrow Harbor) situated off the southwest coast of Turkey, just opposite the island of Rhodes. Capable of suddenly and unpredictably becoming a cauldron of swirling winds, this beautiful site over the centuries had been the burial ground for several seagoing vessels.

On the basis of a few trial dives, which produced reports that thirty-three meters below the surface





there was "glass everywhere," Bass decided that the location appeared to offer enough potential to commit his institute, its equipment, and a large sum of money to an excavation. In the spring of 1977 he started a full-scale dig at Serçe Limani. When it was discovered that the remains of a ship also lay underwater, he knew that the expensive gamble was not in vain.

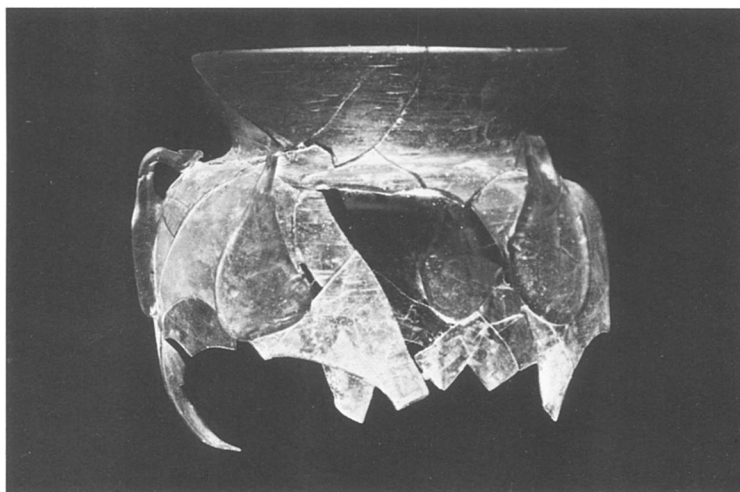
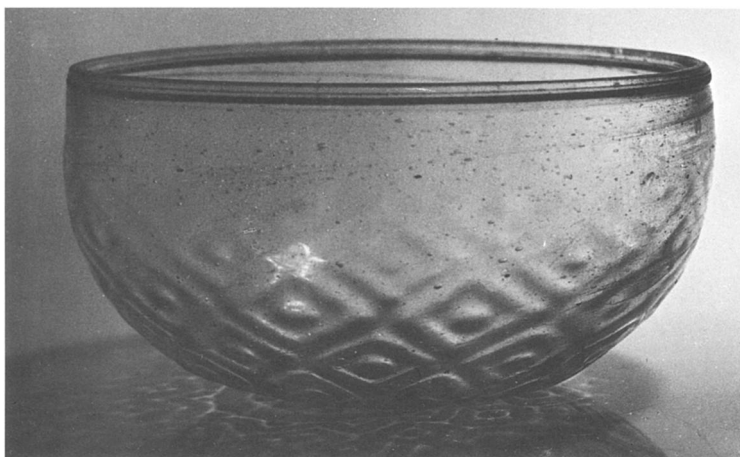
The first step in the recovery of the ship and its contents was to construct a metal grid composed of two-meter-square sections, each of which was numbered, over the entire area of the wreck (see photograph, p. 4). The grid was used much like a map to pinpoint the exact location of the objects strewn on the sea floor. Then

began the painstaking and often hazardous (many divers were cut in the process of bringing up the glass) process of salvaging the ship and all its contents.

The retrieval took three seasons, but the results were astounding. Among the remains gathered by the team of divers were copper coins of the Byzantine emperor Basil II and Fatimid gold coins and glass coin weights. The latest among these, three of the weights, permit the dating of the ship's sinking to around A.D. 1025. As the site seemed almost uncontaminated by earlier or later artifacts from passing ships, this wreck is a time capsule of a single voyage made late in the first or early in the second quarter of the elev-

enth century. As such, it serves as an invaluable tool for dating, and it is revolutionizing our view of a major period of Islamic art history.

Although one should not underestimate the importance of the pottery, jewelry, arms, metalwork, and wooden objects found, all of which add new and important dimensions to our knowledge of these media, the single most important cargo on this merchant ship was its glass. More than eighty intact pieces were found in locations that indicate they had been carried in the living quarters at the bow and the stern and thus probably belonged to the merchants traveling in those cabins. Any excavation yielding eighty such pieces would be judged a success, but that at Serçe



*A bowl (above) and a fragmentary lamp (below), both of which were recovered from the wreck, help to date similar objects at the Metropolitan and those in other collections as well (see nos. 39, 40).*

Limani provided an additional three metric tons of glass cullet, which had been stowed in the after hold area. Roughly two tons were in the form of heavy chunks of raw glass up to thirty centimeters long. The remaining ton was in the form of small fragments of glass, in a broken condition when loaded on board; some had been factory waste and some, showing signs of wear, probably had been bought from households in much the same manner as in the Middle East today, where itinerant dealers going from house to house purchase broken glass to sell to glass factories.

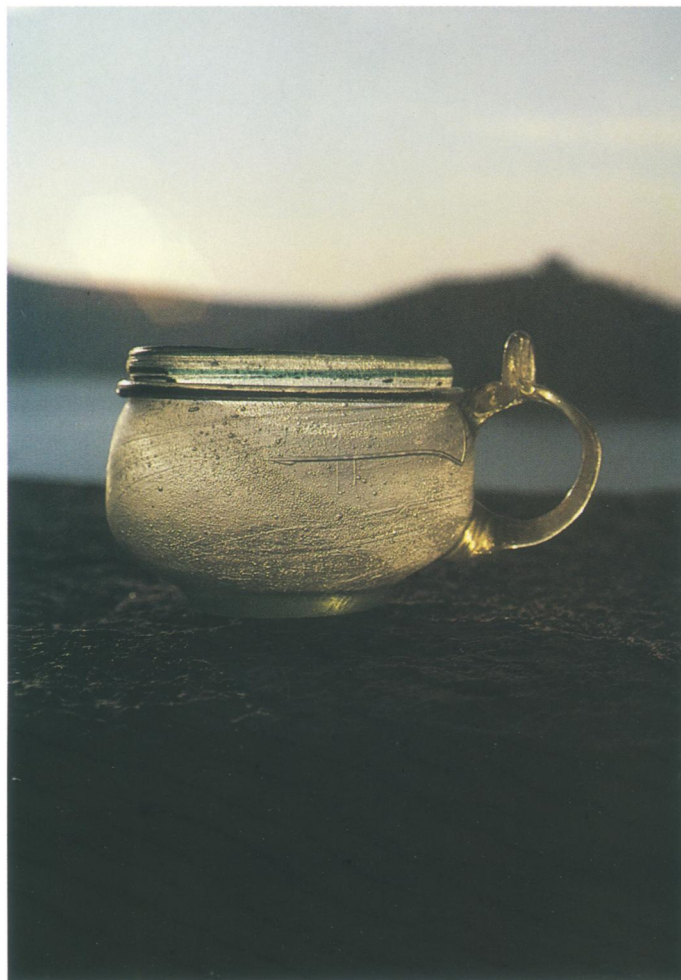
The use for which the Serçe Limani cullet was intended is unknown since the ship's ports of departure and destination have yet to be determined.

As mentioned earlier, cullet was often added to the batch to speed up the melting and to economize. We also know from texts of the Late period (sixteenth to nineteenth century) that cullet from Venice and England was brought to India and Turkey to serve as foreign-produced raw material for glass objects that were made locally.

After the excavating team had brought up, separated, washed, dried, and numbered each of the more than half a million fragments of glass and had failed to make any joins based on find locations, a decision was made to try sorting the fragments by color. First they were divided into more than a dozen basic groups, then by shades of the same color. Each color group—consisting

of thousands of fragments, each the size of a quarter—was sorted until just a few pieces remained that had the identical shade, thickness of metal, and design. These were then assembled. To date, approximately two hundred objects have been put together by this very time-consuming and painstaking process.

Representative of over two hundred vessel shapes and comprising fragments from more than ten thousand objects, this complex glass puzzle will probably withstand the test of time as the most important find in this medium ever made. More than eight hundred beakers and two hundred and fifty lamps have been identified, and as the joins continue to be made, shapes are appearing



*The cup from Serçe Limani shown here is a miracle of preservation after almost a thousand years beneath the sea.*

that previously were totally unknown. The precise dating and broad scope of this find are finally making it possible to discuss glass of the Early Medieval period with confidence.

It is now feasible for the first time to begin delineating a history of Islamic glass from the seventh to the nineteenth century, using knowledge gleaned from the undisturbed pit at Fustât and the terminus post quem for Samarra, for the Early period (seventh to tenth century); the Serçe Limani shipwreck and other, better documented, media, for the Early Medieval period (eleventh to mid-thirteenth century); dated metalwork and datable enameled glass objects, for the Late Medieval period (mid-thirteenth to fifteenth century); and

contemporary travelers' accounts and pictorial representations, for the Late period (sixteenth to nineteenth century). Applying this information to the comprehensive collection of Islamic glass in the Metropolitan Museum, I have attempted to provide such a history in these pages.

In my effort to lay some solid foundations on which others can build, it has seemed prudent to state only what is reasonably certain and to speak in general terms about the rest. It will be noticed, for example, that I have attributed nothing to Iran before the nineteenth century and that, in certain cases, only a broad period is given in lieu of a date. I leave precision in such matters to future scholars who will have

further unequivocal evidence available to them.

#### CHRONOLOGY

622	Flight (Hegira) of the prophet Muhammad from Mecca, marking the beginning of Islamic history
632-61	The Four Orthodox or Rightly Guided Caliphs
661-750	The Umayyad Caliphs
749-1258	The Abbasid Caliphs
756-1031	The Spanish Umayyads
909-1171	The Fatimids
819-1005	The Samanids
977-1186	The Ghaznavids
1038-1194	The Saljuqs
1077-1307	The Rum Saljuqs
1256-1353	The Il-Khanids (Mongols)
1226-1502	The Golden Horde (Mongols)
1230-1492	The Nasrids
1169-1260	The Ayyubids
1250-1517	The Mamluks
1281-1924	The Ottomans
1370-1506	The Timurids
1501-1732	The Safavids
1526-1858	The Mughals
1779-1924	The Qajars





2



3

## Early Glass

SEVENTH TO TENTH CENTURY

During the early centuries of Islam, the principal source of inspiration for the art of glassmaking was the late antique tradition—particularly Roman Imperial shapes and techniques. The most technically innovative glass houses of the Roman Empire were those on the eastern shores of the Mediterranean Sea, in cities such as Tyre and Sidon. Not only did these houses continue production after the Muslim conquests in the early seventh century, but they also functioned as repositories of glassmaking techniques, which succeeding generations of glassmakers in the Muslim world preserved and added to during the next eight hundred years. The techniques then, in turn, were passed on to the Venetians, who were the immediate ancestors of our modern Western glass industry.

After an initial period of adoption and adaptation in which the considerable skills of the craftsmen were directed principally toward achieving decorative effects by manipulating the hot glass surface, the Islamic glassmakers began to experiment with new methods of decoration. They inaugurated a period of innovation that brought them increasingly further from Roman Imperial glass and culminated in the superb and quintessentially Islamic luster-painted and relief-cut vessels.

1. Judging from the number that have survived, it is safe to postulate that single, double, or quadruple glass cosmetic tubes, usually elaborately deco-

rated with trailed threads and multiple handles, were extremely popular in the eastern Mediterranean before the Arab conquest. Islamic adaptations of these late Roman Imperial *balsamaria* have been found in Egypt, Syria, Iraq, and Iran, attesting not only to their continued popularity, but to an international vogue for them in the Early Islamic period. Unlike their Roman Imperial prototypes, the Islamic objects are almost invariably in the form of pack animals that carry the tubes—or, more often, bottles—on their backs.

This unusually beautiful but characteristic example of these so-called dromedary flasks, as well as the group as a whole, can be dated by means of the vessel in this particular piece. Bottles of the same shape are commonly found decorated with applied plain discs, which also appear on a bottle in the Bahrain Museum, Manama, the body of which resembles a doughnut with a sheet of glass over the hole; such a vessel, without the discs, was found in the undisturbed pit in Fustât. Numerous other bottles shaped like the one in the piece shown here bear a type of applied decoration resembling an animal skin; that pattern also appears on a small vessel in the Corning Museum of Glass, Corning, N.Y., whose unusual shape is identical to that of one excavated at Samarra.

2,3. A number of glass objects were found at Early period sites in Egypt, Greater Syria, and Iraq that are surely

adaptations of the zoomorphic flasks current in the eastern Mediterranean provinces of the late Roman Empire. Both examples illustrated here are birds with free-blown, dolphin-shaped bodies; applied opaque red wings, claws, and head; and a ring for suspension. As neither has an orifice and the body of each encloses a rod of glass that creates a noise when the piece is shaken, the objects did not have the same function as their Roman ancestors, and their exact use remains a mystery.

The decorative technique, known as marvered and combed, employed to create the pattern on the body of one bird (no. 2) has a long pre-Islamic history in the Near East; its ultimate origins lie in Egyptian core-formed vessels of the Eighteenth Dynasty. It would be used by glassmakers in the Islamic world until at least the thirteenth century (see no. 50). This type of decoration was executed by winding a thread of contrasting color around the piece and subsequently marvering, or pressing the thread into the surface by rolling the vessel on a flat stone slab. A comblike tool was then utilized to create the featherlike design.

