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SOME EXAMPLES OF ANCIENT CAST AND RIBBED BOWLS IN TURKEY

C. S. LIGHTFOOT

IN the summer of 1988, I was given permission to study part of the glass collection of the Antalya Museum.¹ It is not a large collection, and the majority of the glass vessels are unremarkable. This is surprising, since Antalya is a major regional museum, and it houses some of Turkey's finest treasures.² However, the glass collection does include a group of cast and ribbed bowls that is worthy of special attention. There are 15 vessels. These bowls, whether plain or ribbed, belong to groups that range in date from the second half of the second century B.C. to the mid-first century A.D.

During the past two decades, a series of scholarly articles has shown that the Syro-Palestinian coastal region was an important center for the production of monochrome cast tableware.³ Hellenistic "grooved bowls" are best known from Tel Anafa in Upper Galilee, where fragments have been found in very large numbers. However, they have also been uncovered at numerous other sites, not only in the Levant, but also in Greece, Cyprus, and Italy. Furthermore, similar material has recently been published from Cyrenaica, Carthage, Spain, and even northern France.⁴ D. F. Grose has divided these monochrome cast bowls into four main groups. The Antalya collection lacks an example of his Group B, and the plain bowls can be divided between Groups A and D without any great differentiation.

Groups A and D

The first example (Figs. 1 and 2) is a shallow bowl of greenish colorless or decolorized glass.⁵ It measures 14.9 cm in diameter and only 4.1 cm in

Author's Note. To attempt a full survey of cast and ribbed vessels found in Turkey, either of randomly collected objects in museum collections or of material from properly recorded archaeological sites, is far beyond the scope of this article. The vagaries of the study are due largely to the demands on my time at the British Institute of Archaeology at Ankara, and to the arbitrary workings of the local bureaucracy. The photographs were taken by Tuğrul Çakar. All drawings are reproduced at 1/2 scale, except Figs. 9 and 42, which are at 1/3 scale.

1. I am grateful to the director and staff of the Antalya Museum for their kind assistance, and to the General Directorate of Antiquities in Ankara for arranging my permit. I am also indebted to Sayın Sabri Aydal for his invaluable help.

2. In 1988, a splendid new catalog of these treasures was published by the Antalya Museum. Glass, however, is represented only by four sets of beads: E. and İ. Özgen, eds., *Antalya Museum*, Ankara, 1988, pp. 63, 65, 119, and 200, nos. 77–79 and 82.

3. G. Davidson Weinberg, "Hellenistic Glass from Tel Anafa in Upper Galilee," *Journal of Glass Studies*, v. 12, 1970, pp. 17–27; "Notes on Glass from Upper Galilee," *Journal of Glass Studies*, v. 15, 1973, pp. 35–51; D. F. Grose, "The Syro-Palestinian Glass Industry in the Later Hellenistic Period," *Muse*, v. 13, 1979, pp. 54–67; "The Hellenistic Glass Industry Reconsidered," *Annales du 8^e Liège*, 1981, pp. 66–69.

4. D. F. Grose, *The Toledo Museum of Art. Early Ancient Glass*, New York, 1989, p. 194 and note 34; J. Price, "A Survey of the Hellenistic and Early Roman Vessel Glass Found on the Unexplored Mansion Site at Knossos in Crete," *Annales du 11^e Congrès de l'AIHV*, Amsterdam, 1990, pp. 28–32.

5. Antalya Museum, inv. no. A.1645. Purchased. Intact. Cf.

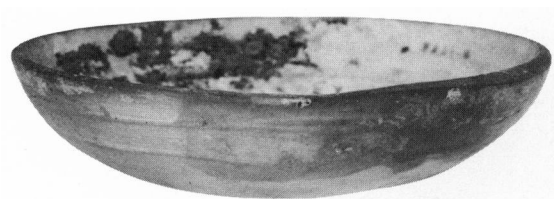


FIG. 1. *Shallow hemispherical bowl. Antalya Museum A.1645.*



FIG. 2. *Shallow hemispherical bowl. Antalya Museum A.1645.*



FIG. 3. *Hemispherical bowl. Antalya Museum A.1666.*

height, and it is decorated with two horizontal grooves on the inside, 0.8 cm and 1.6 cm below the rim. The grooves are wheel-cut, as is indicated by the fact that the two ends of the upper groove do not meet. The rim, which is uneven and of irregular thickness, has a flat, horizontal upper edge. The body thickness diminishes toward the bottom, which is only slightly convex. The second bowl (Fig. 3), also of greenish colorless glass, is hemispherical in shape, measuring 12.6 cm in diameter and 6.3 cm in height.⁶ It, too, has a slightly uneven but rounded, vertical rim. Its most unusual feature, however, is that it lacks any cut decoration. The interior and exterior surfaces are completely plain, except for marks of fine rotary polishing. Another colorless bowl (Figs. 4 and 5) is in the İzmir Archaeological Museum.⁷ It is deep-bodied but less rounded in shape, with a bottom that is flattened



FIG. 4. *Hemispherical bowl. İzmir Museum 145-6-971.*

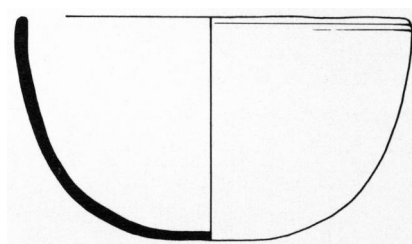


FIG. 5. *Hemispherical bowl. İzmir Museum 145-6-971.*

at the center. It measures 10.5 cm in diameter and 5.9 cm in height. The rim is rounded and slightly inverted, and the glass is streaked with purple at the rim, indicating the use of manganese as the decolorizing agent. The bowl is undecorated, like the second Antalya example, but the exterior surface has a shiny, fire-polished appearance.

These colorless vessels are generally less common than their counterparts in yellow-brown and yellow-green glass, of which there are six examples in the Antalya Museum.⁸ However, the collection

S. M. Goldstein, *Pre-Roman and Early Roman Glass in The Corning Museum of Glass*, Corning, 1979, p. 139, no. 286; and Grose [note 4], p. 205, no. 216.

6. Antalya Museum, inv. no. A.1666. Purchased. Intact. Cf. Goldstein [note 5], p. 138, no. 282; and Grose [note 4], p. 207, no. 221.

7. İzmir Museum, inv. no. 145-6-971. Purchased. Broken and repaired; one patch of fill.

8. According to Grose ([note 3], p. 57 and note 7), spectroscopic analysis has shown that there is no significant chemical difference between the two colors of yellow-brown and yellow-green.



FIG. 6. Conical bowl. İzmir Museum.



FIG. 8. Conical bowl. İzmir Museum 6048.

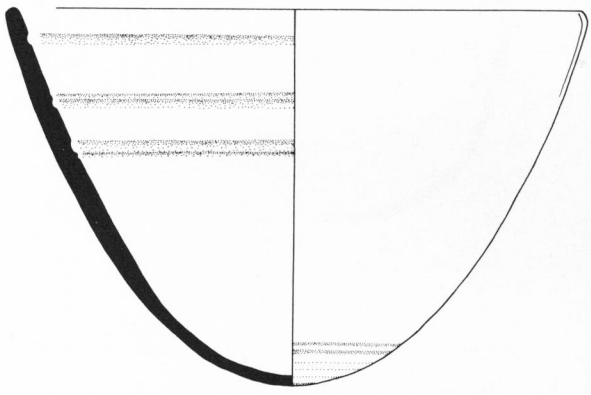


FIG. 7. Conical bowl. İzmir Museum.

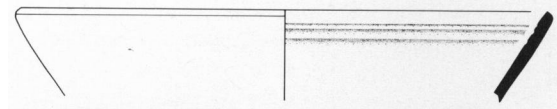


FIG. 9. Conical bowl fragment. Myndos.

