

HELLENISTIC GLASS VESSELS FROM THE ATHENIAN AGORA

(PLATES 91-95)

THE gaps in our knowledge of glass vessels made before the invention of the blow-pipe are gradually being filled in, during recent years at a rather rapid rate. Some pieces discovered in the Athenian Agora may be of considerable help in formulating the picture of glassmaking as it was carried on in the Hellenistic period.¹

To summarize briefly the methods of glass manufacture used before blowing, there seem to have been three: the so-called sand-core method, carving out of a solid block of glass, and casting in a mould.² By the third or second century B.C. the cutting of vessels from blocks of glass probably had gone out of use and sand-core products were rapidly deteriorating, while casting in a mould was the method which came to the fore. It persisted, indeed, long after blowing became the ruling technique.

The most remarkable glassware of the Hellenistic period is undoubtedly the bowls with patterns in gold leaf encased between two thicknesses of glass. All the examples known³ obviously had prototypes in vessels of precious metals. But less pretentious glass products of this time also imitate metal vessels, at least in a general way. Among the finds from the Athenian Agora are quite a few fragments of moulded glass vessels of simple types; despite their extremely fragmentary condition they are most important because they were found in contexts which can be dated. These vessels are all open bowls, a shape easy to cast. They can be classified roughly into two varieties: an approximately hemispherical bowl with a flaring rim and generally with vertical fluting, and a hemispherical or conical bowl with straight or incurving rim.

¹ I am indebted to Dr. H. A. Thompson for permitting me to publish material from the Athenian Agora, to Miss Alison Frantz for the excellent photographs, and to Miss Lucy Talcott for uncounted favors. Most of the profiles of the Agora vessels were drawn by Marian Welker, those of the comparative material by Martin Jones after drawings by myself which may not be entirely accurate. For permission to publish individual vessels I wish to thank the authorities of the Boston Museum of Fine Arts, Haaretz Museum, Louvre Museum, Metropolitan Museum of Art, Naples Museum, Nicosia Museum, Palestine Archaeological Museum, Princeton Art Museum, Reggio Museum, Salonica Museum, Toledo Museum of Art and the Villa Giulia Museum, also Mr. I. M. Geroulanos and Mr. Jerome Strauss.

This study was begun with the assistance of the Founders' Fellowship of the American Association of University Women (1954-55) and carried on with a fellowship of the Corning Museum of Glass (1957) and grants from the American Council of Learned Societies (1958, 1960).

² The method of moulding is described by Frederic Schuler, "Ancient Glassmaking Techniques: The Molding Process," *Archaeology*, XII, 1959, pp. 47-52.

³ These are listed by Axel von Saldern, "Glass Finds at Gordion," *Journal of Glass Studies*, I, 1959, pp. 23-49.

The first type (of which there are eight examples) is a substantial vessel averaging about 0.125 m. in rim diameter, with a rounded bottom (assumed, not actually present in any of the Agora specimens) and a slightly flaring rim. A series of narrow horizontal grooves is usually wheel-engraved around the outside below the rim, and in one case inside as well, while shallow, wide flutes are cut vertically in the lower part of the body. The surface is generally polished both inside and out. The shape of No. 1 (Fig. 1, Pl. 91) is typical but its rim is unusual. While the body is almost colorless, the rim is a heavy coil of deep blue glass. This is the only example among such bowls, so far as I know, of a rim of contrasting color. The shallow flutes on the body were cut after the vase was moulded. There are no horizontal grooves directly below the rim, as on other specimens.

No. 2 (Fig. 1, Pl. 91) is similar but not identical. The walls are thicker; the color is pale green; the narrower, sharper flutes seem more regular. At the top they terminate abruptly in a horizontal ridge. There are two series of horizontal grooves, one just below the rim, a second farther down. No. 3 (Fig. 1, Pl. 91), a smaller fragment, is pale green in color. Its shape and its horizontal grooves are like No. 2 but the shallow fluting is more like that of No. 1. No. 4 (Pl. 91) is a tantalizing fragment (light green) which does not preserve the rim. Its broad, shallow, vertical flutes are separated by narrow grooves.

No. 5 (Pl. 91) is so small that it would be negligible if not for its context. A tiny rim fragment of a dark blue-green bowl, it has horizontal grooves outside below the rim, and is apparently similar to Nos. 2 and 3. No. 6 (Fig. 1, Pl. 91), which is yellow, and No. 7 (Fig. 1, Pl. 91), brown, are from bowls slightly different in profile from Nos. 1-3. In neither case is enough preserved to show whether there was fluting on the body, but, like Nos. 2 and 3, each has two groups of horizontal grooves below the rim. No. 8 (Fig. 1, Pl. 91) consists of three tiny pale green fragments, none large enough to help in reconstructing much of the profile. The material is like that of the other fragments, and there are the same horizontal grooves below the rim. The body seems to have had horizontal ribs, an unusual feature.

Nos. 1, 4 and 5 are datable by context to the second century B.C., No. 6 was found in fill of about 100 B.C., Nos. 2, 3 and 8 turned up in first century B.C. context, while No. 7 was far out of place, in a fill of the sixth century after Christ. It must be remembered that these dates are *termini ante quem*; the pieces are at least as early as their contexts, and their fragmentary condition makes a considerably earlier date quite possible.

Metal parallels to these bowls are rare. We illustrate here an example in bronze (Pl. 91, b).⁴ Although the shape is considerably shallower than that of any Agora piece, the surface decoration is remarkably similar in effect. In the bronze it is in

⁴ The Art Museum, Princeton University, 54-124. H. 0.056 m., diam. of rim 0.137 m., th. at rim 0.0035 m.

relief; in the glass the reverse is true. It is interesting to note that this metal bowl is very thick (0.0035 m. at the rim) and quite heavy throughout, a characteristic also possessed by the Agora glass bowls. Ceramic bowls of similar shape and approximately similar decoration are numerous. The "long petal" variety of Megarian bowl⁵ is that which corresponds most closely to the glass examples.⁶ The initial date of these Megarian bowls has been established as about 150 B.C.⁷ This is consistent with