The iridescence on the bird with the transparent emerald green body (no. 3)—a sheen found on many other objects illustrated in this publication—was created over the centuries as moisture in the soil leached out the alkali from the surface of the buried object. Often exquisite in their laminated, partly disintegrated condition, such pieces inspired imitations by Louis Comfort Tiffany.

4-7. The shape of the dish at the left (no. 4) was a very popular one, judging from the number of complete or fragmentary examples that have survived. Not only is it found with or without the folded rim as seen here, but it also occurs in molded unglazed or glazed pottery as well as in an unglazed type bearing a red slip-painted decoration on a white engobe, or thin wash of the body material. The undisturbed pit discovered in Fustāṭ con-

tained such a glass dish as well as one of slip-painted pottery. Further corroboration for a date in the early Abbasid period (A.D. 750-1258) is provided by a comparable glass dish that was found at Raqqa, Syria, together with a coin dated A.H. 189/A.D. 804-5.

The vessel at the inside right (no. 5) is an enlarged and more elaborate version of the plain dish just discussed. Three feet have been added, as well as a trailed

decoration consisting of three flat coils running vertically down the sides of the straight-walled vessel, three vertical coil handles, and a single staplelike protuberance. Like the smaller dish, this object has parallels in pottery. While the function of the piece is unknown, the fact that it is equipped with handles for suspension suggests that it may have served as a lamp that could be hung or, alternatively, placed on a flat surface. The hori-



zontal projection may have held a device for lighting or extinguishing the lamp.

The function of the free-blown vessel on the right (no. 6) is more easily identified. This measuring cup with an infolded rim and ribbed handle has as its sole decoration a disc bearing, in reverse, the Arabic inscription in Kufic script *qist wāfin*, meaning "a qist, full measure." The disc was decorated by means of a technique known as mold pressing, in which

a die is pressed into a molten mass.

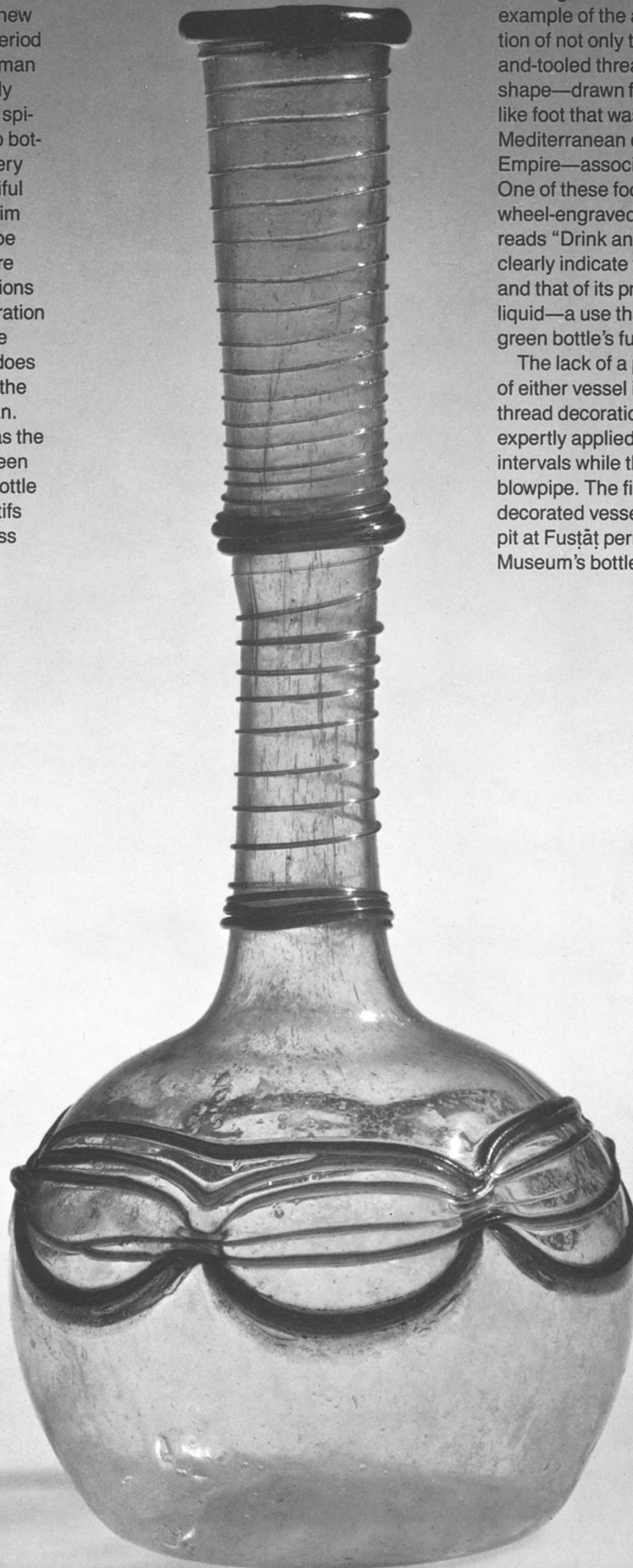
The same technique was used to decorate the discs applied in two staggered rows on the large free-blown vase at the inside left (no. 7); each disc in the upper row bears a long-tailed bird and each in the lower, a mounted horseman. The vessel has a low foot, an applied and tooled horizontal coil on the shoulder, and a chamfered rim. While unusually large for the type, it belongs to the group often

decorated with applied plain discs or designs resembling animal skins previously mentioned (see no. 1) and should be similarly dated. Further confirmation of an Early period date is provided by a bowl in East Berlin; that vessel bears a series of discs decorated with an Arabic inscription in an early Kufic script and a Pegasus-like quadruped closely related in style to the horses on the Metropolitan's vase.



8,9. Except for making slight modifications in proportion and introducing new shapes, glassmakers in the Early period essentially perpetuated the late Roman Imperial tradition of decorating thinly blown, clear glass vessels with fine spiraled and pinched threads. The two bottles seen here illustrate this point very well; they are little more than beautiful echoes of ancient glass in the Muslim world. For reasons that may never be known, this glass type did not inspire Islamic adaptations, but only adoptions like these; the vogue for such decoration in the Muslim world did not continue much after the eighth century, nor does it appear to have extended beyond the eastern shores of the Mediterranean.

The "spectacle pattern" as well as the bands of thick and thin threading seen on the neck of the clear, colorless bottle (no. 8) were popular decorative motifs and conventions on pre-Islamic glass made in Greater Syria.



The green bottle (no. 9) is an excellent example of the almost wholesale adoption of not only this late antique applied-and-tooled thread decoration but also a shape—drawn from a form with a pedestal-like foot that was current in the eastern Mediterranean during the late Roman Empire—associated with this technique. One of these footed objects bears a wheel-engraved inscription in Greek that reads "Drink and live long"; these words clearly indicate that the vessel's function and that of its progeny was to dispense liquid—a use that would explain the green bottle's funnel-shaped mouth.

The lack of a pontil mark on the base of either vessel indicates that the glass-thread decoration was very quickly, expertly applied and crimped at regular intervals while the object was still on the blowpipe. The finding of two similarly decorated vessels in the undisturbed pit at Fustāt permits the placing of the Museum's bottles in the eighth century.







**10.** The decoration on this bottle is reminiscent of the so-called “nip’t diamond waies” design popular on late Roman Imperial glass vessels. While the decoration on the Roman objects was executed with applied threads pincer-ed into a chain design, that on the Metropolitan’s bottle was achieved by first blowing the gather into a vertically ribbed part-size (much smaller than the finished object) dip mold and then removing the parison, pincering the ribs together at various intervals, and reblowing the parison outside the mold. A very similar design, created in the same way, appears on a vessel whose form matches those of the undecorated pumpkin-shaped bottles found in the undisturbed Fustāt pit and numerous other eighth-century contexts.

**11–13.** The technique of inflating the gather of metal in a mold bearing a counter-sunk pattern was another adopted from the Roman Imperial repertoire. Like the molds used by Roman glassblowers, those employed in the Muslim world were usually made of clay or wood. Gaffers in the Early Islamic period frequently worked with thicker metal than their Roman predecessors, however, allowing them to continue blowing or spinning the parison after the design was fixed in its surface. In the cup shown here (no. 13), the way the very popular honeycomb de-

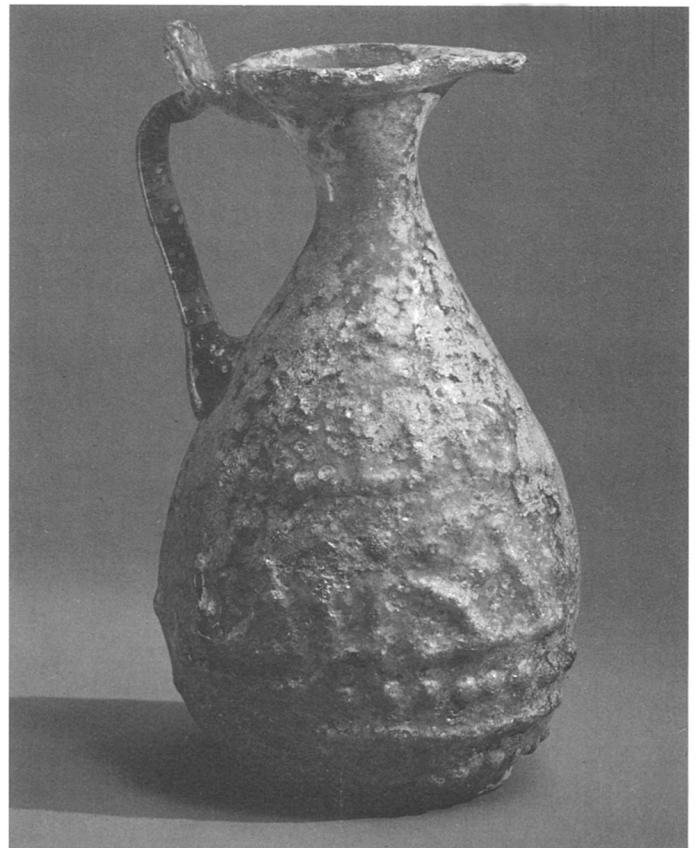
sign diminishes in precision from bottom to top and the off-center placement of the seventeen-petaled rosette on the bottom indicate additional inflation after the parison was removed from the mold (see also no. 10).

The disintegrative process that caused the cup’s iridescence has left the surface in a condition that is rarely matched—exhibiting myriad colors and imperceptible deterioration.

The two small bottles (nos. 11, 12), whose square configuration permitted great ease of packing, belong to a group of vessels probably manufactured as containers for scented oils and other precious cosmetic liquids, which were shipped in large quantities throughout the Islamic world. They are characterized by unusually thick walls, one or more ring moldings at their rims, and mold-blown designs. The bottle on the left bears a design in high relief of a palmettelike plant whose upper petal or leaf has been transformed into a pomegranate. It must have been executed by inflating the gather in a piece mold (composed of two or more pieces); a dip mold (cylindrical, in one piece, and open at the top) would have caused a flattening of the design when the parison was withdrawn. A bottle was found in al-Mina in northern Syria that is so close to this one, except in color, that it must have been made in the same mold.

The same plant motif can be seen on several monuments in Greater Syria dating from the first half of the eighth century, corroborating not only the date provided by the al-Mina piece but also a Syrian provenance for many in the group.

**14.** This ewer, which was made in a two-part, full-size piece mold, bears as its principal design an Arabic inscription containing the name of its maker—the name may be that of the mold’s creator or that of the gaffer, or perhaps they were one and the same person—and the place of its manufacture, Baghdad. Until the initial publication in 1958 of the group of ewers to which the Metropolitan’s object belongs, the existence of a glass industry in Baghdad was known only from contemporary writings. This beautifully proportioned piece is the first example shown here that exhibits Eastern (Sasanian) influences as opposed to Western (Roman Imperial) ones. The pear-shaped body with a narrow foot, the trefoil-shaped mouth with a folded-over rim, and the pearl border below the inscription are very reminiscent of silver and pewter Sasanian ewers. The closest parallels in glass are a ewer in the Shōsōin Treasury in Nara, Japan, which was dedicated in 756, and a fragmentary ewer that was found in Samarra.



**15.** The decoration on this bottle was executed with the aid of a rotating metal wheel and an abrasive in an engraving technique that, like many already discussed, grew out of the late antique tradition. The resulting lines are broader than those scratched into the surface with a pointed metal or diamond tool, as on no. 16.

**16.** When glassmakers in the Early period employed the incising (as opposed to engraving) technique represented by this goblet, they preferred metal colored aubergine purple and various shades of blue to the colorless variety utilized by the Romans. The technique itself caused the designs (which are usually arranged in bands) on these later, colored vessels to read as white. A few complete vessels and numerous fragmentary examples so decorated were found in Egypt, Syria, Iraq, and Iran.

