THE SIGNIFICANCE OF ROMAN GLASS

BY RAY WINFIELD SMITH

The fascination of Roman glass rests on a far more intellectual appeal than the mere aura of antiquity or the fiery gleam of iridescence. Our interest in these objects is a tribute to the high artistic and technical attainments of an ancient craft which developed or was familiar with all the basic processes known to the modern industry, though it lacked any real knowledge of chemistry and worked without equipment designed for modern standards of precision. The classical glassmakers not only supplied a wide range of articles of utility but also demonstrated an admirable aesthetic feeling in many of their superior achievements and even rose on occasion to the realm of the fine arts in masterpieces exemplifying the techniques of painting, sculpture, and gilded decoration.

A superb cross section of total Roman accomplishment, with choice examples illustrating virtually every aspect of the glass-making art during its period of most rapid development, is offered in the galleries of the Metropolitan Museum. The relative stature of the Museum’s collection, long recognized as preeminent, has been further increased by the unfortunate destruction of portions of Europe’s glass treasures during the recent war and by the continued inability of many leading European museums to display their collections which managed to survive the holocaust. Numerous contemporary witnesses have left us a wealth of written evidence to indicate the keen general interest in glass and the relatively important role which the material played in the daily life of ancient Rome. We have ceased to marvel at glass, because many of its characteristics are matched or surpassed by other modern materials. To the Roman, by contrast, glass was a constant source of surprise. At a period when porcelain, for example, was unknown, glass stood out as a conspicuously superior product. A continual flow of technical and artistic innovations sustained the fascination of glass, while jealously guarded trade secrets frequently conspired with the remoteness of the source to create an air of mystery about its substance. For centuries, in fact, certain types of glassware passed as being fashioned from more precious materials.

If we could look in on the manifold associations a typical aristocratic Roman would have had with glass from birth to death and into the hereafter, we might conclude that glass played a greater role in the lives of the Romans than it does in our own. His first bath probably involved the use of oil stored in glass urns, and his first nourishment may have been taken from specially constructed flasks which some archaeologists have identified as nursing bottles.
Roman children played with glass toys and adolescents learned a game, similar to checkers or chess, involving glass "men." The adults took up a sport in which glass balls were juggled by the contestants with great skill. Prominent Roman citizens, we are informed, became proficient in this pastime and demonstrated their dexterity in public places. Glass was sometimes put to a strange use by young patricians. Shaving for the first time on attaining their majority, they carefully deposited the hair in a pyxis, which was carried to a consecration ceremony.

The homes of wealthy Romans were lavishly equipped with glassware. As articles of utility on the kitchen shelves, table service for their dining halls, accouterments of the dressing table, and decorative objects in the salons, glass was considered indispensable. Particular attention was given to the drinking vessels. Classical writers reveal their importance by discussing quite seriously such profound questions as whether a beaker should be large or small, and whether it is really important that a gentleman use a cup of high quality. On the authority of Martial we know that glass occasionally met an abrupt fate. In the flush of good fellowship goblets were sometimes dashed to the floor after drinking a toast, a quaint custom which has survived to this day in certain countries.

In Roman days, as now, a certain amount of good-natured horse play went along with the entertaining. One of the most imaginative practical jokes of all time was conceived by the Emperor Heliogabalus, who sometimes served to his social parasites meals of which the courses included only cleverly fashioned glass imitations of the food. We are told that during these bizarre repasts the host, with rigid regard for etiquette, directed the servants to pour water as usual for the ceremonial hand-washing. The illustration at the left shows a type of glass used in another hoax. The piece has a double wall, providing a space which can be filled through an opening inside the base. When prepared in this way the cup has a convincing appearance of being full and would deceive a drinker until he raised it to his lips. The construction apparently came down through all periods of glass-blowing, for examples have been found in sixteenth-century Venetian ware as well as in eighteenth-century English crystal. It was no doubt known to Arab and Islamic glassmakers, who passed it on to the reawakening Western glass centers after the twelfth century.

Some Roman homes were equipped with glass window panes, although their use was not widespread. In Roman gardens, however, vegetables were frequently grown under glass to ad-
vance the ripening. The Roman household received many of its supplies, including medicines, in glass containers. The apothecary, in fact, employed glass retorts and other implements in preparing his strange concoctions.