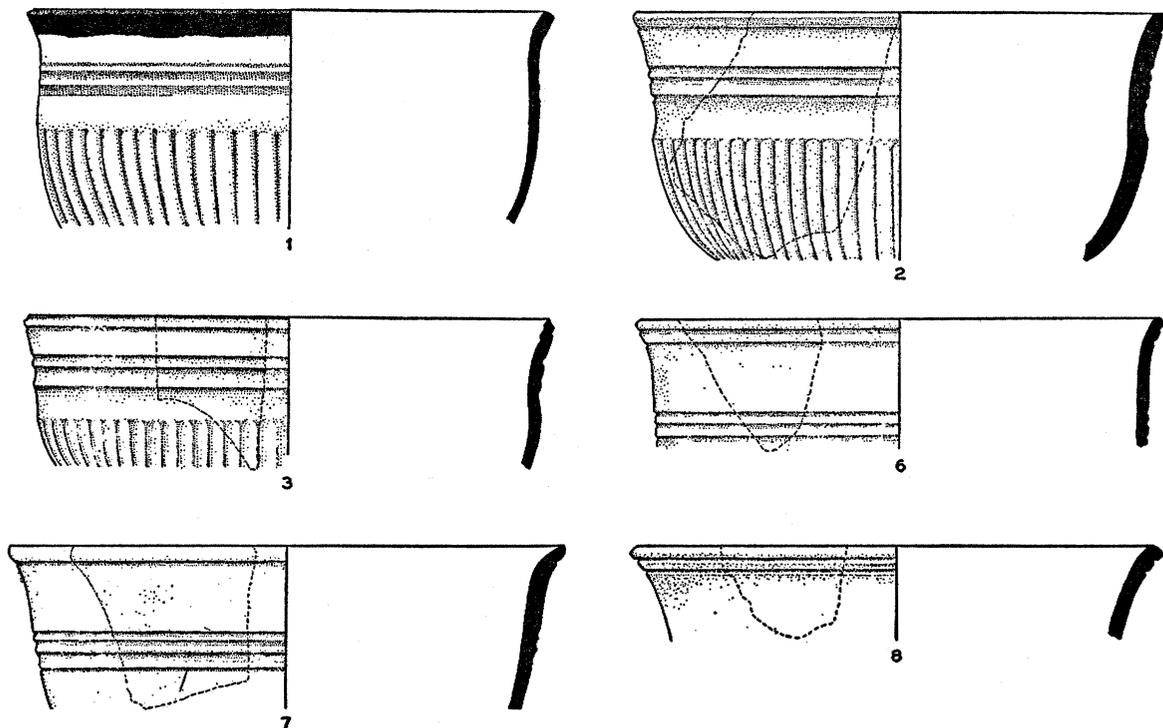


FIG. 1. Glass Bowls. Nos. 1, 2, 3, 6, 7, 8.

the evidence for the glass vessels. Almost the same shape and similar fluting are found on hemispherical Pergamene bowls from Antioch⁸ of a somewhat later date (100-25 B.C.), and on others from Tarsus⁹ assigned to 150-50 B.C. Apparently this type of bowl continued in use for a considerable length of time.

⁵ E. g., H. A. Thompson, "Two Centuries of Hellenistic Pottery," *Hesperia*, III, 1934, p. 385, D44; P. V. C. Baur, "Megarian Bowls . . .," *A.J.A.*, XLV, 1941, p. 237, fig. 6.

⁶ Owing to the fact that in glass the "petals" are cut, not moulded as in pottery, and the upper ends are not really rounded, it seems better to call them "flutes."

⁷ H. A. Thompson, *op. cit.*, p. 370 and G. R. Edwards, *Small Objects from the Pnyx*, II, p. 91.

⁸ Frederick O. Waagé, *Excavations at Antioch*, IV, 1, particularly shape 173. My attention was called to the Antioch parallels by Henry S. Robinson.

⁹ H. Goldman, *Excavations at Gözlü Kule, Tarsus*, I, Princeton, 1950, p. 234, no. 293.

Glass bowls of this sort have seldom been found in other excavations. At Corinth there are a few pieces (unfortunately without good context) which resemble them in a general way.¹⁰ These have probably been dated too late, and might well be from the period before the destruction of 146 B.C. Another, almost complete, bowl from Corinth (Fig. 2, a), which was tentatively assigned to the period before 146 B.C.,¹¹ is probably a good deal earlier than that. Judging from the appearance and texture of the glass (very like that found in Pheidias' workshop at Olympia)¹² I would now guess that it was made in the fourth century B.C., or perhaps even the fifth. Plate 91, a shows a ceramic parallel, perhaps the prototype of this glass bowl—an Attic black-glazed phiale.¹³ At Gordion have been found some interesting fragments of glass bowls dating from the Hellenistic period.¹⁴ The example which appears to be most like the Agora pieces (No. 3 in von Saldern's article, not illustrated) is a fragment of the bottom of the bowl, of "clear glass with a slight green tinge." This is particularly interesting, even though the context was not closely datable, since at the Agora no bottom is preserved. The form of the bottom is described as follows: . . . "a central raised disk (diam. 0.019 m.) surrounded by two fairly broad concentric grooves which form a sort of double step. Narrow flutes radiate from the outer ring."¹⁵ A bowl of pale bluish glass, found at Samaria, is described as having cut fluting and an incised rosette on the bottom, outside.¹⁶ The shape is much shallower than in the Agora bowls, and the date of its context considerably later, the end of the first century B.C.

A recent find in a tomb at Karytsa, a village near the site of ancient Dion, in Pieria, adds a significant example to the meager list of Hellenistic glass vessels datable by context (Pl. 92, a).¹⁷ Although related in shape to the Agora bowls, the walls are proportionately much thinner and the decoration is somewhat different. The grooves are neat and sharp (not always evenly spaced) except for the concentric

¹⁰ G. R. Davidson, *Corinth*, XII, Princeton, 1952, nos. 585, 586.

¹¹ *Op. cit.*, no. 584.

¹² *Neue deutsche Ausgrabungen im Mittelmeergebiet und im vorderen Orient*, Berlin, 1959, pp. 284 ff., figs. 23, 24.

¹³ In the collection of Mr. I. M. Geroulanos, Athens (B.XIX.5). For this shape see G. M. A. Richter and M. L. Milne, *Shapes and Names of Athenian Vases*, New York, 1935, fig. 181.

¹⁴ Von Saldern, *op. cit.*, pp. 34-38.

¹⁵ *Ibid.*, pp. 36-37.

¹⁶ J. W. and G. M. Crowfoot, *The Objects from Samaria*, London, 1957, p. 406, fig. 93. I am indebted to Miss Elizabeth Crowfoot for the loan of a photograph. The parallels suggested, from Cyprus, seem to be ordinary moulded ribbed bowls, none with cut fluting.

¹⁷ Salonica Museum. H. 0.058 m., diam. of rim 0.11 m., th. at rim 0.001-0.0025 m. Colorless with palest green tinge, no bubbles; enamel weathering in spots. Surface smooth but not glossy; no trace of rotary polishing. In intaglio: two concentric circles on the bottom, rays extending from these to a zone of short vertical grooves bounded by horizontal grooves. Published by Ch. Makaronas, *Πρακτικά*, 1955, p. 156, pl. 51, β.

circles on the bottom, which have rather soft outlines, suggesting that they might have been produced by moulding. Indeed, the possibility is not to be excluded that the entire bowl, decoration and all, may have been moulded. The tomb has been dated to the last third of the third century B.C., which makes this the earliest specimen of the lot, at least to judge from its context.