A luster-painted vessel, identical in shape to the cup of this goblet and with remains on its base of what may have been a stem, was excavated at Fustāṭ in the undisturbed pit; this find provides a date in the third quarter of the eighth century for the Museum's vessel as well as for an identically shaped goblet with luster-painted decoration that was excavated in Raqqā, Syria. Because of the rarity of this particular shape, perhaps this dating should be considered for the incised group as a whole.





**17.** This cup, along with nos. 18 and 19, was decorated by means of an implement resembling tongs, a tool that appears to have been devised by glassmakers in the Early period. Since both jaws of the instrument bore the same pattern, the impressed design can be seen on the inside as well as the outside of the vessel. The sole decoration on the object is an Arabic inscription in Kufic script, placed vertically and repeated eight times, that proclaims "Blessing to its owner."

The shape of this vessel is very similar to one with luster-painted decoration in the National Museum, Damascus, bearing an inscription, also arranged in vertical bands, exhorting its owner to "drink and be delighted." Thus, we can be sure that such cups were used for drinking—a function that would account for the large number of variously decorated vessels of this shape extant.

**18.** Unlike the designs created by blowing a gather into a mold, those created with tongs are subject to the frailties of the artisan and sometimes are unevenly spaced or even overlap. Thus, in this vessel decorated with a seven-petaled rosette radiating from its small foot, the space between the petals of the rosette varies from an actual overlap to as much as ten millimeters.

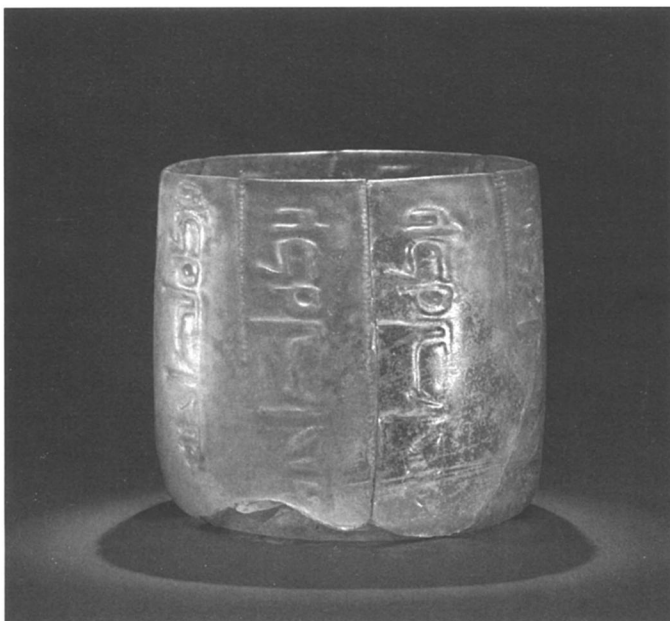
Other examples of the shape are known, but the incorporation of handles here is very unusual and indicates that the vessel may have functioned as a lamp. These handles closely resemble those on Roman funerary urns and are of a form that was "stacked" to create chainlike composite handles on glass ewers with close parallels in rock crystal.

**19.** This long-necked bottle required greater technical skill in its execution

than did either no. 17 or no. 18 because it was made in two parts, each a different color, that were tong-decorated before being joined horizontally at the shoulder. The upper, cobalt blue, section bears petals radiating from the base of the neck, while the colorless body contains a series of five roundels, each of which is filled with a prancing quadruped.

Two objects decorated in this technique—a fragment in the Benaki Museum, Athens, and a complete piece in Berlin—bear inscriptions stating they were *'amal miṣr* (made in Cairo). Unfortunately it is impossible at this stage in our knowledge to say whether vessels exhibiting this technique were manufactured only in Egypt and exported from there or whether they were produced in other places as well; nor can we determine yet the length of time this decorative technique was in vogue.

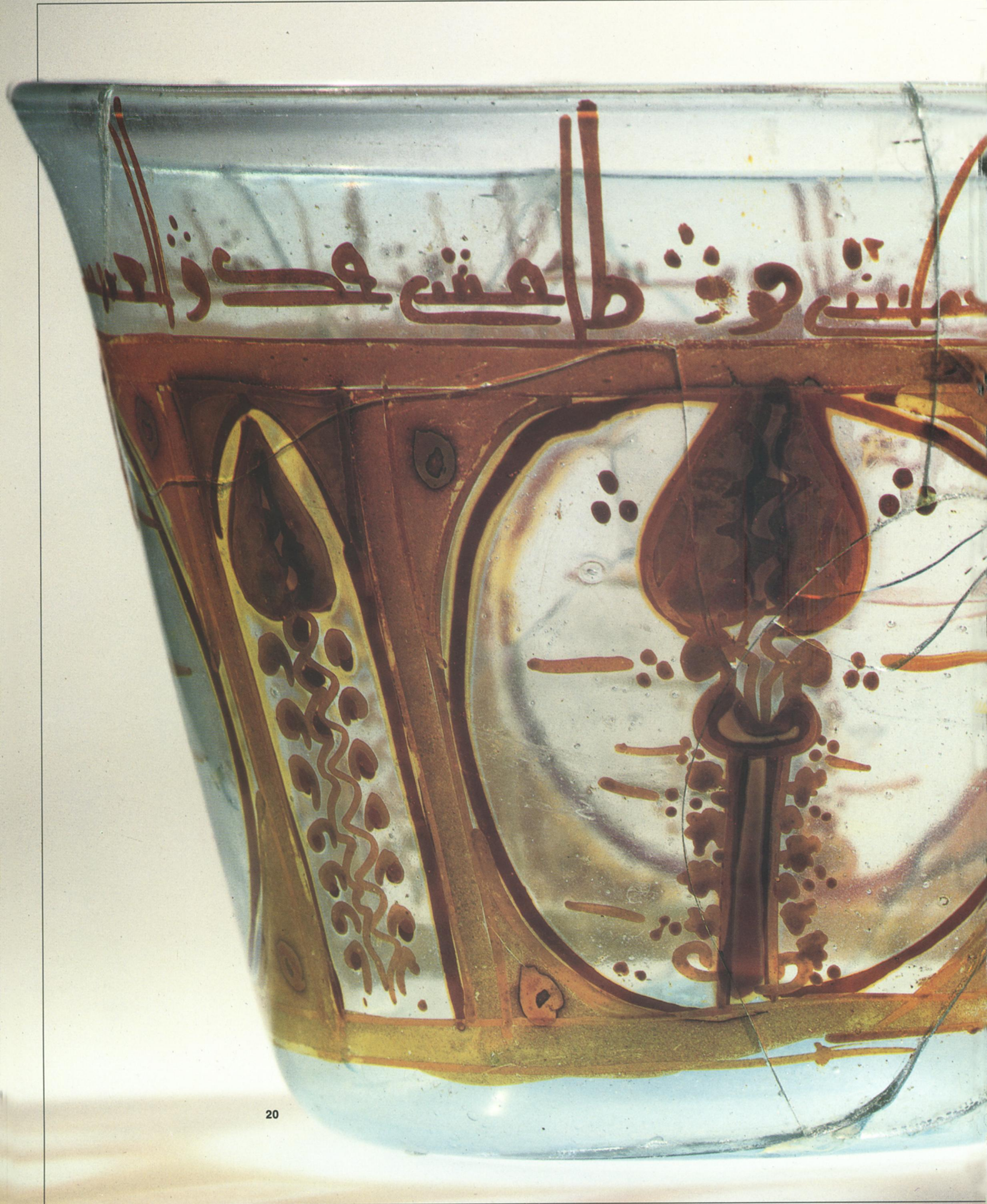
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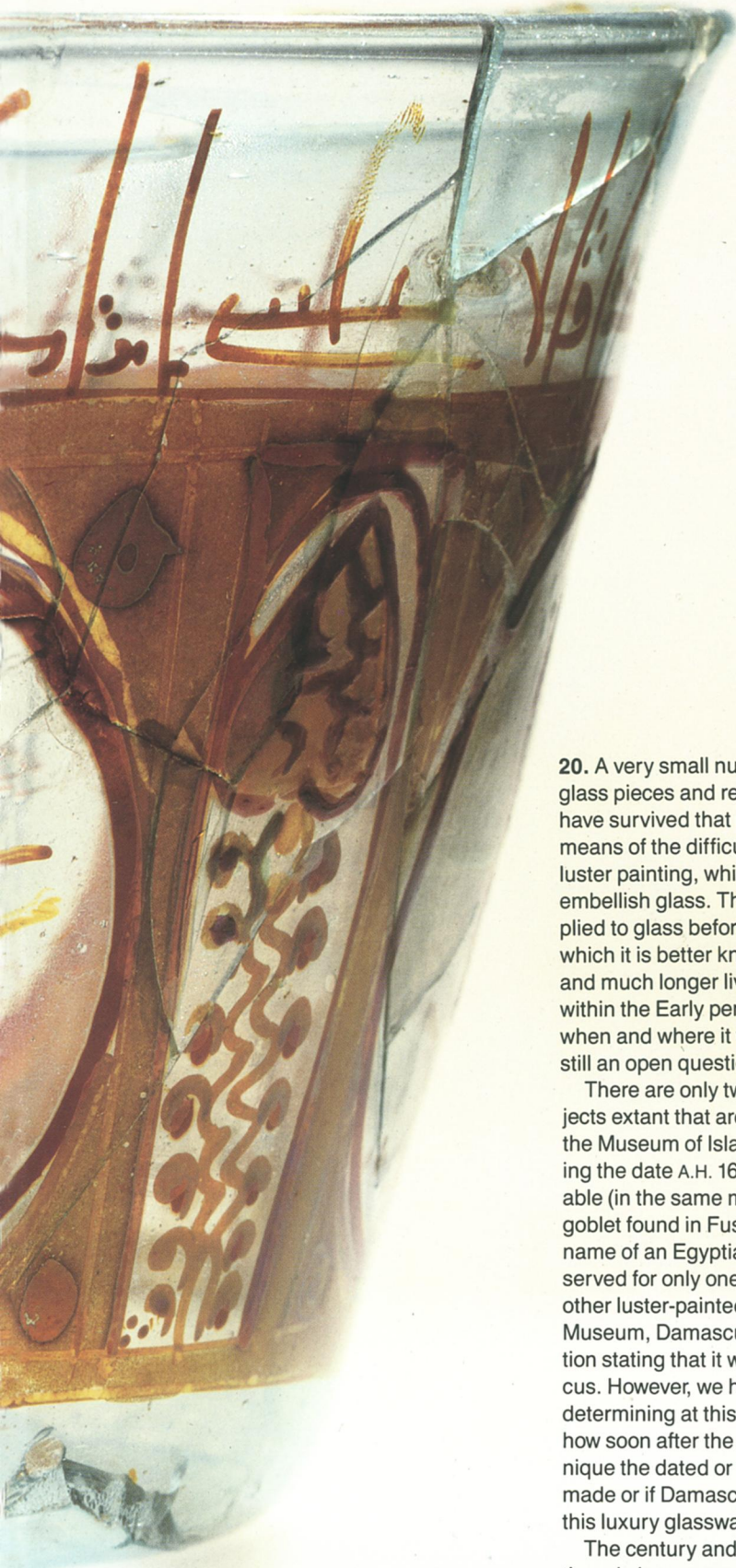
18







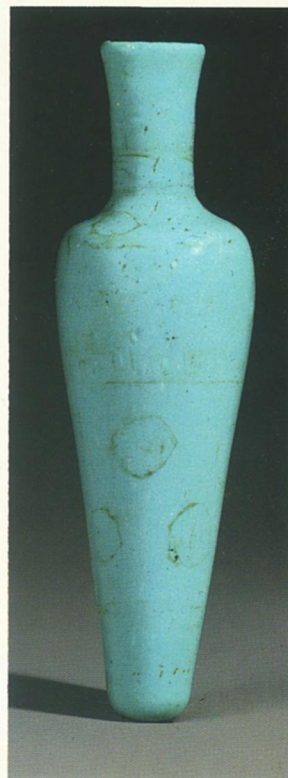




20. A very small number of complete glass pieces and relatively few fragments have survived that are decorated by means of the difficult technique known as luster painting, which was rarely used to embellish glass. The technique was applied to glass before pottery, a medium in which it is better known, more common, and much longer lived. Its origins lie within the Early period, although exactly when and where it was first discovered is still an open question.

There are only two luster-painted objects extant that are dated (a fragment in the Museum of Islamic Art, Cairo, bearing the date A.H. 163/A.D. 779–80) or datable (in the same museum, the bowl of a goblet found in Fustât containing the name of an Egyptian governor who served for only one month in 773). Another luster-painted piece, in the National Museum, Damascus, bears an inscription stating that it was made in Damascus. However, we have no way of determining at this point in our research how soon after the discovery of this technique the dated or datable pieces were made or if Damascus was the only place this luxury glassware was manufactured.

The century and glass center mentioned above seem to be indicated for this exceptional polychrome luster-painted bowl with a flaring rim. A glass



21

object with an identical profile was excavated at the eighth-century site of Jebel SAYS, 105 kilometers southeast of Damascus, and the majority of the many glass vessels found during the excavations were also light green.