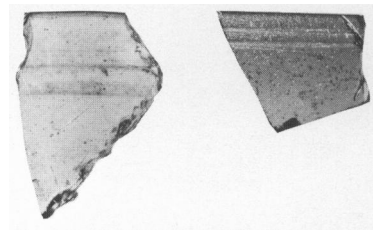


FIG. 10. Myndos and Cremna fragments.

does not include any conical bowls; for these, one must again turn to İzmir, where two fine examples are to be found.⁹ One of these bowls (Figs. 6 and 7), in yellow-green glass, has a slightly oval rim, measuring between 15.05 cm and 15.3 cm in diameter and 10.0 cm in height.¹⁰ The interior is decorated with a band of three broad grooves and two narrow lines, one immediately above the central broad groove, and the other cut around part of the vessel below the lowest groove. On the exterior, there are two concentric, wheel-abraded circles around the bottom, which has a small circle at its center. There are rotary polishing marks on both surfaces, which are still highly polished in places. The second example (Fig. 8) is almost exactly the same size, measuring 15.2 cm in diameter and 10 cm in height, but it is a light green glass.¹¹ The rim

has been ground, and it is partly flat. The straight side tapers diagonally downward to a round, pointed bottom. On the interior, there is a broad band of three horizontal, deep-cut grooves, each between 0.3 cm and 0.4 cm wide. These are flanked by three narrow grooves, one above the uppermost, one above the central, and one below the lowest

9. The vessels are described briefly in C. S. Lightfoot, "Three Cast Vessels from Anatolia," *Annales du 11^e Congrès de l'AIHV*, Amsterdam, 1991, pp. 89–91 and fig. 4 (where the diameter of the unregistered piece is given incorrectly as 15.7–15.95 cm).

10. İzmir Museum, unregistered. Intact; two internal strain cracks. The vessel could not be traced during a subsequent visit to the museum in 1989.

11. İzmir Museum, inv. no. 6048. Broken and mended; chip missing from the rim, and some plaster fill in the side.



FIG. 11. Hemispherical bowl. Antalya Museum A.1895.

broad groove. On the exterior, there are two concentric grooves around the bottom, which has a faintly incised circle at its center. Rotary polishing marks are visible, and the surface around the bottom is still highly polished.

Other conical bowls have been seen, but unfortunately not yet recorded, at the museums of Fethiye and Kahramanmaraş.¹² However, a fragment from the rim of a similar conical bowl can be mentioned; it is recorded as a random surface find at Myndos (Gümüşlük) in Caria.¹³ This fragment (Figs. 9 and 10, left), measuring only 4.13 cm by 2.95 cm and having a maximum thickness of 0.46 cm, is an unusual pale purple glass. It has an upright rim with rounded edges, sloping outward, and a slightly convex side, tapering diagonally downward. On the interior are one narrow and two broad horizontal grooves cut in a band, 0.94 cm wide, 0.73 cm below the rim. The rim diameter has been estimated as about 21 cm, making for an unusually large conical bowl. It may be compared with fragments of a similar oversize vessel in the British Museum.¹⁴

The third example from Antalya belonging to Group A (Fig. 11) is of yellow-brown glass and measures 13.8 cm in diameter and 6.1 cm in height.¹⁵ The rim is rounded and polished, while the body is hemispherical with a convex bottom. On the interior are two horizontal grooves, each 0.2 cm wide, set 0.8 cm and 1.6 cm below the rim; the exterior surface is rotary-polished. I attribute two other bowls to the same group, although they have flat instead of convex bottoms. One (Figs. 12 and 13) is of yellow-brown glass, and it measures 12.6



FIG. 12. Deep bowl. Antalya Museum A.1643.

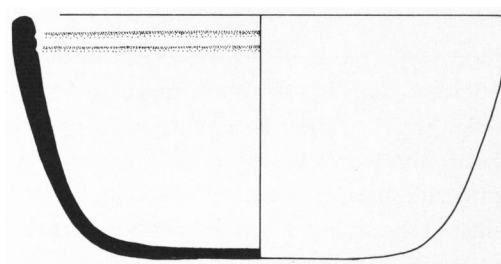


FIG. 13. Deep bowl. Antalya Museum A.1643.

cm in diameter and 6.5 cm in height.¹⁶ It has an upright, rounded, but irregular rim, and slightly convex sides that taper toward the flat bottom. The

12. For references, see Lightfoot [note 9], p. 90, note 19. Cf. also A. von Saldern and others, *Gläser der Antike, Sammlung Erwin Oppenländer*, Hamburg, 1974, p. 93, nos. 244–245; S. H. Auth, *Ancient Glass at the Newark Museum*, Newark, 1976, p. 45, no. 33, and p. 192, no. 288; *Glass at the Fitzwilliam Museum*, Cambridge, 1978, p. 22, no. 30a–c (three examples from sites in Cyprus); *Historic Glass from Collections in North West England*, St. Helens, 1979, p. 7, no. A13 (reused in the Roman period as a hanging lamp); S. B. Matheson, *Ancient Glass in the Yale University Art Gallery*, New Haven, 1980, p. 12, no. 34; Y. Akat and others, *Catalogue of Glass in the Hüseyin Kocabay Collection*, Istanbul, 1984, p. 54, no. 82 (no exterior decoration); Grose [note 4], pp. 204–205, nos. 212–214; and Price [note 4], p. 30 and fig. 1.12.

13. For the site of Myndos, see G. E. Bean and J. M. Cook, "The Halicarnassus Peninsula," *The Annual of The British School at Athens*, v. 50, 1955, pp. 108–112.

14. D. Barag, *Catalogue of Western Asiatic Glass in the British Museum*, v. 1, London, 1985, p. 87, no. 110 and fig. 8.

15. Antalya Museum, inv. no. A.1895. Purchased. Broken and repaired, with four chips in the rim. Cf. British Museum, GR 1912.10–25.17.

16. Antalya Museum, inv. no. A.1643. Purchased. Intact. Cf. J. W. Hayes, *Roman and Pre-Roman Glass in the Royal Ontario Museum*, Toronto, 1976, p. 18, no. 42 (dated by Hayes to the late first



FIG. 14. Deep bowl. Antalya Museum A.1625.



FIG. 15. Deep bowl. Antalya Museum A.1644.

decoration comprises two horizontal grooves on the interior, each 0.1 cm wide, 0.3 cm and 0.7 cm below the rim; there are also rotary polishing marks on the interior surface. The other bowl (Fig. 14) is very similar in shape, but it is slightly larger and deeper, measuring 13.0 cm in diameter and 7.7 cm in height.¹⁷ This example, of yellow-green glass, does not have any grooves for decoration. A sixth bowl (Figs. 15 and 16) may also be added.¹⁸ It measures 10.6–10.8 cm in diameter and 6.0 cm in height, and it is slightly oval in shape at the rim. This deep yellow-brown glass has a vertical, rounded rim and sides that curve in gently to the flat bottom. The interior is decorated with one broad, horizontal groove 0.95 cm below the rim, and a band of two narrower grooves 2.2 cm and 2.4 cm from the top. Parts of the exterior surface are unweathered and retain a smooth, fire-polished appearance.

Finally, a rim fragment (Figs. 17 and 10, right) from Cremna (Çamlık) in Pisidia probably belongs to a hemispherical bowl in the same deep yellow-brown.¹⁹ It measures only 2.43 cm by 3.1 cm, and its thickness varies between 0.34 cm and 0.45 cm; the original diameter at the rim is estimated at about 15 cm. The vertical rim has slightly rounded edges and a convex curving side. The fragment displays traces of rotary polishing on both surfaces, fine pitting, and random surface scratches. The exterior is decorated with two narrow, horizontal grooves cut in a band, 0.35 cm wide, 0.3 cm below

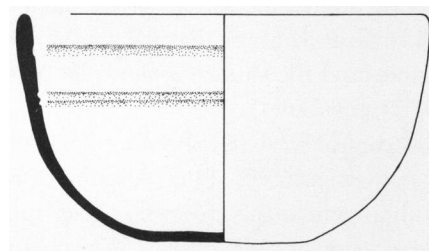


FIG. 16. Deep bowl. Antalya Museum A.1644.