Although, as we have seen, few vessels of this kind have been found in systematic excavations, quite a few are in museums and private collections. Since most of these have not been published and some have been assigned much later dates, it seems worthwhile to present them here. Other examples exist;¹⁸ publication of as many as possible will aid in recognition of similar vessels elsewhere.

Most like the Agora pieces is a bowl (Fig. 2, b, Pl. 92, b) in the Museum Haaretz in Tel Aviv (formerly in the Walter H. Moses Collection).¹⁹ It was purchased in Istanbul but its provenience is unknown. The proportions of the body and the placement of the horizontal grooves are not quite the same as on any of the Agora fragments, but the fluting is similar and the texture of the glass seems identical. On the bottom is engraved a six-pointed star within a double circle. Another almost exactly the same but slightly smaller (Pl. 92, c) is in the Palestine Archaeological Museum.²⁰

A bowl (Fig. 2, c, Pl. 92, d) in the Boston Museum of Fine Arts,²¹ purchased in Crete in the 1880's, is like the Agora specimens in profile but has no vertical grooves. It also lacks any form of decoration on the bottom. This is less well made than the other specimens, and it may have been made in Crete rather than in some more central manufacturing center. However, it is impossible to say anything definite on the basis of this single specimen. Another example which is almost identical in shape (Pl. 92, e) was purchased in Tel Aviv and is now in the Museum Haaretz.²² Presumably it was found somewhere in the Palestine area.

Rather similar in shape to the Agora pieces, and even more to the Karytsa bowl, but far more elaborate in decoration, is a glass bowl in the Naples Museum (Pl.

¹⁸ See Von Saldern, *op. cit.*, p. 36 (an example in the Royal Ontario Museum), p. 40 (one in St. Louis City Museum and another in the Vatican Museum).

¹⁹ Museum Haaretz, 60658. H. 0.088 m., diam. of rim 0.145 m. Light green, no bubbles visible; enamel weathering. Horizontal wheel-cut grooves around outside; vertical flutes below, extending all the way down to concentric rings on the bottom. Six-pointed star engraved on bottom. Polished all over. Rim of uneven thickness; flutes slant slightly; shape of bowl somewhat crooked.

²⁰ Palestine Archaeological Museum, G241. H. 0.078 m., diam. of rim 0.137 m. Pale green, enamel weathering; similar to preceding.

²¹ Museum of Fine Arts, Boston, 86.53. H. 0.066 m., diam. of rim 0.119 m., th. of rim 0.002-0.005 m. Light blue-green; enamel weathering. Three double grooves engraved around the body outside. Rim unevenly ground. Interior rotary-polished; outside likewise as far down as horizontal grooves, remainder fire-polished. From Crete. Gift of Martin Brimmer.

²² Museum Haaretz, 15259. H. 0.08 m., diam. of rim 0.117 m., th. throughout 0.03 m. Grayish green, small bubbles, weathering inside. Three horizontal wheel-cut grooves 0.015 m. below the rim. Polished all over.

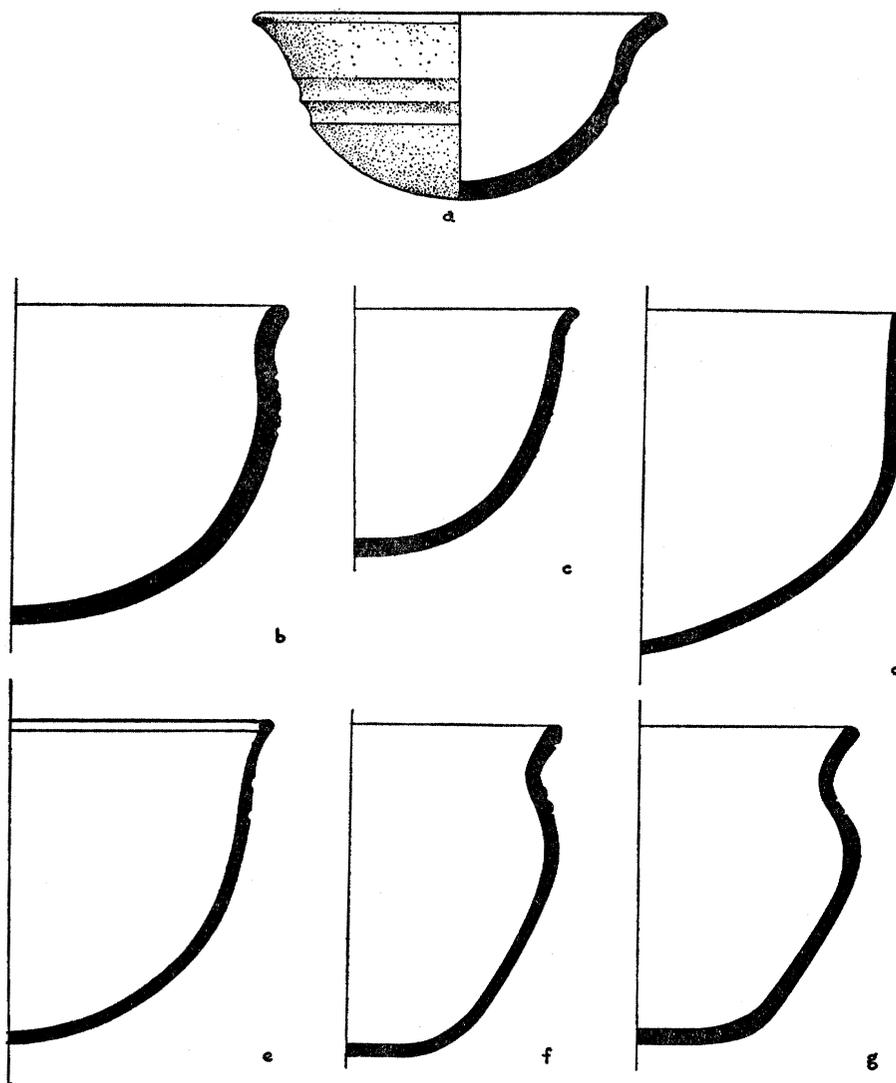


FIG. 2. Glass Bowls. a) Corinth, Cat. No. 584. b) Museum Haaretz, Tel Aviv. c) Museum of Fine Arts, Boston. d) Villa Giulia Museum. e) Jerome Strauss Collection. f) Nicosia Museum, Cyprus. g) Louvre Museum, Paris.