21. In addition to the polychrome luster-painted glass bowl (no. 20), the Metropolitan possesses a monochrome luster-painted *mukhula*, or bottle for kohl (used as eye makeup). This free-blown container is not only the sole example of exceedingly rare opaque turquoise-colored glass in the Museum's Islamic collection but also the only complete vessel of this type of glass that bears luster-painted decoration.

Although the *mukhula* varied very little in shape and size during the first six centuries of Islam—whether it was made of ivory, bone, crystal, bronze, or glass—this example should be dated to the tenth century on the basis of its monochrome (as opposed to polychrome) luster-painted decoration and its type of metal, which was not used for coin weights (which are precisely datable) until the reign of the Fatimid caliph al-'Aziz (975–96). Because this bottle was acquired in Egypt and exhibits the pristine surface associated with a moistureless soil, an Egyptian provenance is indicated.

22. The technique of wheel cutting was brought to a consummate level in the relief-cut glass of the Early period. Perhaps the only other artisans to apply this exacting and difficult lapidary technique to glass with such perfect skill were the fashioners of the late antique so-called *diatrete* cups. Indeed, the Early period creators of relief-cut glass, together with the originators of luster painting on glass, can be credited with two of the most important Islamic contributions to technology in this medium.

Before employing this particular wheel-cutting technique, the artisan would form either solid glass blocks or blanks with especially thick walls to withstand the

great pressure of the wheel. The surface was then selectively cut away, leaving the design in relief, with the highest point of the decoration on each piece representing the original surface.

Nos. 22–25 are illustrative of the earlier—what the author has termed geometric—phase of relief cutting during this period, and nos. 26 and 27 represent the later, vegetal and figural, phase.

The six-lobed vessel shown here, with horizontal flutes cut into the interiors of alternate lobes, has parallels in stone, glazed pottery, and metal, variously dated between the eighth and the thirteenth century. Its closest parallels in glass are a clear emerald green bowl in

the Corning Museum of Glass, Corning, N.Y., and an opaque turquoise example in the Treasury of San Marco, Venice, both relief-cut with vegetal or figural designs.

23. After this cosmetic bottle was wheel-cut from a rectangular glass block, a thin channel was drilled that would eventually contain kohl or scented oil. Vessels of this shape are known as molar bottles because of the resemblance of their feet to the roots of such teeth. This example has a prototype in the free-blown bottles excavated in Susa with applied undecorated oval bosses and feet that belong to the group decorated with applied plain discs or designs resembling animal skins.

22





**24.** The band of slightly beveled lozenges on this large, handled cup, which resembles a Roman Imperial *skyphos*, is bordered at top and bottom by an angular molding. Contoured to exclude the handle with its thumbstop from the decorative band, this molding is reminiscent in form and function of that on the opaque turquoise lobed bowl in San Marco. The base of this cup is also relief-cut, containing a slightly concave protruding disc at its center circumscribed by two angular moldings arranged concentrically around

it. A similar decoration is to be seen on a flat fragment found in Samarra. The cup has acquired a spectacular iridescence.

**25.** The walls of this spherical vessel are decorated with two staggered rows of ten discs, each with a raised dot, a motif found in Samarra. The ten petals that radiate from an identical disc on the bottom of this object are similar in form to the lozenges on the handled cup (no. 24) except that each petal here supports a smaller

version of itself. A similar convention occurs on a fragment found in Samarra and on the feet and interstitial triangles on the green cosmetic bottle (no. 23).

At this stage of research, these objects cannot be ascribed with any degree of certainty to a particular production center. However, because of certain affinities between them and the fact that they have ninth- or tenth-century parallels in common, it appears that they were executed sometime within that two-hundred-year period.

24



25



27



**26.** One of the most beautiful monochrome relief-cut objects extant, this beaker belongs to a group of exquisite relief-cut glass vessels with vegetal and figural decoration that are related to magnificent pieces in rock crystal. Whether the glass objects led up to or were made in imitation of the rock-crystal ones is yet to be determined. This beaker is very closely related in the style of its carving and decorative conventions to the cameo-glass ewer recently acquired by the Corning Museum of Glass, Corning,

N.Y. The latter shares so many features with a rock-crystal ewer in San Marco bearing the name of the Fatimid caliph al-'Aziz that it has been securely ascribed to the tenth century as well. The decoration of the Metropolitan's beaker is even closer to that on a rock-crystal ewer in the Louvre that is part of the Treasury of the Abbey of Saint-Denis.

**27.** This cup is a good illustration of the progressive stylization that relief-cut decoration underwent during the tenth cen-

tury, an evolution that would lead to the succeeding century's wheel cutting in a beveled style without differentiation between background and foreground. The series of parallel diagonal lines on the heads and tails of the birds and the treatment of their bodies as a series of overlapping scales can both be found on a relief-cut bottle in the L. A. Mayer Memorial Institute for Islamic Art, Jerusalem; the scales convention also occurs on the lions on al-'Aziz's rock-crystal ewer in San Marco.

26







29

## Early Medieval Glass

ELEVENTH TO MID-THIRTEENTH CENTURY

Very shortly after the technique of wheel cutting reached its Islamic zenith in the relief-cut glass created at the end of the Early period, its gradual simplification began. By the middle of the eleventh century, the trend toward stylization begun in the preceding hundred years had led to a totally bevel-cut decoration with no foreground or background. The simplification of this lapidary technique as applied to glass reached its logical conclusion in totally plain but beautiful vessels with bodies faceted like gemstones.

In addition to experimenting with wheel-cutting techniques, which could be employed after the glass had cooled, glassmakers in the Early Medieval period continued to adapt techniques applicable only to a hot gather or parison: mold blowing and thread or coil trailing.

At the end of the period, artisans were to make another great contribution to glass technology in general. Not only did enameling attain the distinction of luster painting and relief cutting, but it played a larger role in the West than either of the two earlier techniques.

**28.** On the basis of finds from the Serçe Limani shipwreck, this vessel—a version of a relatively common shape—can now be firmly placed in the first half of the eleventh century. Excavated by the Metropolitan Museum at Nishapur, Iran, this beaker with a flat bottom and slightly flaring sides is very similar in profile to examples found in the shipwreck and has a number of other features in common with glass from that site.

The wheel-cut decoration on this piece is beveled, as is that on the beakers from the wreck bearing the most sophisticated designs (see photograph, p. 6). Other characteristics of this vessel are also closely paralleled in the Serçe Limani glass: the arrangement of the decoration into bands and rectangular compartments; the relationship of plain to decorated areas; and individual motifs such as the lappets at the bottom with a wheel-cut line marking their centers. In addition to numerous individual examples, three beakers of this shape were found at the site of the wreck still stacked, one inside the other.

**29.** The carafe above, also excavated at Nishapur, belongs to a large group of similarly shaped vessels, now in both domestic and foreign, public and private, collections, which have been variously dated between the ninth and the twelfth century. Like no. 28, this vessel type can now be securely placed in time with the help of the Serçe Limani finds. Many such carafes from the wreck are decorated with the type of facet cutting on the neck of this Nishapur example as well as the wheel-cut circles on its body. This particular body profile and several slightly modified versions of it can also be seen in some of the seventeen complete or fragmentary carafes recovered from Serçe Limani (see photograph, p. 7). Parallels for the convention exhibited here of circumscribing the pontil mark on the base of an object with an engraved square (common on glass found at Nishapur) can also be found on objects from the shipwreck.





**30.** This bottle can be solidly linked to the firmly dated corpus of material from Serce Limani, although no complete examples of its particular type were recovered there. A neck from such a vessel with facet-cut motifs similar to those seen here was found at the wreck, as were pieces exhibiting the same style of bevel-cut decoration including many volutes.

Such a dating corroborates that generally suggested for similarly shaped bottles executed in silver and sometimes decorated with parcel gilt and niello inlay. The fact that several of the many glass examples extant are still equipped with a lid executed in silver with niello inlay indicates that these, like their precious-metal counterparts, functioned as perfume bottles that were signs of the owner's prestige.

**31.** Aged in a particularly beautiful way, this bottle combines features of the carafe on the preceding page and the bevel-cut perfume flask no. 30. The neck, slightly tapered toward the top and with a wide, flat rim, is of a shape invariably found on carafes like no. 29. Its facet-cut decoration is very reminiscent of that on the tall, cylindrical necks of scent bottles such as no. 30. The spherical body is decorated with three rows of ten facet-cut circles that are arranged so closely as to have created hexagons. Such a convention was adapted ultimately from Roman Imperial models.

**32.** The shape of this bottle appears to have been extremely popular during the Early Medieval period, occurring not only in glass decorated in a variety of tech-

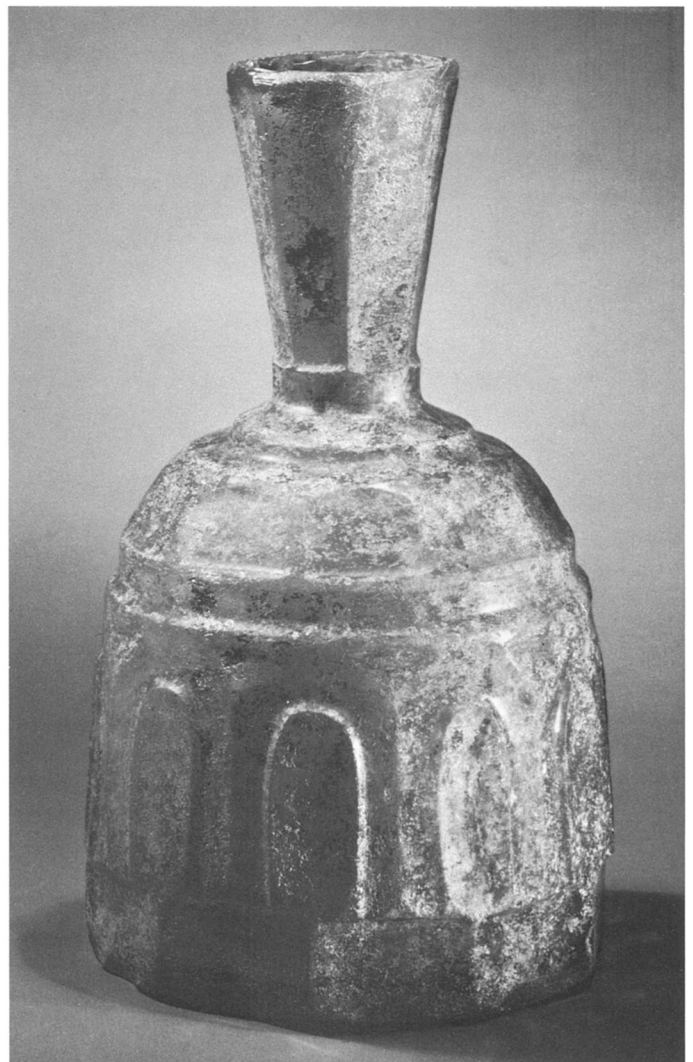
niques (free-blown, mold-blown, cameo relief-cut, and bevel-cut), but also in metal and glazed pottery. This particular faceted variety with horizontal moldings marking the transitions between different parts of the vessel has especially close parallels in metal.

At this juncture in our research we cannot ascertain whether the glass versions imitated or gave rise to those in metal and pottery. However, it does appear safe to assume that they all flourished at about the same time and that the popularity of this shape as a rose-water sprinker—like that of any shape—did not last longer than a generation or two.

30



32



**33.** This unusually tall, graceful bottle and no. 35 are the latest examples of wheel-cut glass illustrated in this publication. Their makers used the lapidary technique of wheel cutting—which had an illustrious history in the Islamic world—to create an effect closer to that found on gemstones than that on glass. A series of longitudinal facet cuts transforms the bottle's cylindrical body into a heptagon, and the slightly flaring neck is also faceted. Similarly decorated vessel fragments were excavated at Samarra, including the necks of several carafes that help to confirm an Early Medieval date for this object.

**34, 35.** The smaller, wheel-cut, version (no. 35) of these two truncated pyramidal vessels was blown as a thick blank into which the nine plain facets were ground.

The larger vessel (no. 34) was decorated by blowing the gather into a two-part full-size piece mold that bore a countersunk design of a band of reciprocal half-palmettes. A carafe excavated at Nishapur that is similar in shape to no. 29 displays the same color as the larger vessel here and a variant of the same design, also with the idiosyncrasy that only the outlines of the pattern are in relief. Since stylized vegetal designs represented only in outline are to be found on the most exquisite relief-cut vessels that have survived, such as no. 26, the question arises, Were mold-blown pieces decorated like the one shown here made in imitation of relief-cut objects or were they simpler versions of such vessels?

**36–39.** These four vessels, as well as no. 34, bear witness to the continued adoption and adaptation of decorative techniques from the previous period, which had in turn drawn upon those in the Roman Imperial repertoire. The object at the inside right (no. 38), like the cup no. 13, bears a pattern-molded decoration that was created with a part-size piece mold. After the parison had been impressed with the pattern, it was removed from the mold, further expanded by blowing, and, finally, tooled (refined in shape). Patterns such as this were all impressed by means of part-size piece molds as opposed to part-size dip molds, which were in only one piece and therefore, as has been said, would have caused a flattening of any design involv-



33



34,35

ing crossed lines during withdrawal of the parison. The other three pieces shown here and no. 34 were all made in full-size piece molds that not only impressed the ornamentation, but also provided the final body shape.