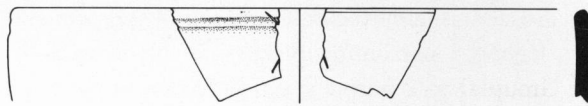


FIG. 17. Hemispherical bowl fragment. Cremna.

the rim. The slight irregularities of the grooves indicate that they were probably made by wheel cutting rather than lathe cutting. Only a few vessels deco-

century B.C.-early first century A.D.); Grose [note 3], p. 59, no. 4 (a smaller version); *Ancient Glass. The Bomford Collection of Pre-Roman and Roman Glass on Loan to the City of Bristol Museum and Art Gallery*, Bristol, 1976, p. 17, no. 31; and British Museum, GR 1896.11-17.2.

17. Antalya Museum, inv. no. A.1625. Purchased. Broken and repaired; patches of plaster fill.

18. Antalya Museum, inv. no. A.1644. Purchased. Broken; one small chip and one larger chip in the rim.

19. Surface find, Cremna Survey 1987, directed by Dr. Stephen Mitchell of Swansea University. See C. S. Lightfoot, "Some Types of Roman Cut-Glass Vessels Found in Turkey," *1st International Anatolian Glass Symposium. April 26th-27th, 1988*,



FIG. 18. *Hemispherical bowl. Antalya Museum A.1162.*

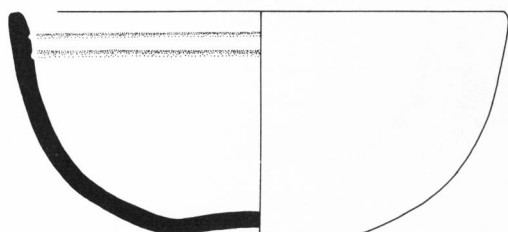


FIG. 19. *Hemispherical bowl. Antalya Museum A.1162.*

rated with similar grooves on the exterior are known; these are usually said to be lathe-cut.²⁰

The two remaining plain bowls resemble Grose's Group D in that they have slightly concave bottoms. They are thick-walled, however, and in this respect, they are closer to the examples of Group A. Both are of yellow-brown glass; one measures 13.2 cm in diameter and 5.9 cm in height, while the other is 12.4 cm in diameter and 5.3 cm in height. The larger bowl (Figs. 18 and 19) is decorated with two horizontal grooves cut on the inside, 0.6 cm and 1.2 cm below the rim. It also has rotary polishing marks on the inside, but the exterior surface is fire-polished and shows random scratch marks from use.²¹ The smaller bowl (Fig. 20) has a similar decoration of two wheel-cut grooves, 0.5 cm and 0.9 cm below the rim.²² This object has some internal strain cracks, but the quality of the glass and the surface treatment are uncertain because most of the vessel is coated with limy encrustation.

Group C

The other seven cast vessels in the Antalya Museum are ribbed bowls. These represent the most

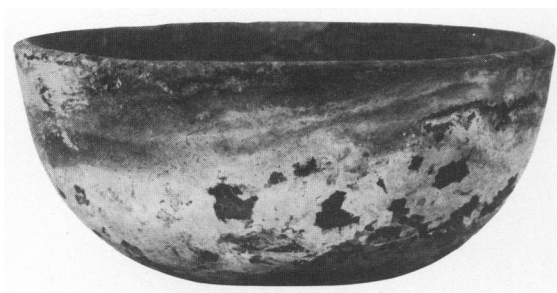


FIG. 20. *Hemispherical bowl. Antalya Museum A.1623.*

common type of late Hellenistic and early Roman cast tableware, and examples are found throughout the ancient world from Britain in the west to Mesopotamia and beyond in the east.²³ One complete and two fragmentary examples have recently been published from a cemetery at ed-Dur, Umm al-Qaiwain (U.A.E.) in the Persian Gulf near the Straits of Hormuz.²⁴ Some variants and subgroups have been recognized, and they have been taken to indicate not only separate workshops but also different periods and areas of production. These glasses were so popular, especially in the western part of the Roman Empire, that they were still being made in Flavian times, and this demand led to both blown and mold-blown imitations of the form (see below).

Istanbul, 1990, p. 8 and note 8. For Cremna, see S. Mitchell and M. Waelkens, "Cremna and Sagalassus 1987," *Anatolian Studies*, v. 38, 1988, pp. 53–59.

20. For example, Goldstein [note 5], pp. 138–139, no. 284; and Grose [note 4], pp. 193–194 and fig. 110 (top row, far right).

21. Antalya Museum, inv. no. A.1162. Gift of Mehmet Ali Cinas. Intact, except for one large crack running almost completely around the body. See note 15 above.

22. Antalya Museum, inv. no. A.1623. Purchased. Intact, except for a chip in the rim (restored with fill).

23. See, for example, D. B. Harden and others, *Glass of the Caesars*, Milan, 1987, p. 51, no. 27 (a mosaic ribbed bowl found at Radnage in Buckinghamshire); and Barag [note 14], pp. 92–93, nos. 116–117 (two fragmentary "pillar-molded" bowls, one of which was excavated by Layard at Nineveh in 1851).

24. D. T. Potts, "The Danish Excavations," *Mesopotamia*, v. 24, 1989, pp. 18, 21, and 22, fig. J:1–3. For the fragments found at Arikamedu and Dharanikota in southern India, see E. M. Stern, "Early Exports beyond the Empire," in *Roman Glass: Two Centuries of Art and Invention*, ed. M. Newby and K. Painter, London, 1991, pp. 142–143, fig. 29b and pl. XXXVIa left.



FIG. 21. Ribbed bowl. Antalya Museum A.1622.

It was not possible to study two of the Antalya bowls in any detail.²⁵ One is of pale yellow-green glass, and the other is a deeper shade of the same color. Both are decorated with horizontal wheel-cut grooves on the interior, and they have numerous shallow ribs set diagonally on the exterior of the vertical sides. In general, they resemble a third bowl in the collection. This piece (Fig. 21) is of yellow-brown glass, and it measures 12.3 cm in diameter and 5.6 cm in height.²⁶ It has a slightly outplayed rim with a rounded edge; the sides are slightly convex; but taper sharply toward the flat bottom. There is one horizontal interior groove, 1.0 cm below the rim, and on the exterior there are 29 short, knoblike ribs, some vertical, others set diagonally from left to right.

A close parallel to these vessels is provided by one of four bowls in a private collection in Ankara.²⁷ This bowl (Figs. 22 and 23), of pale yellow-green glass, measures 14.3 cm in diameter at the rim and stands, lopsided, between 5.6 cm and 6.3 cm in height.²⁸ It has an almost vertical rim with a rounded edge, convex curving sides and a deep concave bottom. It has been rotary-polished on the interior and on the rim, and fire-polished on the exterior. It is decorated with three broad, horizontal grooves on the interior below the rim and around the middle of the body. On the exterior, 52 shallow ribs are arranged obliquely from left to right around the middle of the body. Another bowl, in the Anatolian Civilizations Museum in Ankara, is likewise decorated with many shallow ribs, but the vessel is



FIG. 22. Ribbed bowl. Erimtan Collection 630.

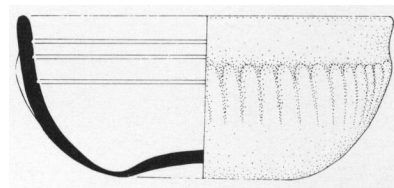


FIG. 23. Ribbed bowl. Erimtan Collection 630.

of the broad, shallow type, and its 68 ribs are more pronounced.²⁹

Another ribbed bowl, of pale blue-green glass and measuring 12.1 cm in diameter and 4.2 cm in

25. One (inv. no. A.1834) could not be removed from the display case, while the other, seen in the depot, was not available for study because it was said to have come from the excavations at Kaş.