Death did not terminate the Roman's associations with glass, as jugs for milk, wine, and honey, with a drinking glass or two, were placed in the grave to provide him nourishment during the journey to the hereafter. Objects identified with a man's profession or cherished pieces from a lady's dressing table, in a quality commensurate with the family's standing, often accompanied the deceased. A type of large urn used to hold the ashes of Roman cremations is illustrated on page 50, and a fine pitcher taken from a grave near Beauvais, which contained two more jugs of the same type and other glassware which had belonged to a lady of distinction, is shown on page 56.

The vast majority of glass objects with which the average citizen was associated throughout his life consisted of commonplace ware of little interest to the modern museum of art. The Metropolitan's collection, however, is rich in glass of real beauty, which was always produced in limited quantities to satisfy the demands of the affluent. Creating sensation after sensation, these finer pieces excited the cupidity and rivalry of collectors. Nero, for example, on whose interest in glass a whole article could be written, was not above depredations to insure his own superior status as a collector. Pliny describes how he confiscated from the heirs of the original owner an outstanding collection, which probably included glass bowls. Nero's trusted friend and master of ceremonies, Petronius, who was also a connoisseur and collector, frustrated the tyrant's covetous intentions by smashing a famous murrine bowl (see page 53) after he had become hopelessly compromised in a plot against the Emperor and was about to commit suicide. In order that there should be no misconception as to who was really the "big collector," Nero once ostentatiously purchased a bowl of this general type, for which he paid a much higher price than the fabulous sum the demolished masterpiece cost Petronius. The Museum's superlative series of mosaic bowls may well include types closely resembling some of the items in the Nero and Petronius collections.

The mosaic bowls represent one of the two related groups of fused mosaic glass objects from the classical period which are among the most astounding achievements of the entire history of glassmaking. Both groups appear to have been produced primarily at Alexandria. The second group comprises small decorative plaques of the highest technical and artistic eminence, most of which are Ptolemaic. These plaques were used as inlays for jewel boxes and furniture, or as ornaments on other objects where they could be admired at close range. The exquisite designs include not only Greek,
Rare fused mosaic of a zoological series

but also earlier Egyptian motives, which have often led students to date the plaques too early.

Most examples of the fused mosaic technique embody geometric, symbolic, or floral motives, but the finest plaques include realistically developed animals, birds and reptiles, and in at least one instance a frieze of human figures is presented. The numerous species of animals and birds on the relatively few surviving specimens of this type suggest that a wide zoological range was represented in the original output. The particularly rare example from the Museum’s collection, reproduced on this page, presents a crocodile, of which the forepart is preserved in strong lustrous colors on a porcelain-like white background.

In discussing fused mosaic plaques, modern scholars have frequently failed to appreciate the merits of the finer examples, and have always explained the technique in terms which apply only to the simplest types. It has been repeatedly pointed out that the basic element of the geometric designs was a small glass rod. Such elements, in fact, have been excavated. These rods could be successively immersed in molten glass of other colors to form concentric circles, or placed in bundles with rods of contrasting color, after which they were fused to form rosettes and other simple patterns. Step by step the final design was built up, the possibilities being limited only by the originality of the artist. In any event a “cane” resulted, sometimes the size of the human thumb, in which the pattern ran from end to end. After reheating, the cane was pulled out lengthwise, until the cross-section and design became greatly reduced. Slices from canes were used independently, combined with others of identical or varying design to form a frieze, or incorporated in larger canes to become minor elements of an elaborate design after repeated heating and drawing. The collector of nineteenth-century glass paperweights will recognize the foregoing description as essentially the process by which these colorful objects, whose family tree reaches back two thousand years, were also fashioned.

A far more complicated technique was involved in the finer types of fused mosaics. The routine by which geometric designs were produced would never have achieved a human face, for example, or the head and mane of a lion. For such perfection highly specialized, still unexplained refinements were developed. Many difficulties undoubtedly arose during the process of drawing out the canes. Each colored layer of glass, for instance, had its own composition, and therefore its own viscosity at any given temperature. Thus, even if the cane were brought to the same temperature throughout its mass before it was drawn, astonishing command of the material was necessary to prevent distortions in the design caused by uneven flow of the material during reduction. In spite of this difficulty, however, the mosaic artist was able to draw down a colored line to a width of one thousandth of an inch without breaking it or losing control of the design. The details in some specimens can be distinguished only by using a strong magnifying glass. A complete composition, for example, showing a lion attacking a seated human figure, is contained on one plaque less than half an inch in diameter.