93, a).²⁸ There is no information as to its provenience or date. With its elaborate pattern it is more like metalwork than any of the other pieces shown here, and it is

²⁸ Naples Museum, 12001. H. 0.065 m., diam. of rim 0.141 m. Colorless with faint greenish tinge; enamel weathering. Grooves of design are sharply cut. On the bottom are eight petals with central rib surrounded by two concentric circles. Above these are fourteen angular petals with drop-shaped motives between. Above these a net-pattern bounded by horizontal grooves.

obviously the product of a master craftsman. There is no doubt here that the design was cut, for the edges of the grooves are very sharp. Most of the cutting seems to have been freehand, however, for there are many irregularities, particularly in the long horizontal grooves.

A bowl (Fig. 2, d, Pl. 93, b) found at Vulci²⁴ (not in a closed deposit but still within the range of the third-first centuries B.C.) has a rim with only the slightest perceptible flare, but in other respects it is extremely like the Agora pieces, with narrow grooves below the rim and shallow vertical flutes fading out toward the top. On the bottom are engraved concentric circles, but there is no star.

An almost similar example (Pl. 93, c) in the Toledo Museum of Art²⁵ has no flare whatever at the rim, and on the bottom is a six-pointed star within concentric circles. This bowl is said to have come from Syria. Pottery vessels very similar in shape and decoration have been found at Antioch;²⁶ these are dated in the first three quarters of the first century B.C. If it is justified to assume similar dates for similar shapes, we must then conclude that the Vulci and Toledo bowls are somewhat later than the Agora fragments.

Another bowl (Fig. 2, e, Pl. 94, a) said to be from Syria is probably related to these two examples, even though the decoration is different. This piece, in the collection of Jerome Strauss,²⁷ has a very slightly flaring rim with the customary narrow horizontal grooves below, but instead of the vertical flutes there is an engraved pattern of four petals alternating with four sets of vertical grooves. On the bottom we again find concentric circles enclosing a six-pointed star. A ceramic bowl found at Tarsus²⁸ is very like this piece, particularly as regards the decoration; this is dated mid-second to mid-first century B.C. Fragments of a faience bowl with the same pattern, a direct

²⁴ Villa Giulia Museum. H. 0.086 m., diam. of rim 0.14 m., th. at rim 0.003 m. Light brown; heavy enamel weathering. Horizontal grooves wheel-engraved around the outside, below the rim; vertical flutes cut all around the body. Engraved concentric circles on the bottom. Polished all over. From Vulci (Necropoli dell' Osteria, not in closed deposit).

²⁵ Toledo Museum of Art, 354.732. H. 0.095 m., diam. of rim 0.115 m. Light greenish; enamel weathering. Two wheel-cut grooves around the outside just below the rim; four more farther down. Vertical fluting all around the body. Three concentric circles on the bottom enclosing a "star." From Syria. Gift of Edward Drummond Libbey (Curtis Collection).

²⁶ *Antioch*, IV, 1, shapes 173, 175, 177.

²⁷ Jerome Strauss Collection, S463. H. 0.081 m., diam. of rim 0.14 m. Dark brown glass. Engraved grooves around the outside below the rim; on the body four vertical petals alternating with four sets of vertical flutes (all cut). Three concentric circles on the bottom enclosing a six-pointed star. Interior polished; outside polished only around the tops of the flutes and petals, and below the rim. The polish seems to have been heightened in modern times, giving a glossy surface unlike that of the other examples. Published in *Glass Drinking Vessels from the Strauss Collections*, Corning, 1955, p. 41. From Syria (Eumorfopoulos Collection). Cf. a similar bowl in the Vatican (Von Saldern, *op. cit.*, p. 40, fig. 26).

²⁸ Goldman, *Tarsus*, I, no. 306.

copy of a metal prototype, were found at Tarsus in a mid-third century context.²⁹ In general, it seems that this type of decoration appeared on metal bowls in the third century,³⁰ somewhat later on glass and pottery. At any rate, we may assume that the three bowls just described are not earlier than the third century nor later than the first B.C.; they are thus approximately contemporary with the Agora pieces.

Of different shape but similar material and workmanship are three interesting bowls. Two of these, one in the Metropolitan Museum of Art (Pl. 94, b),³¹ the other in the Nicosia Museum (Fig. 2, f, Pl. 94, d),³² were found in Cyprus. The third, in the Louvre Museum (Fig. 2, g, Pl. 94, c),³³ is of unknown provenience. All are much alike, though there are slight differences. Beneath a rather flaring rim the body is sharply constricted and then bulges below. The bottom is somewhat flattened, though not quite stable. The bottoms of the Nicosia and Louvre bowls are flatter than that of the Metropolitan bowl; the Louvre shape is slightly squatter, and on it the bulge below the constricted portion is more emphatic. All have "stars" on the bottom, though they are not identical. Parallels to this shape are not easy to find. If we go back to the fourth century B.C., there is a silver bowl (Pl. 94, e) found at Vouni, Cyprus,³⁴ whose shape is somewhat similar to that of these glass bowls, and

²⁹ Goldman, *op. cit.*, pp. 165, 225, fig. 132 (No. 183); also fig. 170, A.

³⁰ See M. Rostovtzeff, *Social and Economic History of the Hellenistic World*, I, Oxford, 1941, pl. LX, one of two silver bowls with a similar pattern (though more elaborate) found at Nihavand in Persia. These formed part of a treasure buried some time during the early Roman Empire. Zahn (as quoted by Rostovtzeff) regarded it as purely Greek and dating in the third century B.C., while Rostovtzeff thought it of eastern (Bactrian or Syrian) workmanship, also of the third century B.C. Others (Herzfeld, Schönebeck, P. Ackerman, all as quoted by Rostovtzeff) incline to the second century B.C. or even later, and speak of it as Parthian. See also H. A. Thompson, *op. cit.*, p. 408 (references to silver bowls); and compare also the Rothschild gold-glass bowl (P. Wuilleumier, *Le trésor de Tarente*, Paris, 1930, pp. 29-30).

³¹ Metropolitan Museum of Art, 17.194.322. H. 0.074 m., diam. of rim 0.10 m. Light yellowish brown; surface slightly pitted. Two engraved (not wheel-cut) grooves around the body below the rim; vertical flutes below. On the bottom an engraved star. Polished outside above the flutes. Found in Cyprus. Published by W. Froehner, *La Collection Julien Gréau*, Paris, 1903, no. 1074.

³² Nicosia Museum, D 1008. H. 0.088 m., diam. of rim 0.113 m. Dark brown glass; heavy enamel weathering. Grooves engraved around the outside below the rim; vertical fluting on the body. Concentric circles on the bottom enclosing an engraved six-pointed star. Polished all over. Found in Cyprus; exact provenience unknown.

³³ Musée du Louvre, 9184. H. 0.085 m., diam. of rim 0.117 m. Blue-green glass with small bubbles. Surface slightly dulled. Two engraved grooves (probably not wheel-cut) around the body below the rim; vertical fluting on the body. Engraved concentric circles on the bottom enclosing a six-pointed star with the points joined by lines. The rim is polished but the outside is not (perhaps fire-polished). From the Campana Collection.