26. Antalya Museum, inv. no. A.1622. Purchased. Intact, except for a large, vertical crack in the side.

27. I thank Mr. Yüksel Erimtan for allowing me to study this and the other ribbed bowls in his possession. They have been published in a complete catalog of his glass collection: C. S. Lightfoot and Melih Arslan, *Ancient Glass of Asia Minor: The Yüksel Erimtan Collection*, Ankara, 1992, pp. 33–36, nos. 2–5.

28. Erimtan Collection, reg. no. 630; Lightfoot and Arslan [note 27], p. 34, no. 3. Broken and badly repaired; some small pieces missing. Cf. Grose [note 4], p. 264, no. 232.

29. A. Özet, "Ankara Anadolu Medeniyetleri Müzesindeki cam örnekleri ile antik çağda cam yapımı," *Belleten*, v. 51, no. 200, 1987, pp. 593 and 603, no. 7 and fig. 7. Another similar piece, in blue-green glass, is on display in the Burdur Museum. Cf. Goldstein [note 5], p. 154, no. 329; Harden and others [note 23], p. 50, no. 26; Grose [note 4], pp. 264–265, nos. 234–238; Price [note 4], p. 30 and fig. 2.17; and C. Ziviello, "Considerations about Some Pieces of Glassware from Puteoli Kept in the Museo Archeologico Nazionale of Naples," *Annales du 11^e Congrès de l'AIHV*, Amsterdam, 1990, p. 50 and figs. 3–4 (perhaps imports or early products of immigrant glassmakers from the East).



FIG. 24. Ribbed bowl. Antalya Museum A.1646.



FIG. 25. Ribbed bowl. Antalya Museum A.1621.

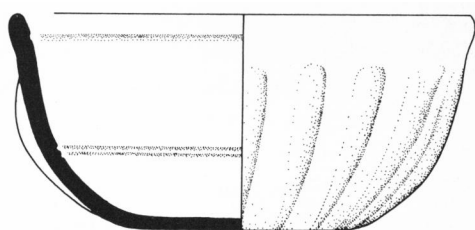


FIG. 26. Ribbed bowl. Antalya Museum A.1621.

height, belongs to a different subgroup, known for a long time as “pillar-molded” bowls. The Antalya piece (Fig. 24) has an uneven, rounded rim, with short, vertical sides that curve in sharply to the very slightly concave bottom.³⁰ On the inside, marking the junction of side and bottom, are two narrow, wheel-cut grooves, while the exterior is decorated with 23 pronounced, almost vertical ribs that taper toward the bottom and extend underneath the vessel; most are rounded at the top. The tooling of the ribs is clearly marked by a number of vertical indents on the sides, next to some of the ribs. A second bowl of this type (Figs. 25 and 26) is deeper, with a diameter of 12.3 cm and a height of 5.7 cm.³¹ The



FIG. 27. Ribbed bowl. Antalya Museum 7.3.77.

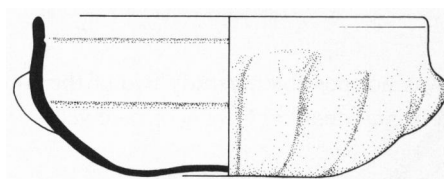


FIG. 28. Ribbed bowl. Antalya Museum 7.3.77.

vessel, of an attractive light yellow-green glass, has a rounded, slightly outplayed rim, convex curving sides, and a broad, flat bottom. The interior decoration consists of a groove 0.5 cm below the rim and a band of two more horizontal but narrower grooves, 3.5 cm and 3.8 cm below the rim. On the exterior, there are 28 slender and rounded ribs slanting downward from right to left; the ribs vary in thickness, but most are in quite shallow relief.

A smaller version is seen in a third bowl (Figs. 27 and 28), also of light yellow-green glass.³² It measures 10.7–10.8 cm in diameter and 4.2 cm in height. The rim is rounded and slightly oval in shape, while the convex sides curve in to a concave bottom. There are three horizontal interior grooves; one is 0.5 cm below the rim, and the other two,

For a rare example from Spain, see J. Price, “Late Hellenistic and Early Imperial Cast Vessel Glass in Spain,” *Annales du 10^e Congrès de l’AIHV*, Amsterdam, 1987, pp. 63–64 and fig. 1.4.

30. Antalya Museum, inv. no. A.1646. Purchased. Intact, but cracked across the bottom.

31. Antalya Museum, inv. no. A.1621. Provenance unknown. Intact, except for a small, filled chip in the rim and a large crack. Cf. Goldstein [note 5], p. 155, no. 332.

32. Antalya Museum, inv. no. 7.3.77. Purchased. Broken and repaired; three chips missing from the rim; one hole in the side, and a smaller hole in the bottom.



FIG. 29. *Ribbed bowl. Antalya Museum 13.14.86.*

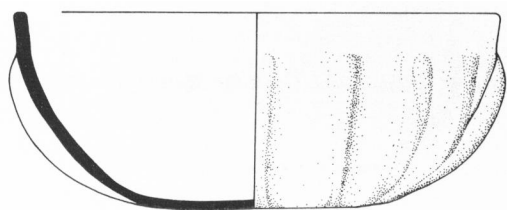


FIG. 30. *Ribbed bowl. Antalya Museum 13.14.86.*

lower down, are badly cut and run together. The 18 ribs on the outside are crudely shaped and placed at irregular intervals; some slant downward from right to left. The tops of the ribs have been removed by grinding and polishing, and a band of varying depth has been cut into the sides below the rim, causing the ribs to have different lengths.

The last example is the only bowl that has been excavated by the Antalya Museum itself. It was found in a tomb uncovered during construction work at Haciveliler, near Kumluca, late in 1986. The other grave goods included a bronze strigil, two bronze mirrors, a terra-cotta lamp, and several pottery unguentaria.³³ The bowl (Figs. 29 and 30) is of pale blue glass, and it measures 12.8 cm in diameter and 5.2 cm in height.³⁴ It has no horizontal grooves decorating the interior, which displays traces of rotary polishing. The exterior retains a highly polished surface, but there are vertical scratches between the ribs. The exterior is decorated with 18 long, vertical ribs of slightly uneven length and thickness. They are set at irregular intervals around the body, and their tops have been cut away to form a plain band below the rim.

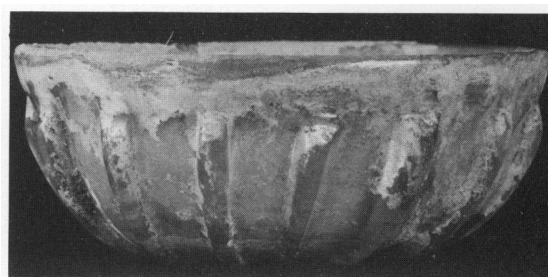


FIG. 31. *Ribbed bowl. Erimtan Collection 188.*

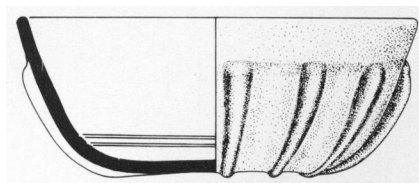


FIG. 32. *Ribbed bowl. Erimtan Collection 188.*

Two of the vessels in the Erimtan Collection belong to the same deep-sided type of ribbed bowl. One (Figs. 31 and 32), measuring 15.2 cm in diameter and 6.1 cm in height, is of light blue-green glass. It has a slightly outsplayed rim with a rounded edge, a convex curving side, and a slightly concave bottom.³⁵ The interior is decorated with two horizontal grooves in a band at the junction of the side and bottom. On the exterior, there are 14 ribs of varying length, slanting downward from right to left; the ribs end beyond the junction of the side and bottom. The side of the vessel is convex between some of the ribs, and there are irregular tooling marks on and between the tops of the ribs. The bowl has been rotary-polished on the interior,

33. From information kindly supplied by Sayın İ. Akan Atila. Seventeen items were recovered from the tomb, but no details are known concerning the appearance of the tomb and the nature of the burial(s). The finds have not been thoroughly studied or published.