About the middle of the first century B.C. the Alexandrian factories of fused mosaics sharply diminished their output of plaques in favor of bowls. There was almost certainly a connection between this shift and Pompey’s introduction to Rome of the fabulous “murrine” bowls. Pliny recounts that this conqueror brought back as loot from the East a number of “murrina,” which, passing “into private use,” created a sensation and initiated an avid demand for the spectacular novelty. The purchasers probably believed, as Pliny did, that murrina were made from a mysterious substance taken from the ground at an obscure locality in Parthia. Pliny also mentions glass murrina, however, and Kisa, a modern scholar
who discussed the question at length, was convinced that all murrina were actually glass vessels. Despite the continuing controversy over the distinction between murrina and glass, it seems reasonable to conclude that glass bowls were frequently called murrina, whether or not their true nature was recognized. In any event, the Alexandrian manufacturers had correctly sensed the potentialities of a great distant market, to which they accommodated their output at handsome profit to themselves. The mosaic bowls, of which the Museum owns in some respects the finest group in existence, are now popularly called “millefiori,” an Italian term adopted during the Renaissance.

It is perhaps indicative of Roman taste that while the dilettanti were immensely pleased with the millefiori bowls, they were relatively indifferent to the artistically superior fused mosaic plaques, which were also exported to Rome. The classical writers paid no attention whatever to the plaques, although they must have been known to Pliny and earlier students who wrote on glass from Italy. No doubt the millefiori bowls shared the snobbish appeal of rock crystal and other semiprecious materials.
Opaque white pyxis used as a cosmetic box

wherever they passed as murrina. The mosaic plaques, moreover, were on a miniature scale, and the Roman host was more interested in objects which impressed his guests from across the room. The Alexandrian producer had no incentive to argue the point with his customer when the mosaic bowls were far easier to make and the Roman market was willing to pay high prices for them.

A large part of the beautiful glass from the Roman period, being manufactured for the dressing table, was designed to captivate the feminine market. The opaque white glass pyxis shown above is so modern in appearance that it would unquestionably find a ready market today as a cosmetic box, the use to which it was originally put. The Roman glass factories found a vast outlet for their products in supplying the cosmetics industry. Despite the magnitude of cosmetics sales in the United States, a larger share of the national income was probably spent for these products in the Roman centuries than is the case in this country today. Technically, the pyxis illustrated is an outstanding example of a method of glass-cutting mentioned by Pliny—the art of turning a glass object with a tool from a massive block. Both the cover and the pyxis itself were profiled as one would fashion an object with a wood lathe.

The highest technical, though not artistic, accomplishment of the classical glass-cutters was a type of bowl or cup now called a “diatretum.”

While no complete specimen of this extremely rare work is preserved in the United States, the Museum has an important fragment. The first stage in making a diatretum was to construct a very thick-walled bowl, which was probably poured into a mold. By progressively cutting away portions of the outside, involving dexterous free-hand undercutting, a cagelike network was left standing out from an inner core, to which it remained attached by slender connections. The diatreta were handsome objects, particularly those which embodied a network and core in two layers of contrasting colors. The archaeological importance of certain diatreta is enhanced by their complimentary or convivial inscriptions, usually carved around the upper part.

Near the beginning of the Christian era, perhaps a few decades earlier, the most revolutionary development in glass history occurred—the discovery that glass could be blown. As with all revolutions, the consequences of this epochal event were not all good. It eventually turned glassmaking over to a new category of artisans, who, given a process of free blowing with unlimited artistic possibilities, were usually incapable of rising to the occasion. At first, however, the leading exponents of glass-blowing, at Sidon, merely exploited the technique as a de-
Amber-colored ewer inscribed below the handle: Ennion made it. Blown in a tripartite mold, open at the bottom. The foot is restored. Sidonian, 1 century A.D.
ABOVE: Chain-handle pitcher with swirled diagonal ribbing, a Seine-Rhine product. Opaque blue ewer with inclined body, lathe turning on the base, and heavily cut handle. 