The Serçe Limani shipwreck yielded a very large number of bowls shaped like no. 38. Many were also decorated with pattern-molded diaper designs, none of which were identical to that seen here, however. This particular pattern—which radiates from a hexagon on the base and consists of two rows of contiguous pentagons, each containing a palmette that is more classical than Islamic in spirit—gets larger and fainter as it approaches the rim, a sure indication that the parison was reblown after the design was impressed on the surface.

It is possible that such glass vessels were used as lamps. A medieval Islamic three-legged bronze lamp stand that holds seven such bowls exists in the L. A. Mayer Memorial Institute for Islamic Art, Jerusalem. A polycandelon in the Walters Art Gallery, Baltimore, is identical to the stand in Jerusalem except for the legs, and consequently, it must have originally been fitted with the same type of vessel. If these objects functioned primarily as lamps, the large numbers in which they have survived would be easily explained, as would the proclivity for honeycomb or other diaper patterns, which refract the light like facets.

Parallels for the principal design of concentric diamonds on the beautifully aged and preserved, jewel-like vase (right, no. 39) can be found among the objects from Serçe Limani (see photograph, p. 8, above). Unlike the other Early Medieval vessels executed in full-size piece molds that are illustrated here, this vase is extremely thick-walled and heavy for its size.

The mold-blown jug (left, no. 36) and bottle (inside left, no. 37) were both made in two-part molds. Their shapes were popular with contemporary Islamic potters, but which medium influenced the other is not known. A problem inherent in working with full-size piece molds was the masking of the areas where the parts of the mold joined. On the bottle, a rose-water sprinkler, the two flutes where the joins are effected bear multiple vertical moldings, which are easier to match than either of the alternating patterns of pearls and diagonal lines.



**40.** This small lamp, which was bought on the art market, is identical in shape to one excavated by the Museum in Nishapur. The dates attributed to these and similar objects in other collections have varied considerably over the years, ranging from the fifth to the eleventh century. Once again we can turn to the material from Serçe Limani to find help in settling a dating problem. In this case the evidence is a fragmentary lamp (see photograph, p. 8, below) that is identical, except for its coloration, to the Metropolitan's two lighting devices.

Once an Early Medieval date was unequivocally determined for such glass lamps, parallels were easily found to corroborate this reattribution. An almost identical shape exists in glazed pottery datable to the late eleventh or early twelfth century (a turquoise lamp, also excavated at Nishapur, and a white spouted vessel in the Victoria and Albert Museum, London), and a very similar metal lamp bearing the date of A.H. 483/ A.D. 1090 is in the Museum of Turkish and Islamic Art, Istanbul.

The suggestion made in connection with no. 32 that a given shape probably stayed à la mode for one or two generations is further substantiated by the evidence cited above.

**41.** It has been suggested that the mold-blown vessel no. 34 was one illustration of how glassmakers in the Early Medieval period attempted to imitate relief-cut designs in less time-consuming tech-



40



41

niques. This ewer appears to be another example of such copying. The principal decoration, executed in trailed threads, is suggestive of the undulating, stylized vegetal scrolls often executed in the more difficult, relief-cut, technique, as seen on the beaker no. 26. The series of horizontal rings on the neck and body are paralleled on relief-cut glass ewers, as is the shape, except for the pedestal-like modification to the foot and the very sharp return at the bottom of the vessel.

Imitations of relief-cut beakers, decorated in the same trailed-thread technique as such adaptations of relief-cut ewers, also survive. Whether these less-expensive versions were made in the same centers as the monochrome and the bichrome, cameo relief-cut glass objects or were provincial copies of them is impossible to say at this point.

**42.** The undulating threads flanking the lower neck are the only decoration on this beautifully proportioned and aged perfume sprinkler. These handlelike threads, the flattened globular body, and the slender neck with its small opening are all very characteristic of such vessels, which, when shaken, dispensed drops of expensive perfume suspended in a heavy oil base. An almost identical sprinkler in the British Museum and several executed in the marvered-and-combed technique with a similar opening in the body (which must have been designed for ease of holding when dispensing the precious cosmetic) also survive.





**43, 44.** Decorating glass with trailed threads in a contrasting color was popular in the Early Medieval period (see photograph, p. 9), but the variation illustrated by these two vessels seems to have been quite rare. After an initial blowing of each gather, threads—emerald green and clear, colorless for the beaker (no. 43) and cobalt for the bottle (no. 44)—were trailed on the bodies. Then each object was reblown, causing the threads to become further imbedded in the matrix but less so than if they had been marvered. Finally, a coil base was applied to each and the rim and neck were also decorated with a trailed thread.

Unlike the beakers excavated at the Serçe Limani shipwreck or at Nishapur (see no. 28), which all had slightly and gradually flaring walls and no foot ring, the one shown here has a protruding rim

and a foot ring known as a coil base, which is composed of a single thread. This type of beaker appears to have been quite common during the first half of the period but was later replaced by a variety with a more flaring rim that is commonly decorated with enamel painting. Perhaps the type illustrated here should be seen as a link between the early eleventh-century beaker type and that which came into vogue during the late twelfth century.

The author knows of no other Islamic bottle of the shape seen here, but this piece is clearly related to a footed, luster-painted bottle with a flaring neck in the Museum für Islamische Kunst, Berlin-Dahlem, and it must have been the precursor of a shape seen in a number of enamel-painted bottles of the Mamluk period, such as the types illustrated by nos. 48 and 49.

**45.** This perfume sprinkler is an intact example of an extremely rare type of enamel-painted glass that for the most part has survived only in fragments. Usually executed in either cobalt blue or manganese purple glass, the design is customarily painted in either white, lapis lazuli, or turquoise blue enamel or in a combination of white and turquoise blue, outlined and highlighted with gold.

The example shown is a textbook case of how the glassmakers in the Islamic world made adaptations from the glass of earlier periods. In this instance, they adapted the effect created by marvering and combing to enameling, a new technique that was totally their own creation and one that would assume a distinguished position within the universal history of glassmaking.





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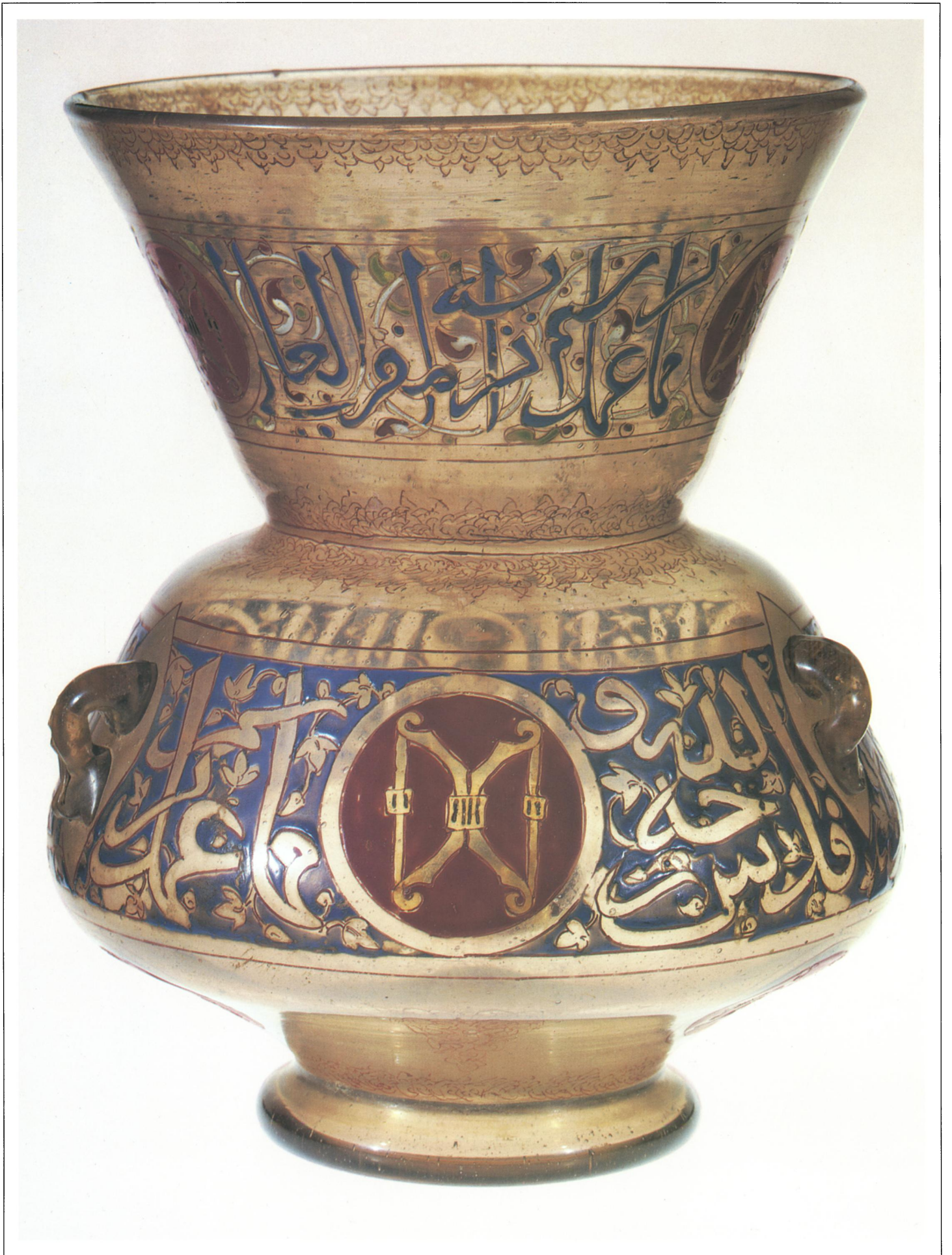


46. Although previously considered to be a product of the Mamluk period, this superb gilded and enameled tazza appears to stand much more in the earlier, Ayyubid, tradition. Using datable enamel-painted objects to establish a chronological sequence within the history of this technique in the Muslim world, we can postulate that the abundance of gilding on this tazza and the tentative application of enamel colors in a highly varied palette (red, blue, yellow, green, white, and black) are clues suggesting an early date. These features, combined with the style, scale, and rich decorative vocabulary of the designs displayed in the horizontal bands of varying widths separated by narrow borders, seem to set this drinking vessel, which may have been lidded,

quite apart from objects showing precisely the same technique that were made under the aegis of the Mamluk dynasty during the Late Medieval period; the later pieces are generally larger and exhibit fewer colors, less gilding, and a much simpler iconography.

Virtual bestiaries of both real and fantastic animals, entertainers, geometric designs, arabesques (three here end in human heads), and secular inscriptions—all seen on this tazza—are typically found on various media from the first half of the thirteenth century. However, it is in metalwork that the closest parallels are encountered, particularly on those objects made for Sultan al-Malik al-Nāṣir II Ṣalāḥ al-Dīn (1237–60), the last Ayyubid ruler of Aleppo and Damascus.





# Late Medieval Glass

MID-THIRTEENTH TO FIFTEENTH CENTURY

As we have seen, the Early Medieval period witnessed the tentative beginning and early development of enamel painting on glass. There was a further florescence of the technique during the succeeding period, when artisans produced some of the most luxurious glass objects ever made in the Islamic world. Al-Qazwīnī (d. 1283), a famous Arab cosmographer and geographer, attested to the fact that this glass was a legend even in its own time: he wrote that in the thirteenth century one of the wonders of Aleppo was its glass bazaar filled with so many “tasteful” objects, which were exported widely, that a visitor to the *suq* (marketplace) did not want to leave it.

Virtually the only types of glass to have survived that can be attributed to the Late Medieval period with any degree of certainty are enameled objects, extremely well represented in the Metropolitan’s collection, and marvered-and-combed examples, although other techniques were surely employed at this time. Contemporary texts refer to a number of very important production centers and to various products, many of which remain unidentified to this day. The glass made in Hebron is mentioned, as is glassware “inlaid” with gold and silver (probably gilded and enameled) from Damascus that was exported to Egypt, Iraq, and Asia Minor, as well as glass from Iraq, including vessels from which fruit was served with wooden spoons. A Chinese source of the period mentions engraved opaque glass from Baghdad

and Asia Minor and from Ghazni and Kabul in present-day Afghanistan.

Descending precipitously from these glorious heights, the art of glassmaking reached its nadir in the Islamic world by the end of the Late Medieval period. By around 1400, Timur (Tamerlane) had devastated Syria, including Aleppo and Damascus. We are told that he took the famous glassmakers of these cities with him to Samarkand, although no glass products of his Central Asian capital are known. Timur’s invasion does appear to have brought a definitive end, however, to the great, unbroken, two-millennia-long tradition of glassmaking in Greater Syria. The new venue would soon be Europe: by the end of the fifteenth century, the Mamluks were ordering enameled mosque lamps from Venice.

47. Any number of European church treasuries bear witness to the esteem in which the glass of the Muslim world was held in the West. One of the most popular types was the enamel-painted variety, which was often not only mounted in precious metal, but also protected in beautiful leather cases. The so-called Goblet of Charlemagne at Chartres Cathedral, the Goblet of the Eight Priests at Douai Cathedral, and the beaker known as the Luck of Edenhall, now at the Victoria and Albert Museum, London, are three well-known testaments to the prestige of this enameled glass, much of which found its way to Europe at the time of the Crusades.