34. Antalya Museum, inv. no. 13.14.86. Intact, except for a crack running from the rim to the bottom.

35. Erimtan Collection, reg. no. 188; Lightfoot and Arslan [note 27], p. 33, no. 2. Intact; one large crack extends from the rim and runs across the bottom. Cf. Grose [note 4], p. 263, no. 229.



FIG. 33. Ribbed bowl. Erimtan Collection 169.

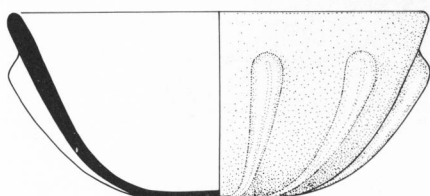


FIG. 34. Ribbed bowl. Erimtan Collection 169.

the top, and the outside of the rim, but the rest of the exterior is fire-polished. The second example (Figs. 33 and 34), like the Antalya piece found at Haciveliler, has no cut decoration on the interior. It measures 12.4 cm in diameter and 5.5 cm in height.³⁶ This pale blue-green glass has a slightly outplayed rim with a rounded edge, a straight side that tapers obliquely downward, and an almost flat bottom. It is decorated on the exterior with 11 pronounced ribs, rounded at the top and tapering sharply toward the bottom. Some are vertical and others are slanted. The ribs end beyond the junction of the side and bottom. The object has been rotary-polished on the interior, the top, and the outside of the rim; it is fire-polished on the rest of the exterior.

Cast ribbed bowls are found in several other Turkish museums. I have studied two such bowls in the Gaziantep Museum. These very similar vessels, of yellow-brown glass, represent an early form of the ribbed bowl that may be dated to the first century B.C. One of them (Fig. 35) measures 12 cm in diameter and 6.1 cm in height.³⁷ It has a rounded and slightly flaring rim, deep sides, and a slightly concave bottom. The body is decorated on the exterior with 32 ribs of irregular length; some of these ribs



FIG. 35. Ribbed bowl. Gaziantep Museum 46.1.77.

are vertical, and others slant or curve from left to right. The top ends of the ribs terminate in one or two shallow pressed grooves. Rotary polishing marks are visible on the interior and above the ribs on the exterior; the rest appears to be fire-polished. On the interior, there is a single horizontal groove 0.6 cm below the rim, and a pair of narrower grooves are found where the sides curve in toward the bottom.

The second bowl (Figs. 36 and 37) is slightly larger; it measures 12.4 cm in diameter and 6.9 cm in height.³⁸ It, too, has a rounded and slightly flaring rim, deep sides, and a slightly concave bottom. However, it has only 25 ribs, some of which are set almost vertically, while others slant from right to

36. Erimtan Collection, reg. no. 169; Lightfoot and Arslan [note 27], p. 35, no. 4. Badly cracked; areas of plaster fill around the rim. Cf. Grose [note 4], p. 266, no. 239.

37. Gaziantep Museum, inv. no. 46.1.77. Purchased. Broken and repaired; one large fragment missing from the bottom. Cf. J. du Plat Taylor, "Roman Tombs at «Kambi» Vasa. Appendix I (by D. B. Harden). The Glass," *Report of the Department of Antiquities of Cyprus, 1940-1948, 1958*, p. 49, no. 3, pl. 5, d and fig. 20, b; von Saldern and others [note 12], pp. 94-95, no. 249 (dated to the end of the first century B.C.-beginning of the first century A.D.); *Ancient Glass* [note 16], p. 17, no. 34; and Barag [note 14], p. 87, no. 112.

38. Gaziantep Museum, inv. no. 2.9.77. Purchased. Broken and mended; one large and two small fragments missing. Cf. M. Kunz, ed., *3000 Jahre Glaskunst von der Antike bis zum Jugendstil*, Luzern, 1981, p. 61, no. 140 (from Syria); and G. Loudmer and A.-M. Kevorkian, *Verres antiques et de l'Islam. Ancienne collection de Monsieur D.*, Paris, 1985, p. 35, no. 81.



FIG. 36. *Ribbed bowl. Gaziantep Museum 2.9.77.*

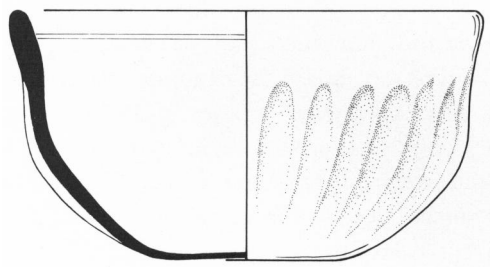


FIG. 37. *Ribbed bowl. Gaziantep Museum 2.9.77.*

left, or curve from left to right. The ribs are of irregular length and thickness, but all of them taper toward the bottom. The interior is decorated with a single horizontal, wheel-cut groove 0.6 cm below the rim.

Another fine example is to be seen on display in the İzmir Archaeological Museum. Although this vessel was not available for proper recording, I can offer the following description.³⁹ It is a large, shallow bowl of light blue glass, 17.5 cm in diameter and 5 cm in height. It has a rounded rim and a slightly concave bottom. On the exterior are 15 ribs, the tops of which have been ground flat; the ribs taper downward, extending under the bottom. The interior is decorated with two concentric grooves at the junction of the side and bottom. Similar to this bowl is a vessel in the Erimtan Collection, measuring 15.2 cm in diameter and 4.0 cm in height.⁴⁰ The bowl (Figs. 38 and 39) is of clear blue-green glass. It has a slightly outsplayed rim



FIG. 38. *Ribbed bowl. Erimtan Collection 67.*

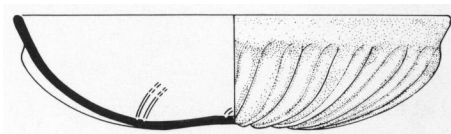


FIG. 39. *Ribbed bowl. Erimtan Collection 67.*

with a rounded edge, a shallow and convex curving side, and a slightly concave bottom. On the interior, there are two horizontal grooves in a band at the junction of the side and bottom, and a small, broad, circular groove at the center of the bottom. The exterior has 31 long, close-set ribs, slanting downward from right to left and tapering toward the bottom. The ribs extend almost to the center of the bottom, and they show signs of having been rotary-polished across their tops.

A number of other bowls have been published in recent years, notably those in the Ankara Museum, the Sadberk Hanım Museum, and the collection of the Turkish Bottle and Glass Factory Company.⁴¹ The Kahramanmaraş Museum also has a good selection of cast ribbed vessels, and E. M. Stern refers to four examples in the Adana Regional Mu-

39. İzmir Museum, inv. no. 8008. Confiscated in 1974. Intact, except for a hole and a crack in the side. Cf. Goldstein [note 5], p. 153, no. 328; and Price [note 4], p. 30 and fig. 2.20.