Another example of this shape, a comparatively thin-walled bowl of brown glass, was noted while this article was in proof: Metropolitan Museum of Art 91.1.1343. H. 0.084 m., diam. of rim 0.113 m. Provenience unknown.

³⁴ E. Gjerstad et al., *The Swedish Cyprus Expedition*, III, Stockholm, 1937, pl. XC. Photograph courtesy of Nicosia Museum.

whose decoration, moreover, consists of vertical petals. I do not venture to date these three pieces on the basis of the Vouni bowl; I only suggest that a bowl something like it must have been their inspiration.

As we have mentioned, most of the bowls adduced as parallels to the Agora fragments have engraved "stars" or segmented circles on the bottom. This motive, I am told,³⁵ does not occur on Megarian bowls before 100 B.C., after which it becomes extremely common. Does this mean that we must date all glass bowls with "stars" after 100 B.C.? I think not. The Agora fragments clearly indicate that bowls similar in shape and decoration to those which bear stars existed at least in the second century B.C. Glass vessels were probably meant to imitate metal ones (or their ceramic copies) as closely as possible. But the glassworker's technique could not follow the metalworker's in every detail. At this stage of the glassmaker's art he could not easily reproduce the elaborate plastic floral patterns found on metal vases. There was, indeed, the difficult and costly technique of enclosing patterns in gold leaf between two thicknesses of glass, but for glass alone it was better to simplify the patterns. Is it not possible, therefore, that the engraved star found on all these glass bowls was a modification of the moulded floral designs or rosettes common on the earlier ceramic Megarian bowls as well as on their metal prototypes, and that at a later date the star came into use for Megarian bowls? Until more glass of this period is found, one can only speculate upon such problems.

Having presented these bowls as parallels to the Agora fragments, we must admit that they show a good deal of variation. Since none of the Agora pieces preserves the bottom it is impossible to be certain whether they were actually like any of the complete specimens which we illustrate. Moreover, there are considerable differences in rim profile, an important criterion for dating. The specialist in pottery, who has hundreds of examples at his disposal, neatly dated by context, would undoubtedly be right if he objected that we have insufficient material for establishing a chronology of pre-Roman moulded glass. The only answer is that we must make do with what we have, and hope that the discovery of additional material will corroborate or correct the tentative statements advanced here.

There are, however, certain features possessed both by the Agora fragments and by most of the complete specimens which seem to point to a common period and perhaps even a common origin. Among these features the texture of the glass is not the least important. This is almost impossible to describe; it may be hoped that something of the vessels' quality may be apparent in photographic reproduction. A second feature is the appearance of the flutes, which are cut deeper near the bottom and fade out at the top. The horizontal grooves are not particularly distinctive, but the broad, shallow vertical flutes are uncommon and confined, so far as I know, to

³⁵ By G. Roger Edwards, who is publishing the Hellenistic pottery of the Agora.

this type of bowl. A third feature is the almost uniform thickness of the bowls from top to bottom. Perhaps the best argument for the early date of these bowls is their rarity. It is difficult to think of any reason why such bowls should be rare, unless it was because the casting of glass vessels was still in an experimental stage. Once we reach the first century after Christ, we suddenly have hundreds, if not thousands, of moulded ribbed bowls. They turn up everywhere in Europe as well as in western Asia and northern Africa;³⁶ they adorn every museum and private collection. These bowls are so different from those we have presented here that one variety cannot be mistaken for the other, even in the case of small fragments. The shallow vertical fluting disappears, and instead one finds rather high moulded ribs. The shapes are also quite different; the bottom is generally stable and the ribs often continue nearly to the center of the bottom.

We are far from knowing where the early bowls were manufactured. The Athens fragments, and the possible few from Corinth, offer little help, for glass was certainly a rare and prized commodity at this time, and centers such as Athens and Corinth would have been likely places for selling valuable merchandise. The main question is whether to look southward or eastward from Athens, and the arrow seems to point eastward—to Cyprus and beyond to Syria. There is also the early Gordion glass, and a few bowls which appear to be copies of Achaemenid silver vessels,³⁷ to make this hypothesis more likely.³⁸

The second type of moulded bowl of pre-Roman date found at the Agora is approximately hemispherical or conical, with walls thick at the top, thinning toward the rounded bottom (assumed, as none is preserved), and with the rim following the line of the walls rather than flaring out (sometimes it even curves inward). Each bowl has a series of horizontal engraved grooves either inside or out, never both on a single specimen. Fragments of eight such bowls have been found, Nos. **9-16** (Fig. 3, Pl. 95), six of them brown or yellowish brown in color, one purplish and one yellowish green.

This rather simple shape resembles one of the commonest varieties of glass bowl of the early Roman period (late first century B.C. to second century after Christ). These earlier fragments are, in fact, almost indistinguishable from the later specimens. Their chief interest, therefore, lies in the fact that at least one is dated to before 150 B.C., and the others must have been made before 100 B.C., a good deal earlier than such bowls had been supposed to exist. The only other dated examples from the second

³⁶ C. Isings, *Roman Glass from Dated Finds*, Groningen, 1957, Form 3, as well as many other examples from undated contexts.

³⁷ Von Saldern, *op. cit.*, pp. 41-42, figs. 27-29.

³⁸ Von Saldern, *op. cit.*, p. 38, is inclined to favor Alexandria as the manufacturing center for such bowls. Rostovtzeff, *op. cit.*, p. 539, states his belief that "vessels of cut glass" were manufactured in Hellenistic times both in Alexandria and in Syria.

century B.C. are a few fragments found at Samaria³⁹ and one complete bowl found at Reggio di Calabria (Pl. 94, f).⁴⁰ As far as one can tell, the type continued to be manufactured without significant change through the first, possibly even the second