BELOW: Heavily cut bottle. Great accuracy was required to hold the intersections straight. Cup commemorating an arena contest, inscribed with the names of charioteer and horses. IV century A.D.
vice to facilitate the production of beautiful vases with molded design. Previously, molded glass had been poured and pressed into the molds. The outstanding glass-blower of antiquity was one of these Sidonians, Ennion, who may even have been the first to blow glass. Ennion rightly considered his work to be of high artistic quality, in token of which he proudly placed his name on the choicest pieces at a conspicuous point for all to see. Four of Ennion’s creations are exhibited in the Museum’s gallery of Roman glass, and of the surviving twenty-one signed specimens two more are in New York City, the six together constituting the largest group of these objects gathered in one locality since antiquity. The example illustrated on page 55 has the most stately shape Ennion is known to have produced. Like all his work, it draws its molded design from the Greek tradition.

When the emphasis in classical glassmaking shifted from mold-blown to free-blown glass, two paths were open to the art. It could either continue to find its inspiration in sources outside the glass industry, such as ceramics and the metal arts, or launch out in the evolution of entirely new concepts of beauty in profiles, shapes, and mass relationships. It is clear that most of the Roman glass-blowers were quite incapable of the latter course, and that they never outgrew the handicrafts. Considerable originality was evidenced, however, in the development of new motives in subsidiary details, such as handles, in special techniques of “decoration,” particularly with applied threads, and in tours de force of glass-cutting. Occasional masters, moreover, were able to rise above their contemporaries and demonstrate that the highest destiny of glassmaking lies in a logical beauty of design and decoration, growing out of the unique plastic potentials of glass-blowing and the peculiar characteristics of the material. The Museum’s collection of classical glass has numerous examples of superlative free-blown glass, of types which could have been fashioned only in glass.

To supply the demand of an Empire population for utility and luxury glassware, an extensive industry developed, with manufacturing centers scattered through many provinces. Those in Gaul and on the Rhine were particularly prominent. In the third century, for instance, specialties of the Cologne glassworks ranked among the finest glass the industry was producing. Some of these objects were exported to Italy and other distant regions. This phenomenal production of such distinguished glass at a remote frontier point was probably due to favorable deposits of pure sand near a metropolis which dominated the economy of an extensive trading area.

One of the most celebrated Cologne products was “snake-thread” glass. Although the finest specimens were conceived at this Rhenish glass center, simpler pieces of snake-thread glass were also manufactured in the East. The beaker illustrated herewith is unusual in its shape and its color combination, brown and white. While most snake-thread decoration represents nothing in nature, the elements were intended in some cases to suggest serpents. A few of the most distinctive pieces bear thread decoration in foliage motives, and there are cases where the threads are coated with gold. The manufacture

*Snake-thread cup with polychrome decoration*
of snake-thread glass required an almost unprecedented dexterity, as molten thread fuses instantly on contact, with no correction possible. In many examples the design dictated that the thread be applied in an exact path, yet the artist's hand was separated from the vase by an incandescent thread, sometimes three feet or more in length, which he could guide only from its outer end. One characteristic feature of the finest pieces of snake-thread glass is the use of threads of small diameter. Since thin threads cool rapidly, these exceptional pieces had to be executed with great speed.

The dazzling color combinations on some ancient glass are an unintended embellishment. While brilliant iridescence is frequently a thing of consummate beauty and presents some of the most spectacular chromatic effects in nature, it is merely the result of decomposition during the centuries the glass has reposed in the ground, and does not enhance the intrinsic artistic value of the objects. Effects that shame the rainbow, in fact, are frequently encountered on the most commonplace ware. On the other hand, Pliny mentions glass imitations of opals, and some pieces of classical glass may originally have had an opalescent shimmer. If so, iridescence is a fortuitous compensation for this ephemeral effect, no examples of which have survived.

While glass is occasionally used today in the fine arts, sculpture and painting, we can safely conclude from the evidence that the classical sculptor and artist turned to glass more frequently. A few full-round sculptured heads, several inches high, including those of emperors, reveal first-rate artistry in the perfection of their workmanship. A portrait in blue glass paste of an aristocratic Roman lady is illustrated on this page. The selection of a lustrous glass resembling lapis lazuli probably reflects the glyptic background of the sculptor, who doubtless worked in Alexandria shortly before or after the beginning of our era. The glass was initially pressed into a mold, after which the features and other details were worked with a cutting tool.