40. Erimtan Collection, reg. no. 67; Lightfoot and Arslan [note 27], p. 36, no. 5. Intact.

41. Özet [note 29], pp. 593 and 603, nos. 6–7 and figs. 6–7 (one in pale yellowish glass, the other in greenish colorless glass; a third example, unpublished but similar to the greenish colorless glass, is of light yellow-brown glass—Anatolian Civilizations Museum, Ankara, inv. no. 90–19–81); Akat and others [note 12], pp. 85–87 and figs. 35–36 (three examples in blue-green glass); Ü Canav, *Türkiye Şişe ve Cam Fabrikaları A.Ş. Ancient Glass Collection*, Istanbul, 1985, p. 85, no. 137 (in blue-green glass, found at İznik, ancient Nicaea).

seum, although none of them is described or illustrated.⁴² A yellow-brown example, similar to the Gaziantep pieces described above, is known from the collections in the Hatay Museum at Antakya, ancient Antioch-on-the-Orontes.⁴³ Other bowls are on display in the Fethiye and Bodrum museums, some of which are said to have come from the excavations at Kaunos. Another example from the Dardanelles area is now in the Museo del Vino, Palazzo Baglioni, Torgiano (Perugia).⁴⁴

Few cast ribbed bowls have been properly recorded at archeological sites. A fine example, sadly broken, was uncovered during the excavation of the necropolis to the east of the sanctuary site at the Letoon in Lycia. It was found with a number of blown vessels, including a collared-rim jug.⁴⁵ Other cast bowls are reported as having been found during the excavations at Anemurium (Anamur) in Rough Cilicia.⁴⁶ At Sardis, where the glass finds have been well published, many fragments have been found.⁴⁷ If this can be taken as a reliable indicator, one may assume that monochrome cast vessels were not uncommon in the prosperous cities of the southern and western coasts of Asia Minor. By contrast, it is worth noting that very little trace of mosaic glass can be found in Anatolia. Apart from a piece in the Sadberk Hanım Museum, the only example known to me is a fragment from the excavations at the site of Labraunda in Caria.⁴⁸

Nevertheless, this survey indicates that there is a wide distribution of late Hellenistic and early Roman cast glassware in Asia Minor. In particular, the coastal cities of Pamphylia and Lycia would seem to have attracted either traders who brought with them the products of faraway glasshouses, or foreign craftsmen who came to exploit the local market. Most of the stimulus undoubtedly derived from Syria, where a flourishing glass industry existed in the late Hellenistic period. The demand for its products grew to such an extent that the industry could barely cope. In this respect, the cast vessels in Antalya are instructive. They were clearly made for a thriving local market, in which the craftsmen could afford to produce relatively poor work. Despite the fact that all cast glass is regarded

as "luxury ware," these simple, mass-produced bowls represent the products of an industry that was stretched to the limits. If, then, one adds the Roman demand, which suddenly exploded onto the existing markets in the eastern Mediterranean in the late first century B.C., one finds ideal conditions for the adoption of new, cheaper, and faster methods of production. It is no surprise, therefore, that in many ways early blown glass imitates cast ware. The blown and mold-blown ribbed bowls described below (pages 36–37) are a clear instance of this process.

Glass from Military Sites

During the past five years, I have been able to study the glass from several archeological sites. Two of these sites, both in eastern Turkey, have yielded pieces of cast vessels. These include a significant number of ribbed bowl fragments. The first group of fragments comes from the excavations at Tille on the Euphrates.⁴⁹ In addition to an impressive mound or tell, the site boasts a lower settlement area, principally of the Hellenistic and Roman periods, which incorporates a substantial baths complex. From the importance of the site as a natural crossing-point on the river, and from the evidence of military tile stamps, it is also inferred that there was once a Roman fort at Tille.⁵⁰ Apart from

42. E. M. Stern, "Glass Vessels Exhibited in the Bölge Museum-Adana," *Belleken*, v. 53, nos. 207–208, 1989, pp. 585–586.

43. E. E. Yağcı, "Hatay müzesindeki bir grup cam eser," *1st International Anatolian Glass Symposium. April 26th–27th, 1988*, Istanbul, 1990, p. 31 and fig. 28.

44. *Bulletin de l'AIHV*, v. 9, 1981–1983, p. 151.

45. Found during the 1991 excavation season; personal communication of Prof. Christian Le Roy.

46. Stern [note 42].

47. A. von Saldern, *Ancient and Byzantine Glass from Sardis*, Cambridge, Massachusetts, 1980, pp. 11–12, nos. 27–41, and pls. 2 and 20.

48. Akat and others [note 12], p. 54, no. 83 and fig. 33; P. Hellström, *Labraunda. Swedish Excavations and Researches*, v. 2, part 1, *Pottery of Classical and Later Date, Terracotta Lamps and Glass*, Lund, 1965, p. 84, no. 1 and pl. 29.

49. I am grateful to the director of the Tille excavations, Dr. David French, for allowing me to study and publish these glass finds.

50. D. H. French, J. Moore, and H. F. Russell, "Excavations

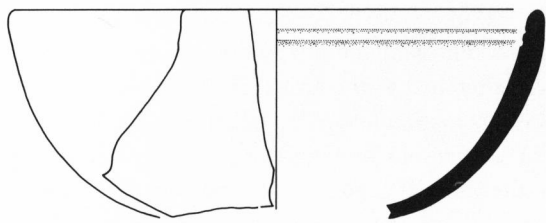


FIG. 40. Hemispherical bowl fragments. Tille.

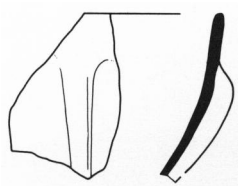


FIG. 41. Ribbed bowl fragment (no. 1). Tille.

four tiny fragments of core-formed vessels found on the mound, the earliest example of a glass vessel is a hemispherical bowl (Fig. 40), represented by two rim fragments.⁵¹ The rim diameter is estimated at 14 cm and the height at 6 cm.⁵² The fragments are of colorless glass with a yellow-green tinge, and they are decorated on the interior with two horizontal grooves below the rim. The vessel belongs to Grose's Group A, and it can be dated to the mid-second or early first century B.C. The other cast fragments are from ribbed bowls. There are 11 examples in all, none of which shows any trace of horizontal cut grooves decorating the interior of the vessels.

1. Rim and body fragment, deep ribbed bowl (Fig. 41). Blue-green, more blue than nos. 4, 6, 7, and 8. Very slightly outplayed rim with rounded edge; rotary-polished on exterior between rim and tops of ribs; part of one rib extant, rounded, sloping from left to right and tapering downward.⁵³

2. Rim and body fragment, shallow ribbed bowl (Fig. 42). Light blue-green, color as no. 5. D. about 20 cm. Slightly outplayed rim with rounded edge, continuing slope of wall; two rounded ribs extant.⁵⁴

3. Rim and body fragment, ribbed bowl. Light blue. Slightly outplayed rim with rounded edge; rotary-polished on exterior below rim; tops of ribs ground flat, with uneven indentations; part of two

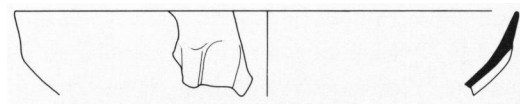


FIG. 42. Ribbed bowl fragment (no. 2). Tille.

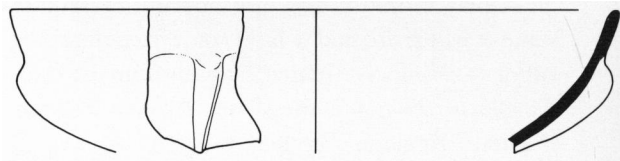


FIG. 43. Ribbed bowl fragment (no. 4). Tille.

rounded ribs extant; side slightly convex between ribs; surface of side and ribs fire-polished; similar in shape to nos. 1, 5, and 7.⁵⁵

4. Rim and body fragment, shallow ribbed bowl (Fig. 43). Light blue-green. D. about 14–16 cm. Slightly outplayed rim with rounded edge; rotary-polished on exterior below rim; tops of ribs ground flat; part of one vertical rib extant, tapering downward.⁵⁶

at Tille, 1979–1982: An Interim Report," *Anatolian Studies*, v. 32, 1982, pp. 161, 169–170, 174, and 177.

51. For the core-formed vessel fragments, see C. S. Lightfoot, "Glass in the Iron Age," in *Anatolian Iron Ages Colloquium Held at İzmir, 4–8 May, 1987*, ed. A. Çilingiroğlu and D. H. French, Oxford, 1991, p. 69 and note 1, pl. 05.1.

52. Excavation no. TH 1983–7759–193–50–040. Context: stone wall on mound. H. 6.4 cm, L. 6.9 cm, W. 6.0 cm, Th. 0.7–0.3 cm. Both surfaces scratched and covered with brown staining; the interior is smooth and has horizontal (rotary) polishing marks. Cf. Grose [note 3], pp. 55–59; and British Museum, GR 1868.5–1.220.