In addition to such secular pieces, the manufacture of large lamps for specific religious foundations was, judging from the great number that have survived, a very important part of the predominantly Syrian enamel-painting industry, particularly in the late thirteenth and fourteenth centuries. Commissioned by the sultan himself or his amirs, these lamps are characteristically decorated with the name of the patron and his blazon or coat of arms, as well as with the “Light Verse” (‘Āyat al-Nūr) of the Koran (sura 24, verse 35):

*God is the Light of the heavens  
and the earth;  
the likeness of His Light is as a  
niche  
wherein is a lamp  
(the lamp in a glass,  
the glass as it were a glittering  
star)  
kindled from a Blessed Tree,  
an olive that is neither of the East  
nor of the West  
whose oil wellnigh would shine,  
even if no fire touched it;  
Light upon Light;  
(God guides to His Light whom  
He will.)*

This early example was commissioned for the mausoleum in Cairo of the amir Aydakin, who died in 1285. His blazon, repeated nine times on this lamp, consists of two addorsed bows on a circular red field—indicating that he had served as *bunduqdār* (bowman) to a sultan.





48. This very large bottle in pristine condition is often discussed in the scholarly literature. It is generally considered a product of Damascus from before 1360 and illustrative of the Chinese influence that entered the Islamic repertoire by way of the Mongol invasions, more specifically those of the Il-Khanids. The bottle's iconography, motifs, decorative conventions, and design layout are so close to those found on late Ayyubid and early Mamluk metalwork, however, that the piece should be dated to the end of the thirteenth century instead of the first half

of the fourteenth as had been generally accepted previously. The uninterrupted wide band of mounted warriors wielding maces, swords, lances, bows and arrows, and shields on a very sparsely decorated background and the three vigorous and extremely complex arabesques are reminiscent of the decoration on Ayyubid metalwork, particularly that made for the last sultan, al-Malik al-Nāṣir II Ṣalāḥ al-Dīn (1237–60); but they are even closer to the ornamentation on the so-called Baptistère de Saint Louis, dated to between 1290 and 1310, at the Louvre. The pecu-

liarities of headdress (both hats and turbans) and robe, as well as the treatment of birds (that appear to float on the horizon), horses, and leaves forming the ground line are all to be found on that famous metal object.

The closest glass parallel in shape and decorative layout is one in the Museum of Islamic Art, Cairo, which shares the feature of three large roundels on the shoulder, as well as the phoenix (*fêng-huang*) and flanking borders on the long neck.



49. This type of vessel must have been used as a decanter for wine, as it is represented, along with goblets, in many contemporary reveling or banqueting scenes, in several different media. The earliest datable example of this decanter type is in the Museum of Islamic Art, Cairo, and bears the name of Sultan al-Malik al-Nāṣir II Ṣalāḥ al-Dīn. The latest known to the author is in the Freer Gallery of Art, Washington, D.C., bearing the name of al-Malik al-Mujāhid Saif al-Dīn 'Alī, a Rasulid sultan of the Yemen (1321–63). The Metropolitan's example, which should be placed in the first half of the fourteenth century, has a band of very vigorous animals coursing around the base of its tall neck and a successful main design of a Chinese cloud-collar frame with lobed panels, four of which terminate in a point and enclose a bird of

prey attacking a goose. However, by the second half of the century the decline of enamel-painted glass had begun, and except for a brief revival at the end of the century, it would continue unabated while Venice's star was rising in the West.

50. We have seen that decoration executed in the marvered-and-combed technique, after a long and distinguished pre-Islamic history, became part of the repertoire of glassmakers in the Muslim world in the very beginning of the Early period (see no. 2). This beautiful lidded bowl is ample proof that the technique remained popular at least until the Late Medieval period.

After both parts of the bowl were free-blown and tooled into shape, an opaque

white thread was wound around each of them and subsequently marvered in flush with the surface. The featherlike design was then created with a comb-like tool.

Although many Late Medieval objects decorated in this technique are extant, this lidded bowl is unique, the only complete container (a few lids without their bowls exist) so ornamented. An enamel-painted parallel in the Freer Gallery of Art, Washington, D.C., seems to place the Metropolitan's exceptional bowl in the second half of the thirteenth century. We know from the Cairo Geniza documents that red (manganese-colored) glass was a specialty of Beirut, and the provenance of this object is reported to have been nearby Sidon; in this particular case, therefore, Greater Syria can be suggested as the place of manufacture.









## Late Glass

SIXTEENTH TO NINETEENTH CENTURY

During the Late period the glassmaking industry in the Islamic world continued to decline. The magnificent glassware of the "Saracens," which had been so highly prized in Europe for centuries, was no more, and the successors to the Muslim ruling houses whose products had been so admired in the West were obliged to order all their fine glassware from Italy, Holland, Bohemia, Spain, and England.

Extant material indicates that European imports were the stimulus for glass produced locally under the Mughals, Ottomans, and Safavids. The examples here are representative of the final chapter in the history of Islamic glass.

51; 52–54 (overleaf). For information concerning the vogue in glass in India prior to the second half of the eighteenth century, we must rely on literary evidence. We know from illustrated manuscripts and a great variety of contemporary accounts that Persian as well as European glass from a number of different glassmaking centers was being imported into India from the sixteenth through the eighteenth century and that these imports fulfilled a number of different functions.

Surviving examples of glass produced on the Indian subcontinent itself during the Late period date mainly from the second half of the eighteenth century or later and are illustrative of an imitative as

opposed to an innovative art form. Glassmaking appears never to have been an industry of any great importance in India prior to the Mughal period, and the long, unbroken glassmaking tradition in the rest of the Near and Middle East seems to have been totally lacking there. This may explain why Indian glassmakers as a group were very unventuresome with regard to shapes and often confined themselves to painted and gilded designs more suited to paper than glass.

All four of the bottles shown (nos. 51–54) were made in two-part molds. The shape illustrated by the three square-bottomed examples (nos. 51–53) has no Middle Eastern prototype, but is a minia-

ture version of the common Dutch gin bottle; it is believed that these vessels, produced and decorated in India, were made in Ahmedabad or Surat, both cities where the Dutch were strongly established. The three square-bottomed bottles also have similar decoration;

each face bears an arch supported by columns, and all the arches and all the capitals have identical outlines. The motif is very common in a variety of media, including carpets, textiles, ivory, and stone architectural elements, produced on the subcontinent at this time. While

the hexagonal bottle (no. 54) does not share its shape with the others, it displays painting conventions that closely relate to those used in the floral decoration on the bottle bearing figural designs (no. 51).



55. For information about the fashion in glass under the Ottomans before the eighteenth century, we are again forced to rely on contemporary accounts and illustrated manuscripts.

From documents of the time we know that imports, particularly Venetian products, were popular. The account books of a Venetian merchant at Constantinople during the second quarter of the fifteenth century record an order for 2,500 glass objects from Venice including 1,600 footed goblets; a letter written by the Venetian ambassador to the Sublime Porte (Turkish government) to the Signoria (governing council) in Venice in the third quarter of the sixteenth century passes along a request, complete with drawings, for 900 lamps needed for a new mosque. Products from Bohemia, Spain, and England found their way to the Ottoman capital as well. Very few of these imported varieties have survived.

Glass was also produced in Turkey at this time. Detailed building records imply that windowpanes and glass vessels were being manufactured in Constantinople in the middle of the sixteenth century, and not much later, the *Sûmâme-i Humâyûn* of 1582 (see inside covers) provides pictorial evidence of local glaziers and glassblowers. In the following century, the writer and traveler Ewliya Celebi (d. 1679) wrote that in Constantinople there were 105 glass-dish makers with 45 shops, the same number of bottle makers with 4 shops, and glass factories at 4 different locations.

No examples of sixteenth- or seventeenth-century glass made locally have been identified, but such objects from the eighteenth century are quite plentiful. A very common variety, which is characterized by a thin and bubbly metal with opaque red marbling, can be seen here. This elegant object functioned as a rose-water sprinkler.

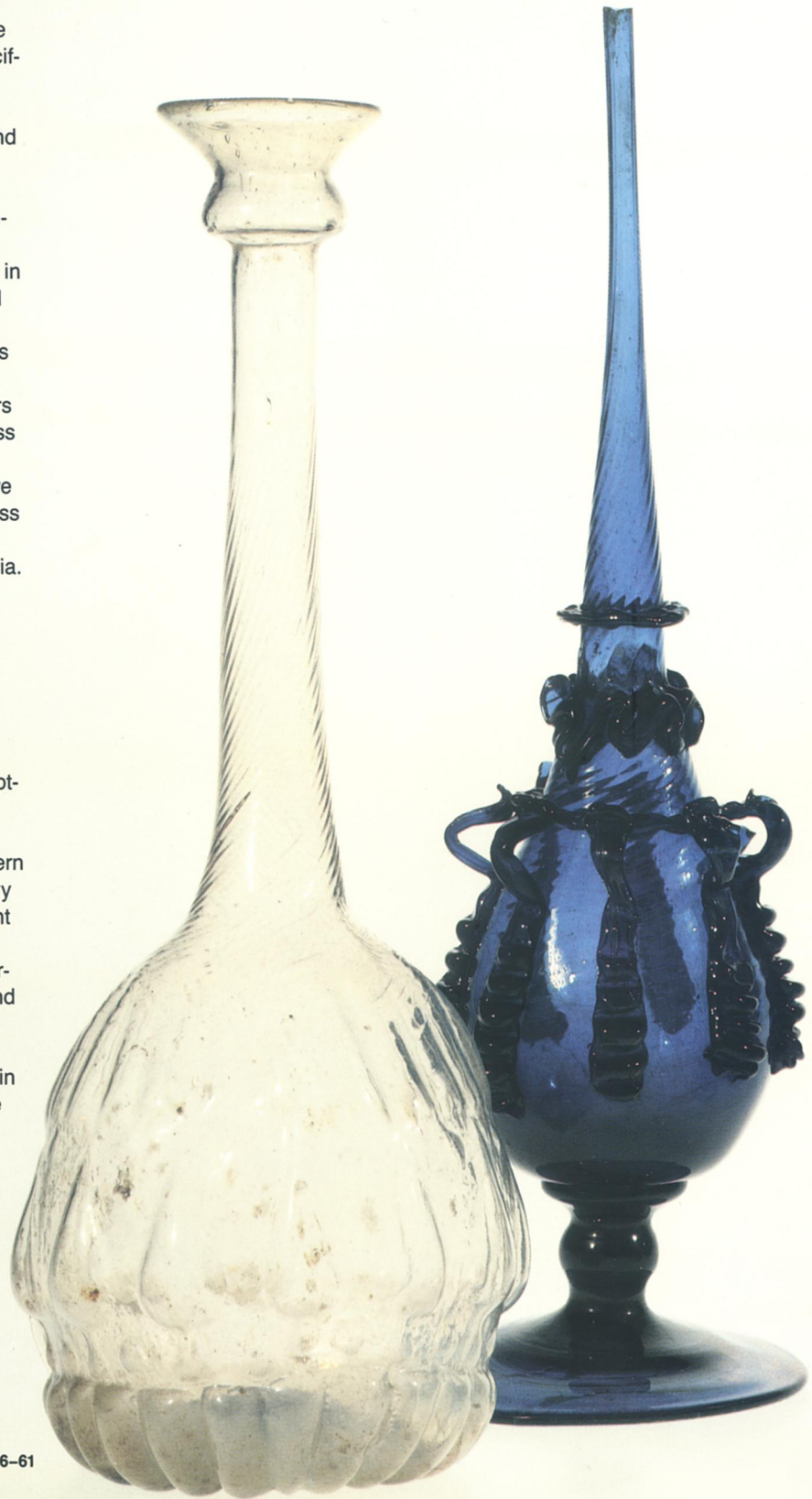


56–61. The picture of glassmaking in Islamic Iran before around 1600 is not clear, but accounts of travelers, miniature and wall paintings, and business documents from that time on shed light upon local production and indicate a brisk import business.