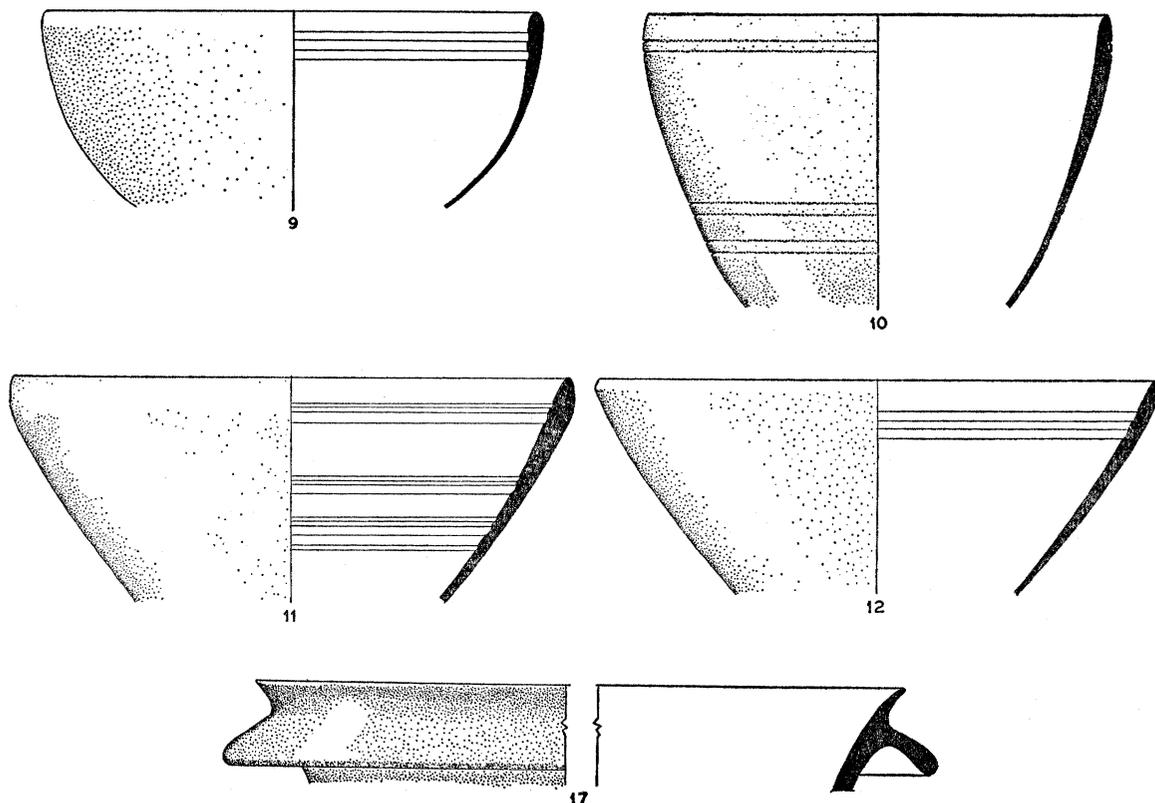


FIG. 3. Glass Bowls. Nos. 9, 10, 11, 12, 17.

century. Countless parallels exist, but comparatively few are published; a few examples will suffice.⁴¹ The origin of these glass bowls is apparent; there are good parallels in both metal⁴² and pottery (Pl. 95, a)⁴³ which date from the second and even the third century B.C.

³⁹ *Harvard Excavations at Samaria*, I, p. 330, fig. 203. According to Crowfoot, *op. cit.*, p. 403, fragments like these were found with Megarian bowls, probably from the last decades of the second century B.C.

⁴⁰ Reggio Museum, 8849. H. ca. 0.065 m., diam. of rim ca. 0.11 m. Colorless with greenish tinge; enamel weathering. One engraved horizontal groove inside, just below the rim. Polished inside and out.

⁴¹ *Corinth*, XII, no. 587; G. A. Eisen, *Glass*, New York, 1927, pl. 7. Some are cited in Isings, *op. cit.*, pp. 15-16.

⁴² *Comptes-rendus de la Commission Impériale*, 1900, p. 108, fig. 213.

⁴³ Agora, P18704 and P18705, dated by context to the late third century B.C. (*Hesperia*, XVII, 1948, p. 160).

That in this period glass vessels were made in shapes more complicated than bowls is shown by one small fragment found at the Agora, No. 17 (Fig. 3, Pl. 95), which appears to be the rim of a kantharos. Tiny though it is, there does not seem to be any doubt of its identification.⁴⁴ A kantharos of silver⁴⁵ could well have been the prototype. A similar pottery kantharos has been found in the Agora (Pl. 93, d).⁴⁶

CATALOGUE

1. Fragment of rim and body. Fig. 1, Pl. 91.
G 236. H. 0.06 m.; diam. of rim *ca.* 0.14 m., th. below the blue rim 0.004 m., th. at lower edge 0.002 m.
Colorless with greenish tinge, deep blue rim; surface slightly clouded and pitted. Rim made of a coil pressed onto the body. Wide vertical flutes lightly cut, fading toward the top. Wheel-cut grooves above the fluting, outside. Polished inside and out.
Second century B.C. context (D 19:2).⁴⁷
2. Fragment of rim and body. Fig. 1, Pl. 91.
G 253. H. 0.065 m., diam. of rim *ca.* 0.14 m., th. 0.004-0.006 m.
Pale green; surface slightly pitted. Wide vertical cut flutes, deeper, narrower and sharper than in No. 1, cut off at the top. Series of narrow wheel-cut grooves on the rim, and a second series below. Polished outside and probably inside.
First century B.C. context (B 22:4).
3. Fragment of rim and body. Fig. 1, Pl. 91.
G 72. H. 0.042 m., diam. of rim *ca.* 0.12 m., th. 0.003 m.
Pale green with a slight blue tinge; severe milky pitting in the surface. Shape similar to the preceding; flat, wide flutes like those of No. 1. Narrow wheel-cut grooves at the rim and below, outside; two grooves inside. Polished inside and out.
First century B.C. context (Area E 6).
4. Fragment of body. Pl. 91.
G 535. H. 0.027 m., th. *ca.* 0.003 m.
Light green; slight iridescence. Broad, very shallow vertical flutes with narrow, slightly deeper flutes between them; both cut off at the top. Polished inside and out.
Late second century B.C. context (C 18:3).
5. Fragment of rim. Pl. 91.
G 462. H. 0.015 m., diam. of rim *ca.* 0.10 m., th. *ca.* 0.002 m.
Dark turquoise blue; surface slightly pitted. Two narrow wheel-cut grooves around the outside below the rim. Polished inside and out.
Context about 160 B.C. (H-K 12-15).
6. Fragment of rim and side. Fig. 1, Pl. 91.
G 20. H. 0.035 m., diam. of rim *ca.* 0.14 m., th. 0.002 m.
Golden yellow; slight milky pitting. Two groups of narrow wheel-cut grooves outside. Not enough is preserved to show presence or absence of fluting. Published in *Hesperia*, III, 1934, p. 427, E 159.
Context 125-100 B.C. (F 15:2).
7. Fragment of rim and body. Fig. 1, Pl. 91.
G 296. H. 0.043 m., diam. of rim *ca.* 0.14 m., th. 0.004-0.005 m.
Golden brown; severe milky pitting and iridescence. Narrow wheel-cut grooves outside, some distance below the rim. Polished inside

⁴⁴ I owe this identification to G. Roger Edwards.

⁴⁵ S. Reinach, *Antiquités du Bosphore Cimmérien*, pl. 38.

⁴⁶ *Hesperia*, V, 1936, p. 38, fig. 38.