53. Excavation no. TH 1983–7556–163–50–106. Context: stone-robbet's trench on mound, found with blown vessel fragments. H. 4.4 cm, W. 2.9 cm, Th. (between rim and top of ribs) 0.3 cm. On the interior, rotary polishing marks. Cf. Grose [note 4], p. 266, no. 239.

54. Excavation no. TH 1983–7656–137–50–106. Context: remnants of surface on mound, found with blown vessel fragments. H. 3.4 cm, W. 3.35 cm, Th. (max.) 0.6 cm, (between rim and top of ribs) 0.45 cm. Cf. Hayes [note 16], pp. 20–21, no. 53 and fig. 2 (excavated at Alchester, England).

55. Excavation no. TH 1983–7656–171–50–125. Context: spread on mound, with Eastern Sigillata pottery. H. 4.5 cm, W. 3.9 cm, Th. (max.) 0.8 cm, (rim) 0.2–0.28 cm.

56. Excavation no. TH 1983–7656–147–50–117. Context:

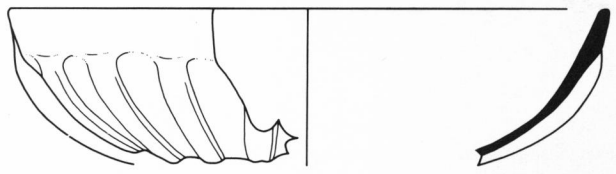


FIG. 44. Ribbed bowl fragment (no. 5). Tille.

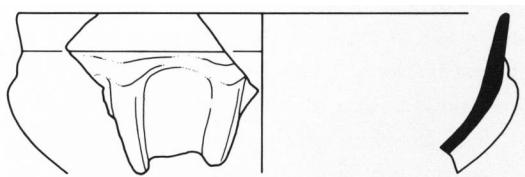


FIG. 45. Ribbed bowl fragment (no. 6). Tille.

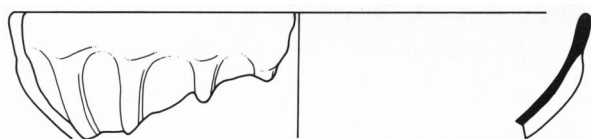


FIG. 46. Ribbed bowl fragment (no. 7). Tille.

5. Rim and body fragment, shallow ribbed bowl (Fig. 44). Light blue-green. D. about 16 cm. Slightly outplayed rim with rounded edge, continuing slope of wall; rotary-polished on exterior between rim and tops of ribs; part of four rounded ribs extant, sloping and tapering downward; side slightly concave on interior between ribs; surface of side and ribs fire-polished.⁵⁷

6. Rim and body fragment, ribbed bowl (Fig. 45). Light blue-green. D. about 13 cm. Very slightly outplayed rim with rounded edge; rotary-polished on interior and on exterior below rim; tops of ribs ground flat, giving a notched profile; part of two rounded ribs extant, tapering downward.⁵⁸

7. Rim and body fragment, shallow ribbed bowl (Fig. 46). Light blue-green. D. about 15 cm. Slightly outplayed rim with rounded edge; tops of ribs slightly cut flat by rotary polishing below rim; parts of four rounded ribs extant, of varying width but tapering downward; surface of side and ribs highly polished.⁵⁹

8. Two conjoining body fragments, ribbed bowl

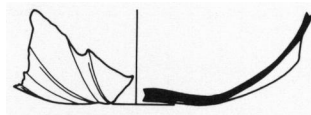


FIG. 47. Ribbed bowl fragments (no. 8). Tille.

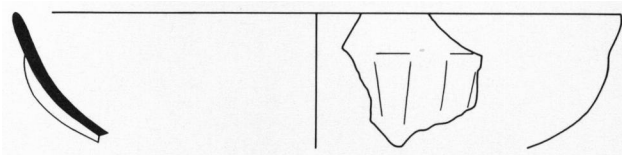


FIG. 48. Ribbed bowl fragment (no. 9). Tille.

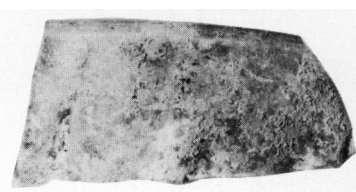


FIG. 49. Ribbed bowl fragment (no. 10). Tille.

(Fig. 47). Light blue-green. Lower part of five ribs extant, tapering downward.⁶⁰

9. Rim fragment, ribbed bowl (Fig. 48). Light blue-green. D. about 16 cm. Vertical rim with rounded edge; tops of ribs cut flat by rotary polishing below rim; parts of two ribs extant, tapering downward.⁶¹

surface on mound. H. 3.8 cm, W. 3.3 cm, Th. (below rim) 0.3 cm. Cf. Grose [note 4], p. 264, no. 231.

57. Excavation no. TH 1983-7556-163-50-101. Context: stone robber's trench on mound. H. 4.2 cm; W. 5.4 cm, Th. (max.) 0.7 cm; (below rim) 0.45 cm. See D. French, "Tille höyük 1983," *VI. Kazı sonuçları toplantısı. İzmir-16-20 Nisan 1984*, Ankara, 1985, p. 258, fig. 6, no. 5 (where it is attributed to the Hellenistic Level 1, Phase 2).

58. Excavation no. TH 1983-7656-177-50-124. Context: spread on mound, with Eastern Sigillata pottery. H. 4.3 cm, W. 5.2 cm, Th. (below rim) 0.3-0.4 cm. Internal strain cracks around rim. Cf. Hayes [note 16], p. 20, no. 50 and fig. 2.

59. Excavation no. TH 1983-7757-152-50-071. Context: medieval stone-robber's trench on mound, found with no. 8, below. H. 3.35 cm, W. 7.5 cm, Th. (below rim) 0.4 cm.

60. Excavation no. TH 1983-7757-152-50-071. Context: medieval stone-robber's trench on mound, found with no. 7, above; possibly from same vessel. H. 2.8 cm, L. 6.9 cm, W. 3.5 cm, Th. (bottom) 0.3 cm.

61. Excavation no. TH 1990-013-50-20. Context: baths

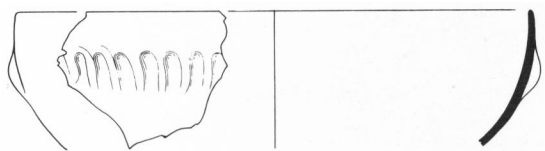


FIG. 50. Ribbed bowl fragment (medieval levels). Tille.

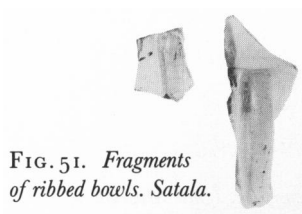


FIG. 51. Fragments of ribbed bowls. Satala.

10. Rim fragment, ribbed bowl (Fig. 49). Blue-green. Vertical rim with rounded edge; tops of three ribs in low relief extant.⁶²

Another fragment found in early medieval levels on the mound may also be residual. It has an almost vertical rim, turned slightly inward, with a rounded edge and a convex curving side (Fig. 50). The exterior is decorated with a number of short, close-set ribs, seven of which are extant, arranged almost vertically around the middle of the body.⁶³ It thus bears a close resemblance to the group of ribbed bowls decorated with short, close-set ribs that are described above (page 28).