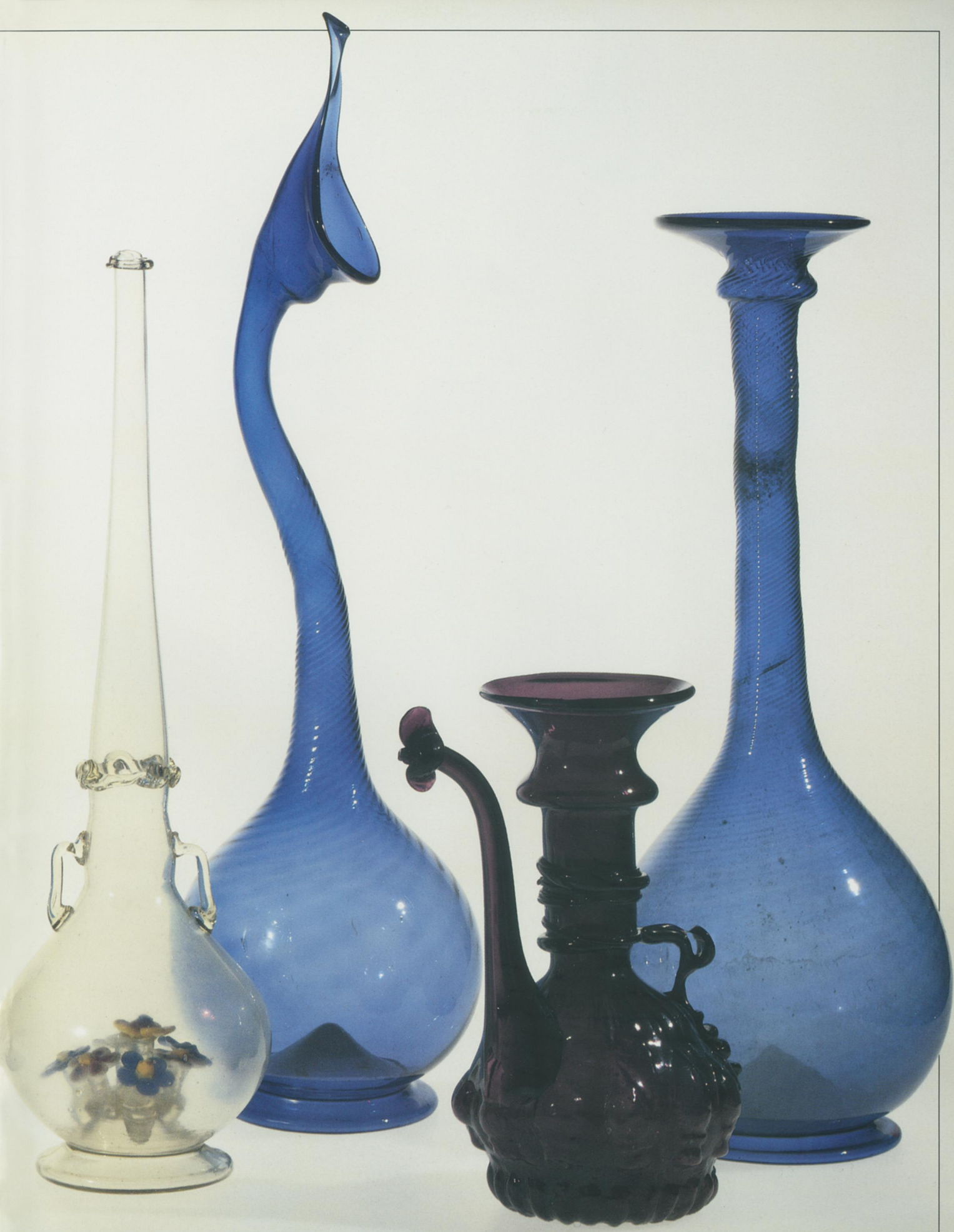
The French traveler Jean-Baptiste Tavernier, who journeyed to Persia in the middle of the seventeenth century, specifically mentions that Shiraz had three or four glass houses that manufactured large and small bottles for rose water and other locally made perfumes as well as many types of containers for pickled fruits exported abroad. Another contemporary traveler writes that Shiraz wine was taken to the Gulf port of Gombroon in long-necked bottles that were protected by wicker coverings. Several of the seventeenth-century travelers' accounts pointedly note how unsuccessful the Persians were at glassmaking. It appears that very little, if any, of this Safavid glass has survived.

From the late sixteenth century on, we have records showing that Venetian glass vessels, beads, mirrors, windowpanes, and spectacles were being sent to Persia. Among the most popular items were kalians, or huqqa bases, for smoking tobacco.

The six objects shown here were all produced in nineteenth-century Persia and are typical in their minimal surface ornamentation, their rather graceful shapes, and, in some cases, their indebtedness to earlier European glass. The kalian with the flowers inside its base (no. 58) is a good example of this Western influence; numerous eighteenth-century documents record the Persian penchant for Venetian-made huqqa bases with lampwork (rods of glass worked into various forms over an open flame) fruits and flowers enclosed within them. An early nineteenth-century traveler observed that copies of such objects were made in Shiraz, and the Metropolitan's example is probably one of these.



56–61





Although the vast majority of the glass produced in the Muslim world was made into vessels of various types, the glass-maker's craft was also employed to make other kinds of objects. The final pages of this history of Islamic glass are devoted to four such applications: gaming pieces; weights of several different types; architectural decoration; and objects of personal adornment.

**62-65.** Both the game of chess and that of backgammon are Middle Eastern in origin. The former, according to the Persian poet Ferdowsi in his epic *Shah-nameh*, was invented in India, whence it was brought by an envoy to the Persian court during the reign of Khosrow I (531-78). The envoy came with an ultimatum that unless the Persians could name the

pieces and figure out the moves of the game, India would not pay tribute. A counselor to the shah saved the day by recognizing that it was a game of war between symbolic armies commanded by the king and his vizier (queen, in the West). Each army consisted of four branches: chariotry (represented by the rook, from the Persian *rukh*, or "castle"); elephant corps (bishop); cavalry (knight); and infantry (pawn). The story concludes with the same wise counselor journeying to India to present his own invention, *nard* (backgammon), which neither the rajah nor his advisors could fathom.

The marvered-and-combed glass object (no. 63) is definitely a chess piece, either a king or a vizier; its shape is variously interpreted as a throne, a stylized seated human figure, or a ruler on a

throne atop an elephant's back. It is not certain whether the other pieces illustrated here were used for chess, backgammon, or another board game, however.

Gaming pieces are very difficult to date. The forms of the various pieces in the partial wooden chess set, datable to the first half of the eleventh century, found in the Serce Limani wreck are not unlike those of the partial ivory set excavated by the Museum at Nishapur that was dated to the early ninth century. This correspondence suggests that these shapes may have been traditional, continuing for centuries, but until other groups that can be assigned firm dates or provenances come to light, we must be satisfied with a broad attribution for most gaming pieces.

66–74. Glass served a fiducial function in the Islamic world, primarily in the Egyptian monetary system between the eighth and the fifteenth century. The coins of gold (*dīnār*), silver (*dirham*), and copper (*fals*) that were in circulation during the twelve hundred years under discussion in this publication were handcrafted and, unlike our modern machine-made coinage, did not have a precisely calibrated weight. Thus, a simple payment in coins for an item of a stated price was not possible.

To remedy this problem, a system was devised utilizing glass weights that were the precise equivalents (or fractions or multiples) of the standard unit weights of the three denominations of coins. When a business transaction was carried out,

coins were weighed in bulk against glass weights equaling the price of the purchase. In Early Medieval business documents the Arabic verb *wazana* (to weigh) was used for any transaction in which money changed hands. The issuing of weights was carefully regulated and was generally delegated by the caliph to the governor or viceroy, when one existed; to the finance director; or to both.

The eight coin weights illustrated here, which represent only a fraction of the Metropolitan's collection of these fiducial tools, range from a very precisely identified one-*dīnār* weight (green, at the center foreground, no. 66) issued by al-Qāsim ibn 'Ubayd Allāh, who was finance director in Egypt from 734 to 742, to the Mamluk one-half-*dirham* weight

(aubergine and opaque white, at the bottom right, no. 73) with an unintelligible Arabic inscription.

Another type of weight, known as a ring weight (top left, no. 74), was used for weighing meat, grapes, and other commodities. While approximately ten thousand coin weights are extant in public and private collections here and abroad, complete examples of the larger ring weights—equaling a *raṭl* (a unit of weight), its double, or its fractions—number less than one hundred. Such objects are usually found in fragmentary condition because when a new governor, viceroy, or finance director was appointed, weights were issued in the new appointee's name and old weights were ordered destroyed.





**75-80.** According to accounts from the Early period onward, glass was employed to decorate the interiors of buildings in the Muslim world, but few architectural elements executed in or incorporating glass have survived from before the Late period. The excavations at Samarra, which yielded a number of different types of such architectural decoration, are the richest source of such elements from the Early period. The so-called millefiori (meaning "thousand flowers") tiles must have given a most dazzling and kaleidoscopic effect. Two fragments of such tiles—which we know, from more complete examples, measured approximately 22 centimeters square—are seen above (no. 75). A method used by Roman glass-makers was employed to construct the tiles. First, glass canes of various colors were arranged in differing patterns and fused together in a series of cylindrical molds. The resulting cylinders were then stretched into long tubes, from which individual pieces were sliced off and arranged side by side in an open mold to form a pattern. Final heating and polishing produced the finished tile.

The hollow, clear, colorless object to the right of the millefiori fragments (no. 76) belongs to a rather large group composed of elements of various geometric shapes found in the most luxuriously decorated area of Samarra's Jausaq Palace—the harem. It is impossible to say how these pieces were used. Each has a flangelike border that somehow must have secured the element to another surface, perhaps one of stucco.





Window glass was in common use in Samarra as well, in several varieties. The panes were set in stucco; lead or putty was never used as in the West. The tradition of setting colored or colorless glass into a trelliswork of stucco would continue in the Near and Middle East until the present day. Two beautiful Late period examples that were made under the Ottomans can be seen in this publication (back cover and title page).

Objects of personal adornment were also fashioned by Islamic glassmakers. No doubt certain of these jewelry items, such as particular types of beads, crossed social boundaries, as is the case today, and others, like some seen here—the emerald green glass ring and the beads colored like emerald, ruby, turquoise, amethyst, and lapis lazuli—were used only by the lower classes, in imitation of more expensive objects worn by their social superiors.

At this point in our knowledge, a precise chronological sequence of items of jewelry executed in glass cannot be determined. We can assume, however, that such objects were produced wherever glassmaking was practiced and that their shapes and techniques should help to place and date these colorful but inexpensive items.