The smooth surface of glass vessels attracted the Roman artist, and a few painted vessels have survived. Much of this work, however, was carried out in earth colors with no protection, or at the most with a layer of a varnishlike substance. As a result, virtually all painting on glass has been affected by weathering, and much of it has become obliterated. To modern eyes, Roman painting as a whole appears inferior to classical sculpture, but the mythological, hunting, arena, and other subjects painted on glass are frequently handled with vigor and imagination, and there are a few examples of outstanding artistic merit. The plate opposite shows a magnificent fragment of a beaker in the Museum's collection, with gladiatorial and animal
combat scenes. The technique of painting was occasionally combined with cutting and gilding on particularly illustrious work.

The greatest burst of true artistic expression in glass occurred in the first century B.C., at Alexandria, where work of the highest significance was turned out for a century or more.

During this phase a large volume of vases, cups, and decorative plates in the cameo technique was produced. In this adaptation glass of one color was poured in slabs or blown into vessels, after which other layers were added in contrasting colors. The work was completed by cutting away the outside layers to reveal the base as a
background for the design. The most frequent color combination was that seen on the Portland vase, now in the British Museum. This amphora, the most celebrated survival of the classical glass industry, presents its story in opaque white glass on a base of transparent dark blue. The same combination occurred on a fine cup, a fragment of which (see p. 59) is in the Museum's collection. This is an excellent example of the highest quality, the delicately cut figures of the Dionysiac scene being skillfully disposed in a dynamic composition. The Museum also has a fine fragment of multilayer cameo glass in four colors, no complete specimens of which are in existence.

A splendid fragmentary plate in the cameo technique from the Museum's collection is reproduced on page 59. The plate's low, circular profiled rim, with a diameter of more than forty inches, enclosed a rich group of marine edibles, such as crabs and mollusks, executed in glistening white on a background of deep wine color. To appreciate fully the beauty of this capital piece, the reader must visualize its pristine freshness before the process of weathering had dulled the pure, lustrous colors. While the original owner cannot be identified, the plate was obviously a centerpiece for a banquet table, and it would have been appropriate to an imperial dining hall, for it is one of the most impressive surviving monuments from a period which was satiated with lavish display of glass splendor.

The impeccable workmanship of many such cameo fragments establishes their carvers as artists of high rank. The signature of Herophilos, son of the great Dioskourides of Samos, who was pre-eminent in the reign of Augustus, appears on a large glass cameo in Vienna. During the flood tide of classical taste, in fact, exponents of every fine art chose as a medium this most versatile of materials.

The most extensive ancient source on classical glass is Pliny's Natural History: book xxxvi contains a detailed discussion of glass; book xxxvii recounts the anecdotes about Pompey, Nero, and Petronius and mentions glass imitations of opals. Columella refers to the use of glass in gardening in his work On Agriculture, xi, chapter iii. There is an interesting Roman inscription describing the contests with glass balls in Corpus inscriptionum Latinarum 6, part 2 (Inscriptiones urbis Romae Latinae 2, no. 9797.1).

Several Roman authors who refer to glass are now included in the Loeb Classical Library. Suetonius, The Lives of the Caesars, book vi, xii, 4, mentions the use by Nero of a gold pyxis to contain his first shaven beard (a fine glass pyxis with carefully wrapped hair has been found in a Roman grave). Martial, Epigrams, book xi, 74, confirms the custom of smashing drinking glasses, and Lampridius, Antoninus Elagabalus, xxv, lists the prandial eccentricities of a degenerate emperor.

Modern authors have also contributed sources for the foregoing article. Furtwängler, Die antiken Gemmen, lists the Herophilos cameo (iii, p. 312). Kisa's monumental work, Das Glas im Altertume, presents this scholar's conclusion in the murrina, or fused mosaic, controversy (xi, p. 357), and Fremersdorf's Roemische Glaeser aus Koeln (1928) discusses the glass specialties of Roman Cologne (p. 7).

Ray Winfield Smith, who has traveled extensively in Europe and the Near East, has been for many years a student and collector of ancient glass. He has recently been appointed by the Archaeological Institute of America to a committee which will study a project for a comprehensive work on ancient glass. The objects illustrated on pages 50 (top), 54 (top), 55, 56 (lower right), and 58 are from Mr. Smith's collection.