Two fragments of cast ribbed bowls have also been recorded recently at Sadak köy, ancient Satala, the site of a legionary fortress in northeastern Turkey. Both of these fragments (Fig. 51) were found outside the area of the fortress itself, in a field to the northwest of the modern village, but their presence at the site should doubtless be associated with the arrival of the Roman garrison soon after A.D. 75.⁶⁴ One is a small body fragment in pale blue glass, consisting of a single vertical rib, the top of which has been ground flat by a horizontal rotary-polished band.⁶⁵ The other, of colorless glass, is a smaller piece, also with part of a single vertical rib.⁶⁶

The Tille and Satala material provides much-needed evidence for the use of cast ribbed bowls on the eastern frontier, thereby forming a parallel to the frequent discovery of similar finds on military

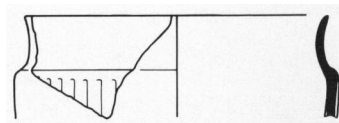


FIG. 52. Molded ribbed bowl fragment. Tille.

sites in the West.⁶⁷ The association of certain types of glass with the Roman army is further strengthened by the example of another fragment from the Tille excavations.⁶⁸ It is from the rim of a mold-blown bowl with a diameter of about 8 cm (Fig. 52), in pale yellow-green glass. The slightly out-splayed rim has been cut and ground flat on the top. The side curves out to a projecting shoulder of close-set, vertical ribs. An intact but larger version of the same mold-blown bowl is to be found, appropriately, in the Antalya Museum.⁶⁹ It has an un-

complex. Th. 0.3–0.4 cm. On the interior, rotary polishing marks.

62. Excavation no. TH 1982–7659–136–50–039. Context: mound. H. 2.3 cm, W. 4.5 cm, Th. (below rim) 0.35 cm.

63. Excavation no. TH 1982–7458–076–50–037. Pale green. D. about 14 cm. J. Moore, *Tille 1: The Medieval Period*, forthcoming, fig. 98, no. 24.

64. For a plan of the site and a preliminary report on other glass finds there, see C. S. Lightfoot, "Satala yüzey araştırması, 1989," *VIII. Araştırma sonuçları toplantısı*, Ankara, 1991, pp. 299–309, esp. p. 305 and figs. 1, 5, and 6.

65. L. 6.3 cm, W. 2.35 cm, Th. (max.) 0.6 mm, L. (of rib as extant) 4.3 cm; W. (top of rib) 0.8 cm. Grinding and polishing marks on the band below the rim and on the interior; tooling marks on the top of the rib. See C. S. Lightfoot, "Satala yüzey araştırması, 1990," in *IX. Araştırma sonuçları toplantısı*, Ankara, 1992, p. 293, no. 1 and fig. 8.

66. L. 2.3 cm, W. 2.0 cm, Th. 0.2 cm. *Ibid.*, p. 293, no. 2.

67. See, for example, S. Fünfschilling, "Beobachtungen zu Rippenschalen von schweizer Fundorten," *Annales du 10^e Congrès de l'AIHV*, Amsterdam, 1987, pp. 81–108.

68. Excavation no. TH 1983–7656–143–50–108. Context: from the mound. H. 2.7 cm, W. 4.3 cm, Th. 0.2 cm. Parts of seven ribs are extant, raised on the exterior and slightly hollowed on the interior; a purple streak, owing to the use of manganese as a decolorizing agent, runs obliquely down the side; chipped and cracked. Cf. von Saldern and others [note 12], p. 160, no. 450; and J. Price, "Late Hellenistic and Early Imperial Vessel Glass at Berenice: A Survey of Imported Tableware Found during Excavations at Sidi Khrebish, Benghazi," in *Cyrenaica in Antiquity*, ed. G. Barker, J. Lloyd, and J. Reynolds, Oxford, Society for Libyan Studies Occasional Papers, no. 1, 1985, p. 293 and figs. 24.3 and 43–46.

69. Antalya Museum, inv. no. 1847. Unknown provenance.



FIG. 53. *Molded ribbed bowl. Antalya Museum 1847.*

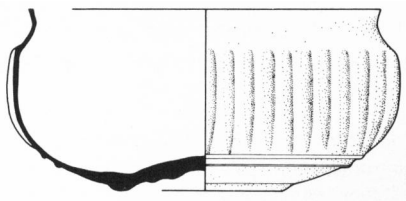


FIG. 54. *Molded ribbed bowl. Antalya Museum 1847.*

worked, knocked-off rim, 9.2 cm in diameter (Figs. 53 and 54). Its height is 4.8 cm, with a maximum diameter of 10.3 cm and a base diameter of 4.6 cm. There are 68 close-set vertical ribs around the side, below which are two horizontal raised lines. On the bottom, there is a broad, molded base-ring surrounding two concentric raised circles and a central pushed-in knob. These mold-blown vessels have been found at numerous military sites in the West.⁷⁰ The distribution of glass tableware, cast or blown, is, of course, not limited to army camps and forts; ribbed bowls are found across the Mediterranean world. However, Roman soldiers were clearly instrumental in spreading such items to the very limits of the empire, and in doing so, they were in very practical terms fostering the process of Romanization.



FIG. 55. *Zarte Rippenschale. İzmir Museum 6050.*



FIG. 56. *Zarte Rippenschale. Bolu Museum 531.*

Large section of the rim and side missing, probably broken in antiquity (weathering visible on broken edge). The museum has another example (number unknown), in blue-green glass; it could not be removed from the display case for study. A bowl of very similar dimensions of greenish glass, is in the British Museum: GR 1912.10-25.16 (from Cyprus; H. 4.7 cm, D. rim 9.1 cm). Cf. "Recent Important Acquisitions," *Journal of Glass Studies*, v. 4, 1962, p. 140, no. 8 (said to have been found in western Anatolia).

70. See J. Price, "Decorated Mould-Blown Glass Tablewares in the First Century AD," in *Roman Glass* [note 24], pp. 67, 70, and 72, pl. XVII.

APPENDIX

I referred above (pages 36–37) to blown imitations of the cast ribbed bowl. I therefore include here two more vessels to illustrate the continuation of the tradition of making ribbed bowls by the use of inflation techniques. They belong to a group of vessels known as *zarte Rippenschalen*, dated to the middle of the first century A.D. The technique by which these vessels were made has been the subject of some uncertainty among scholars, but it is likely that they were blown and tooled in some way. One of the bowls (Fig. 55) is in the İzmir Archaeological Museum.⁷¹ It is of light yellow-brown glass and measures 6.4 cm in height, 8.3 cm in diameter at the rim, and 9.6 cm around the body. It has a flaring rim with a very thin knocked-off edge, a concave shoulder, a bulbous body, and a rounded bottom. Seventeen pinched ribs run from the shoulder to the undercurve of the body, slanting both from right to left and from left to right. The glass is thickest on the interior behind the ribs, on the shoulder, and on the bottom, which is slightly concave on the interior. A similar bowl (Fig. 56), in pale blue-green glass, is in the Bolu Museum.⁷² It

measures 6.4 cm in height, 7.7 cm in diameter at the rim, and 9.9 cm around the body. It, too, has a knocked-off rim and concave shoulder, but the body is a rather squat, bulbous shape, and the bottom is flat. It is decorated with 16 ribs, set at irregular intervals around the body and tapering toward the bottom. The glass is wafer-thin in places; it is thickest at the shoulder and on the ribs (the inside of the vessel wall bulges outward behind the ribs).

71. İzmir Museum, inv. no. 6050. Broken; two patches of fill mixed with earth. For other examples in Turkey, see O. Gündüz, "Fragment of a Vase of Stained Glass," *Annual of the Archaeological Museums of Istanbul*, v. 10, 1962, p. 132 and pl. XVI (two examples, one with opaque white trails, acquired in 1961; the museum collection contains at least two other examples); von Saldern [note 47], pp. 12–13, nos. 42–44 (fragments from the Sardis excavations); Canav [note 41], p. 85, no. 138 (found at Bigadiç; deep yellow-brown with opaque blue and white trails); Yağcı [note 43], p. 33 and fig. 33f; Stern [note 42], p. 586 and figs. 1 and 4–5; and Çankırı Museum (number not known).

72. Bolu Museum, inv. no. 531. Transferred from Afyon Museum, 1980. Broken and repaired; half of the rim missing; two holes in the body. Cf. von Saldern and others [note 12], pp. 100–101, nos. 260–266; and *Glass at the Fitzwilliam Museum* [note 12], p. 34, no. 60a–b (from Cyprus).