⁴⁷ For description of deposits see *Athenian Agora*, IV, pp. 234-245, V, pp. 123-127.

and out. The rim has been ground to a sharp edge.

Sixth century A.D. context (Area B-C 16).

8. Three small fragments; one from rim, one from side and one from lower wall. Fig. 1, Pl. 91.

G 528. Diam. of rim *ca.* 0.13 m., th. of all pieces *ca.* 0.004 m.

Pale greenish; surface slightly pitted. The rim fragment has two narrow wheel-cut grooves outside. The second (triangular) fragment has two pair of grooves; these are horizontal, not vertical. The third fragment is plain.

First century B.C. context (N 19:1).

9. Fragment of rim and body. Fig. 3, Pl. 95.

G 526. H. 0.051 m., diam. of rim *ca.* 0.135 m., th. at rim 0.004-0.005 m.

Yellowish brown; enamel weathering and pitting. Two narrow wheel-cut grooves below the rim, inside. Polished inside and out.

Context before 150 B.C. (R 12:5).

10. Fragments of rim and body. Fig. 3, Pl. 95.

G 533. H. 0.078 m., diam. of rim *ca.* 0.12 m., th. at rim 0.002 m.

Light brown; enamel weathering and pitting. Two grooves engraved (not wheel-cut) around the outside just below the rim; four more lower down. In making the grooves near the rim it appears that the tool slipped (see upper right of photograph). The thickness of the walls varies from area to area.

Context of late second century B.C. (C 18:4).

11. Fragment of rim and body. Fig. 3, Pl. 95.

G 532. H. 0.056 m., diam. of rim *ca.* 0.15 m., th. at rim *ca.* 0.002 m.

Light yellowish brown; surface badly pitted, enamel weathering. Three series of grooves engraved inside. Polished inside, probably also outside.

Context of late second century B.C. (C 18:3).

12. Fragments of rim and body. Fig. 3, Pl. 95.

G 537. H. 0.052 m., diam. of rim *ca.* 0.15 m.,

th. at rim 0.003 m. (thickness of walls is extremely variable, and it is just possible that we have here fragments of two almost identical bowls rather than just one).

Light brown; severe pitting and enamel weathering. Two grooves engraved inside. Polished?

Context of late second century B.C. (C 18:3).

13. Fragment of rim and body. Pl. 95.

G 534. H. 0.04 m., th. at rim *ca.* 0.005 m.

Light brown; slight pitting and enamel weathering. Three grooves engraved below the rim, inside. Rotary-polished inside, perhaps fire-polished outside.

Context of late second century B.C. (C 18:3).

14. Fragment of body. Pl. 95.

G 536. H. *ca.* 0.052 m.

Purplish; surface badly weathered. Faint horizontal grooves near top of fragment. Probably polished.

Late second century B.C. (C 18:3).

15. Two fragments of rim and body.

G 556. H. 0.045 m., diam. of rim *ca.* 0.12 m., th. at rim 0.003-0.005 m.

Brown; surface somewhat pitted. Two horizontal grooves engraved around inside. Polished inside only.

Second century B.C. (Area M 17).

16. Fragment of rim and body.

G 557. H. 0.035 m., th. 0.002-0.004 m.

Yellow-green; pitting and enamel weathering. Polished inside, perhaps outside.

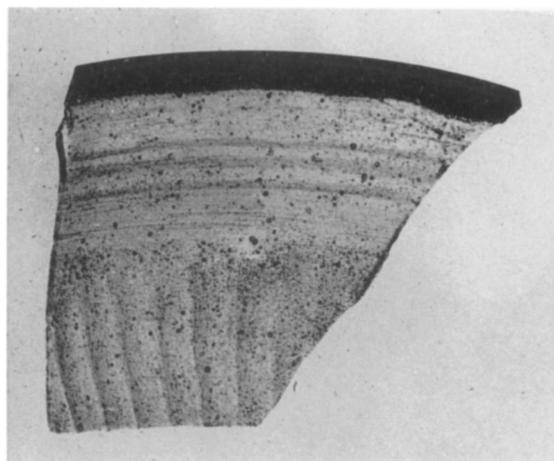
Second century B.C. (Area M 17).

17. Rim fragment. Fig. 3, Pl. 95.

G 467. H. 0.031 m., diam. of rim *ca.* 0.18 m.

Pale green; slight enamel weathering and pitting. Below the rim a large projecting flange. Polished inside and out, rim probably ground down.

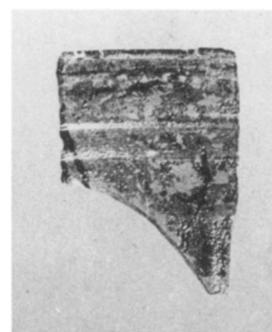
Context of *ca.* 160 B.C. (H-K: 12-14).



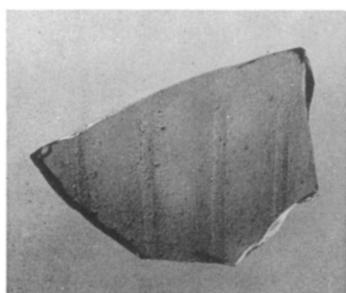
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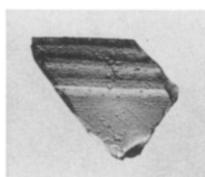
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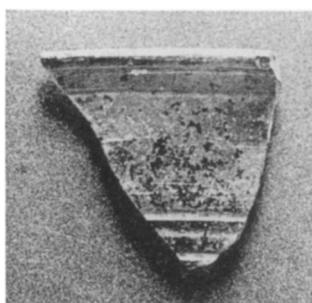
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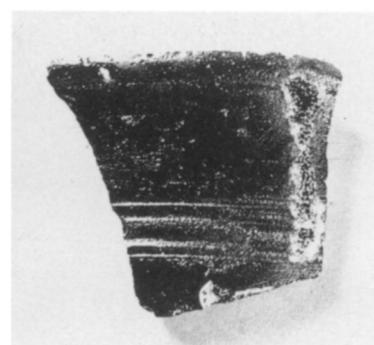
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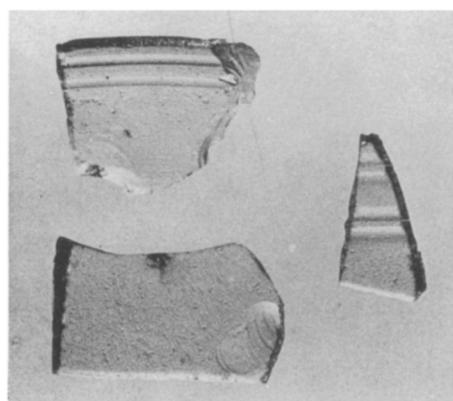
No. 5