# Credits

- 1. COSMETIC BOTTLE.** Tooled and free-blown, with trailed thread decoration, pontil on base. Eastern Mediterranean, 8th–9th century. H. 4¾ in. Gift of Mrs. Charles S. Payson, 1969 (69.153)
- 2, 3. PENDANTS.** Eastern Mediterranean, Early period. No. 2: Free-blown with marvered-and-combed and unmarvered thread decoration, pontil on chest. L. 2<sup>15</sup>/<sub>16</sub> in. Bequest of Mary Anna Palmer Draper, 1914 (15.43.248) No. 3: Free-blown with unmarvered thread decoration, pontil on chest. L. 3 in. Theodore M. Davis Collection, Bequest of Theodore M. Davis, 1915 (30.95.196).
- 4. DISH.** Free-blown and tooled, pontil on base. 8th–9th century. Diam. 3<sup>7</sup>/<sub>8</sub> in. Gift of Helen Miller Gould, 1910 (10.130.2643)
- 5. THREE-FOOTED VESSEL.** Free-blown with applied decoration. 8th–9th century. Gr. Diam. 7¾ in. Purchase, Joseph Pulitzer Bequest, 1965 (65.173.2)
- 6. MEASURING CUP.** Free-blown and tooled with applied handle and mold-pressed disc, pontil mark on base. Eastern Mediterranean, Early period. H. with handle 3 in. Capacity 1½ fl. oz. Gift of Helen Miller Gould, 1910 (10.130.2648)
- 7. VASE.** Free-blown and tooled with applied mold-pressed discs and unmarvered thread decoration, pontil on base. Eastern Mediterranean, 8th–9th century. H. 6 in. Rogers Fund, 1937 (37.56)
- 8. BOTTLE.** Free-blown with unmarvered and tooled thread decoration. Eastern Mediterranean, 8th century. H. 7<sup>7</sup>/<sub>8</sub> in. Museum Accession (X.21.210)
- 9. BOTTLE.** Free-blown with unmarvered and tooled thread decoration. Eastern Mediterranean, 8th century. H. 6<sup>9</sup>/<sub>16</sub> in. Gift of J. Pierpont Morgan, 1917 (17.194.291)
- 10. BOTTLE.** Mold-blown, tooled, and free-blown, pontil on base. 8th–9th century. H. 4<sup>7</sup>/<sub>16</sub> in. Gift of Mrs. Carleton S. Coon, 1963 (63.184.2)
- 11. BOTTLE.** Mold-blown, pontil on base. Eastern Mediterranean, 7th–9th century. H. 1<sup>7</sup>/<sub>8</sub> in. Theodore M. Davis Collection, Bequest of Theodore M. Davis, 1915 (30.115.14)
- 12. BOTTLE.** Mold-blown. Eastern Mediterranean, 7th–9th century. H. 2¼ in. Gift of J. Pierpont Morgan, 1917 (17.194.243)
- 13. CUP.** Mold-blown and free-blown, pontil on base. Early period or later. H. 4<sup>1</sup>/<sub>8</sub> in. Rogers Fund, 1964 (64.241.2)
- 14. EWER.** Mold-blown and tooled with applied handle. Iraq (Baghdad), 8th–9th century. H. 4¾ in. Museum Accession (X.21.191)
- 15. BOTTLE.** Free-blown, tooled, and engraved, pontil on base. Early period. H. 4<sup>7</sup>/<sub>8</sub> in. Rogers Fund, 1930 (30.40.4)
- 16. GOBLET.** Free-blown and incised with tooled stem and foot applied separately, pontil on base. Eastern Mediterranean, 8th–9th century. H. 4<sup>11</sup>/<sub>16</sub> in. Purchase, Joseph Pulitzer Bequest, 1965 (65.173.1)
- 17. CUP.** Free-blown with impressed decoration, pontil on base. Eastern Mediterranean, Early period. H. 3<sup>3</sup>/<sub>8</sub> in. Purchase, Joseph V. McMullan Gift, 1974 (1974.15)
- 18. HANDLED VESSEL.** Free-blown and tooled with impressed decoration and applied handles, pontil on base. Eastern Mediterranean, 10th century. H. 3<sup>1</sup>/<sub>16</sub> in. Gift of Helen Miller Gould, 1910 (10.130.2644)
- 19. BOTTLE.** Free-blown in two parts with impressed decoration, pontil on base. Eastern Mediterranean, Early period. H. 7½ in. Rogers Fund, 1908 (08.138.2)
- 20. BOWL.** Free-blown and luster-painted, pontil on base. Eastern Mediterranean, 8th–9th century. H. 4<sup>1</sup>/<sub>8</sub> in. Purchase, Rogers Fund and Gifts of Richard S. Perkins, Mr. and Mrs. Charles Wrightsman, Mr. and Mrs. Louis E. Seley, Walter D. Binger, Margaret Mushekian, Mrs. Mildred T. Keally, Hess Foundation, Mehdi Mahboubian and Mr. and Mrs. Bruce J. Westcott, 1974 (1974.74)
- 21. COSMETIC BOTTLE.** Free-blown and luster-painted, pontil on base. Eastern Mediterranean, 10th century. H. 4 in. Gift of Helen Miller Gould, 1910 (10.130.2649)
- 22. BOWL.** Mold-blown and wheel-cut. 9th century. H. 2<sup>7</sup>/<sub>16</sub> in. Rogers Fund, 1970 (1970.20)
- 23. COSMETIC BOTTLE.** Relief-cut from block. 9th century. H. 4½ in. Gift of Mr. and Mrs. Arthur G. Altschul, 1985 (1985.316)
- 24. HANDLED CUP.** Free-blown and relief-cut with applied, wheel-cut handle. 9th–10th century. H. 3<sup>1</sup>/<sub>8</sub> in. Purchase, Joseph Pulitzer Bequest, 1969 (69.223)
- 25. VESSEL.** Free-blown and relief-cut. 9th–10th century or later. H. 2¾ in. Purchase, Joseph Pulitzer Bequest, 1965 (65.172.1)
- 26. BEAKER.** Free-blown and relief-cut. 10th century or later. H. 5¾ in. Purchase, Rogers Fund and Jack A. Josephson, Dr. and Mrs. Lewis Balamuth and Mr. and Mrs. Alvin W. Pearson Gifts, 1974 (1974.45)
- 27. CUP.** Free-blown and relief-cut. 10th century or later. H. 2¾ in. Purchase, Rogers Fund and Margaret Mushekian Gift, 1975 (1975.442)
- 28. BEAKER.** Free-blown and wheel-cut, pontil on base. 1st half 11th century. H. 5<sup>15</sup>/<sub>16</sub> in. Rogers Fund, 1940 (40.170.55)
- 29. CARAFE.** Free-blown, tooled, and wheel-cut, pontil on base. 1st half 11th century. H. 8¾ in. Rogers Fund, 1948 (48.101.10)
- 30. BOTTLE.** Free-blown, tooled, and wheel-cut. 11th century. H. 9<sup>1</sup>/<sub>8</sub> in. Harris Brisbane Dick Fund, 1963 (63.157.2)
- 31. BOTTLE.** Free-blown, tooled, and wheel-cut. 11th century. H. 6<sup>7</sup>/<sub>8</sub> in. Harris Brisbane Dick Fund, 1963 (63.159.5)
- 32. BOTTLE.** Free-blown, tooled, and wheel-cut. 11th century. H. 5½ in. Purchase, Joseph Pulitzer Bequest, 1965 (65.172.2)
- 33. BOTTLE.** Free-blown, tooled, and wheel-cut, pontil on base. 11th century. H. 6<sup>7</sup>/<sub>8</sub> in. Rogers Fund, 1924 (24.2.34)
- 34, 35. VESSELS.** 11th century. No. 34: Mold-blown, pontil on base. H. 3½ in. Bequest of Walter C. Baker, 1971 (1972.118.179). No. 35: Free-blown, tooled, and wheel-cut, pontil on base. H. 2¾ in. Gift of Dr. Marilyn Jenkins, in memory of her father, Dr. Arthur M. Jenkins, 1982 (1982.478.7)
- 36. JUG.** Mold-blown with applied handle, pontil on base. Early Medieval period. H. 5¾ in. Rogers Fund, 1947 (47.85.2)
- 37. BOTTLE.** Mold-blown with unmarvered thread decoration, pontil on base. Eastern Mediterranean, Early Medieval period. H. 10½ in. Purchase, Joseph Pulitzer Bequest, 1964 (64.255)
- 38. LAMP.** Mold-blown and free-blown, pontil on base. 11th century. H. 2¾ in. Gift of Charles and Irma Wilkinson, in memory of Richard Ettinghausen, 1979 (1979.315)
- 39. VASE.** Mold-blown and tooled. 11th century. H. 2¾ in. Gift of Everett B. Birch, 1984 (1984.502)
- 40. LAMP.** Free-blown and tooled, with applied handles and cylinder for wick, pontil on base. 11th century. H. 4¼ in. Harris Brisbane Dick Fund, 1964 (64.133.1)
- 41. EWER.** Free-blown and tooled with unmarvered thread decoration and applied handle and foot, pontil on base. 11th century. H. at spout 5¾ in. Rogers Fund, 1962 (62.172)
- 42. PERFUME SPRINKLER.** Free-blown and tooled with applied foot and "handles," pontil on base. Early Medieval period. H. 10¼ in. Purchase, Richard S. Perkins Gift, 1977 (1977.164)
- 43, 44. BEAKER AND BOTTLE.** Free-blown and tooled with unmarvered thread decoration and coil base, pontil on base. Eastern Mediterranean, Early Medieval period. H. 4¾ in.; 4¾ in. Bequest of Mrs. H. O. Havemeyer, 1929, H. O. Havemeyer Collection (29.100.83, 87)
- 45. PERFUME SPRINKLER.** Free-blown, enamel-painted and gilded, pontil on base. Early Medieval period. H. 2½ in. Bequest of Walter C. Baker, 1971 (1972.118.42)
- 46. TAZZA.** Mold-blown in two parts, tooled, enamel-painted and gilded, pontil on base. Eastern Mediterranean, 1st half 13th century. H. 7¾ in. Edward C. Moore Collection, Bequest of Edward C. Moore, 1891 (91.1.1538)
- 47. MOSQUE LAMP.** Free-blown and tooled with applied handles, enameled and gilded, pontil on base. Eastern Mediterranean, ca. 1285. H. 10½ in. Gift of J. Pierpont Morgan, 1917 (17.190.985)
- 48. LARGE BOTTLE.** Free-blown and tooled, enameled and gilded, pontil on base. Eastern Mediterranean, late 13th century. H. 17½ in. Rogers Fund, 1941 (41.150)
- 49. TALL BOTTLE.** Free-blown and tooled with applied foot, enameled and gilded, pontil on base. Eastern Mediterranean, 1st half 14th century. H. 19¾ in. Purchase, Joseph Pulitzer Bequest, 1936 (36.33)
- 50. BOWL WITH COVER.** Free-blown, marvered-and-combed thread decoration, pontil on base and on knob of lid. Eastern Mediterranean, 2nd half 13th century. H. 7¾ in. Funds from various donors, 1926 (26.77ab)
- 51–54. BOTTLES.** India, 2nd half 18th century. Nos. 51 and 54: Mold-blown, enameled and gilded, pontil on base. No. 52: Mold-blown and gilded, pontil on base. No. 53: Mold-blown, painted with silver or palladium and gilded, pontil on base. H. 5½ in.; 2½ in.; 5¾ in.; 5½ in.; No. 51: Rogers Fund, 1921 (21.26.11). Nos. 52–54: Fletcher Fund, 1975 (1975.194.2; 1975.64; 1975.194.1)
- 55. BOTTLE.** Free-blown and tooled, pontil on base. Turkey, 18th century. H. 9 in. Gift of Henry G. Marquand, 1883 (83.7.230)
- 56. BOTTLE.** Mold-blown and free-blown and tooled, pontil on base. Iran (Shiraz), early 19th century. H. 12 in. Edward C. Moore Collection, Bequest of Edward C. Moore, 1891 (91.1.1557)
- 57. KALIAN BASE(?).** Mold-blown and free-blown and tooled with applied thread decoration and foot, pontil on base. Iran, 19th century. H. 12¾ in. Edward C. Moore Collection, Bequest of Edward C. Moore, 1891 (91.1.1600)
- 58. KALIAN BASE.** Free-blown and tooled with lampwork flowers and applied thread decoration, pontil on base. Iran (Shiraz), 19th century. H. 12 in. Gift of Henry G. Marquand, 1883 (83.7.260)
- 59. BOTTLE.** Mold-blown and free-blown and tooled, pontil on base. Iran, 2nd half 19th century. H. 15 in. Gift of J. Pierpont Morgan, 1917 (17.190.829)
- 60. EWER.** Mold-blown and free-blown and tooled with applied thread decoration, handle and spout, pontil on base. Iran, 19th century. H. 6 in. Edward C. Moore Collection, Bequest of Edward C. Moore, 1891 (91.1.1554)
- 61. BOTTLE.** Mold-blown and free-blown and tooled, pontil on base. Iran (Shiraz), 2nd half 19th century. H. 12¼ in. Gift of Henry G. Marquand, 1883 (83.7.227)
- 62. NINE GAMING PIECES FROM SET OF SIXTEEN.** Millefiori. Early period. Round: Gr. H. 5/8 in. Conical: Gr. H. 7/8 in. Pfeiffer Fund, 1972 (1972.9.4–6, 8, 9, 13–15, 19)
- 63. KING OR QUEEN CHESS PIECE.** Marvered-and-combed thread decoration. Eastern Mediterranean, Early or Early Medieval period. H. 1<sup>15</sup>/<sub>16</sub> in. Pfeiffer Fund, 1972 (1972.9.3)
- 64. GAMING PIECE.** Tooled. Early or Early Medieval period. H. 1¼ in. Rogers Fund, 1974 (1974.98.6)
- 65. THREE GAMING PIECES.** Tooled. Early or Early Medieval period. H. 1¾ in. Pfeiffer Fund, 1967 (67.151.4); Pfeiffer Fund, 1972 (1972.9.1, 2)
- 66–74. WEIGHTS:** one *dīnār* (green), 25/36 *fals* (bottle green), one *dīnār* (yellow green), one *dirham* (brown), one *dirham* (blue), one-half *dirham* (opaque turquoise), double *dirham* (opaque white), one-half *dirham*, one *ratl* ring weight in name of Abbasid caliph al-Mutawakkil. Nos. 66–72: Mold-pressed. No. 73: Marvered thread decoration and mold-pressed. No. 74: Tooled and stamped. Egypt. A.D. 734–42; 762–69; 778; 1021–36; 1036–94; 1101–30; 1160–71; Late Medieval period; 847–61. Diam. ca. 1<sup>1</sup>/<sub>8</sub> in.; 1<sup>3</sup>/<sub>8</sub> in.; 1<sup>1</sup>/<sub>8</sub> in.; 5/8 in.; 1 in.; 5/8 in.; 1 in.; 5/8 in. No. 74: 2¾ x 2½ x 2 in. Wt. 4.221 gm.; 5.125 gm.; 4.242 gm.; 2.966 gm.; 3.017 gm.; 1.055 gm.; 5.934 gm.; 1.499 gm.; 381.5 gm. Nos. 66–68: Gift of Mrs. Lucy W. Drexel, 1889 (89.2.241–43). Nos. 69–74: Rogers Fund, 1908 (08.256.46, 23, 66, 29, 56, 1)
- 75. TWO FRAGMENTS OF WALL TILE.** Millefiori. Early period. 1½ x 1½ in.; 1½ x 1 in. Rogers Fund, 1923 (23.75.15ab)
- 76. DECORATIVE ELEMENT.** Mold-blown. Early period. L. 1¼ in., W. 1¾ in. Rogers Fund, 1923 (23.75.2d)
- 77. NECKLACE.** Marvered-and-combed thread decoration and tooled. Eastern Mediterranean, Early or Early Medieval period. L. 20¼ in. Pfeiffer Fund, 1973 (1973.347)
- 78. BRACELET.** Fused slices of cane wrapped around core of dark glass. Eastern Mediterranean, Early period. Outer Diam. 2½ in. Gift of Helen Miller Gould, 1910 (10.130.1097)
- 79. RING.** Mold-pressed. Eastern Mediterranean. Diam. 1 in. Gift of Helen Miller Gould, 1910 (10.130.975)
- 80. BEADS.** Cut and polished (.86a) and molded (.84b; 90c, o, u; 192c, e). Early or Early Medieval period. Rogers Fund, 1948 (48.101.84b; 86a; 90c, o, u; 192c, e)