No. 6



No. 7



No. 8



a. Black-glazed Phiale, Geroulanos Collection, Athens



b. Bronze Bowl, Art Museum, Princeton (54-124)



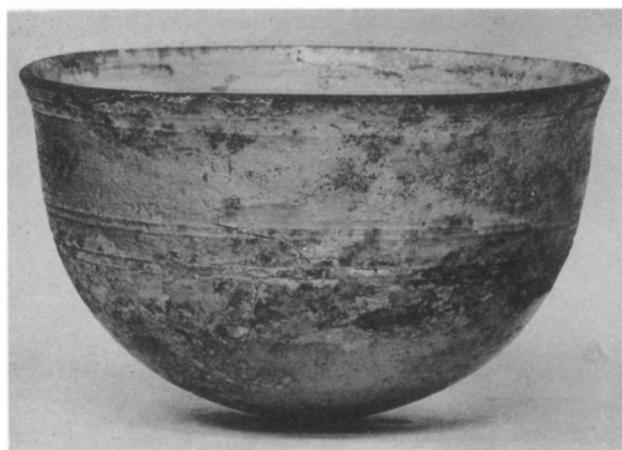
a. Salonica Museum



b. Museum Haaretz, Tel Aviv (60658)



c. Palestine Archaeological Museum (G 241)



d. Museum of Fine Arts, Boston (86.53)



e. Museum Haaretz, Tel Aviv (15259)



a. Naples Museum (12001)



b. Villa Giulia Museum



c. Toledo Museum of Art (354.732)



d. Pottery Kantharos, Athenian Agora (P 5719)



a. Jerome Strauss Collection (S 463)



b. Metropolitan Museum of Art, New York (17.194.322)



c. Louvre Museum, Paris (9184)



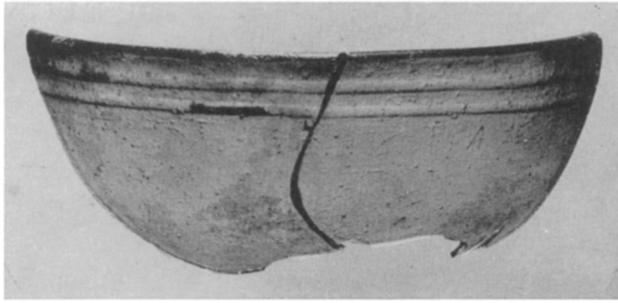
d. Nicosia Museum, Cyprus (D 1008)



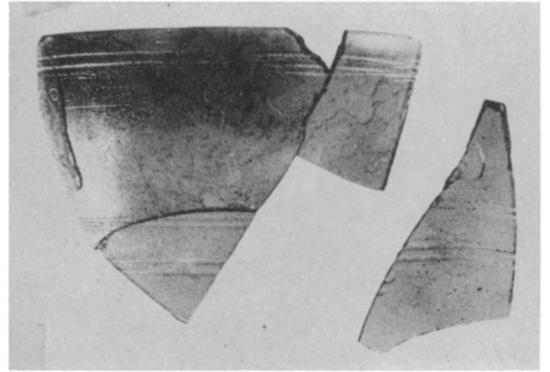
e. Silver Bowl from Vouni, Cyprus



f. Reggio Museum (8849)



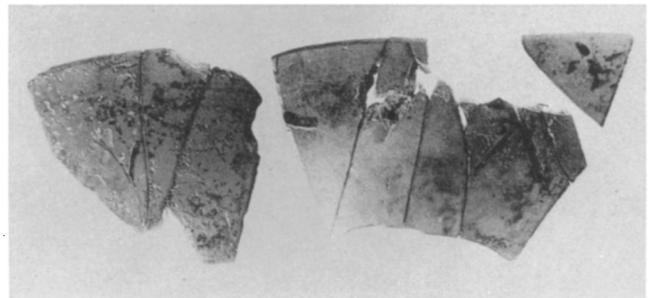
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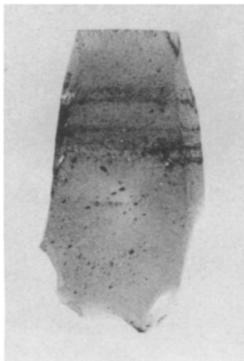
No. 10



No. 11



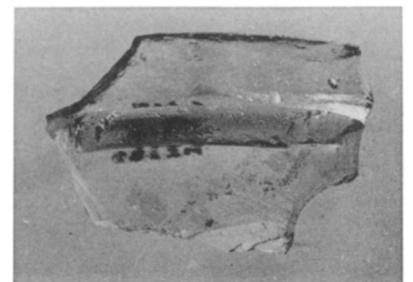
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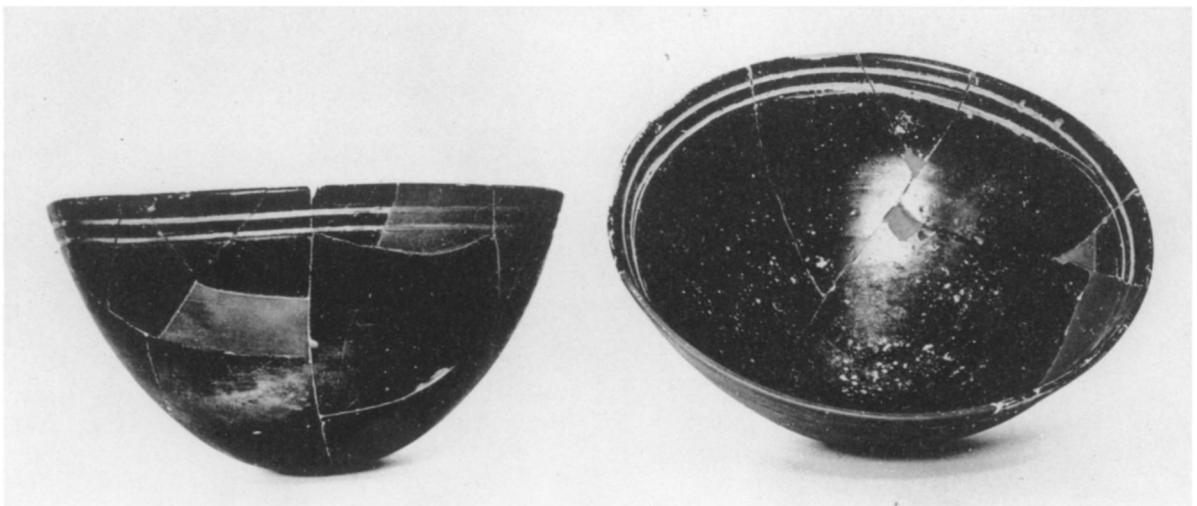
No. 13



No. 14



No. 17



a. Pottery Bowls, Athenian Agora (P 18705, P 18704)