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GLASS

GLASS in Persia. Glass blowing was invented in the Syro-Palestinian region during the Parthian period in the mid-first century B.C.E. and quickly spread from there to neighboring regions. Due to this invention, which probably reached Mesopotamia in the first century C.E., glassware could be produced more easily and in greater numbers than by the techniques known earlier.

The Parthian period. Knowledge of glass production during the Arsacid period is still very limited, especially for Persia, and it can be difficult to decide whether vessels were made locally or imported from the Syro-Palestinian areas. Only a number of small free-blown bottles from a larger number of Mesopotamian sites, such as Niniveh (Curtis, 1976, pp. 47-66), Ctesiphon (Hauser, pp. 360-63), Warka (Curtis, 1979, pp. 314-16, pl. 6-9; Barag, figs. 9-10, pls. 14, 16, color pl. D), and Persia proper (Fukai, pl. 33), are known to date from toward the end of the Parthian period. They were probably used as perfume and oil containers and were mostly produced to be buried with the dead. These finds demonstrate influence of the eastern Mediterranean types, which were also common in Dura-Europos, where finds date from the first to the mid-third century (Clairmont). Nothing of Parthian glass has yet come to light that can be compared in quality to the Achaemenid, Hellenistic, Roman, or Sasanian cut glasses.

The Sasanian period. Production of glass was much more widely spread within the Sasanian empire; it also became in both shapes and types of decoration independent from Parthian prototypes. Due to a number of excavations, much more is known from the western part of the Sasanian empire, i.e.,

Mesopotamia, than from Persia proper. However, parallels with finds from sites in Persia seem to indicate that the main types had been popular in most parts of the empire. A possible reason for the popularity of glass during the Sasanian period may be the fact that Zoroastrians considered glass to be a ritually pure material. Glass vessels were thus used in burials in Mesopotamia (Negro Ponzi, 1968-71; idem, 1972) as well as in Persia (Sono and Fukai). Glass was also used to hold perfumes and cosmetics, for drinking purposes, and as lamps. It often had a light green or greenish color with a somewhat yellow tinge; colorless glass was rare. Red, buff, and a brownish tinge also occur. Typical for many excavated Sasanian vessels is a corrosion that can cause the total decomposition of the glass. This often makes it impossible to see the actual color of the glass.

Remains from a furnace datable to the first half of the 6th century at Taḵt-e Solaymān/Takht-i Sulaiman provided evidence of crown window panes and small bottles that had been worked at that site (Huff, 1995, pp. 259-66). The type of furnace and the glasshouse resemble those of a traditional style glassworks in modern Afghanistan (Reut). Minor remains of glasshouses are also known from other sites.

The late Parthian-early Sasanian finds from graves in Abu Skhair near Ḥira (Negro Ponzi, 1972) and the finds from graves in Tell Mahuz in northern Mesopotamia from the second half of the 3rd and beginning of the 4th centuries already show the increasing range of fully developed glassware types (Negro Ponzi, 1968-69). The region of the Sasanian capital Ctesiphon has been widely studied. The results of the Italian excavations at Choche were finds of the early and middle Sasanian period (Negro Ponzi, 1984), while those at Tell Baruda (Negro Ponzi, 1987) and of the earlier German excavations (Puttrich-Reignard) produced late Sasanian and early Islamic glass. Of importance are the late Sasanian finds in Kish (Harden; Moorey). The results of numerous excavations in Persia have not been published, but Sasanian glass is known in greater numbers from Taḵt-e Solaymān (Schnyder), Turang Tepe (Boucharlat and Lecomte), Deylamān (Sono and Fukai), Susa (Lamm, 1931; Hardy-Guilbert; Kervran), and Qaṣr-e Abu Naṣr (Whitcomb).

Undecorated glass was used in plain straight-sided bowls, stemmed goblets, plain globular bottles, pear-shaped bottles with neck diaphragms, and bottles with a single handle. For decorative purposes, only non-figurative patterns of an abstract nature were used. Mold-blown glass, such as bottles with ribs or honeycomb pattern, was also produced. Typical are vessels with trailed

decoration (Negro Ponzi, 1968-69) or pincered warts (Sono and Fukai, color pl. 1, pl. 41.1a-b).

Cut glass was already common in the early Sasanian period. Deep bowls with shallow circular facets (Negro Ponzi, 1968-69, fig. 157, no. 72) were exported to China (An Jiayao, p. 7, fig. 11), whence a large number of Sasanian glass objects has reached us.

A group of vessels with circular facets, mainly from the 6th-7th centuries, represent Sasanian glass *par excellence* (Plate I). This group is comprised of shallow open bowls (Harden, fig. 4.6), of which an example is now also known from Yemen (Seipel, ed., no. 307). The most widespread type was hemispherical. Fragments are known from Kish (Harden, fig. 4.8), Choche (Negro Ponzi, 1984, fig. 4.7), Taḵt-e Solaymān (Schnyder, p. 183), and Turang Tepe (Boucharlat and Lecomte, pl. 99.9), to name but a few.

Pear-shaped bottles seem to have been made for special purposes, as they have pierced holes in the center of the bottom and could thus have been used as rhytons (Charleston, 1990, p. 64, no. 24; Whitehouse, 1993, p. 257, no. 105). Tall, faceted, tubes (the purpose of which is unknown) were excavated in Niniveh (Pinder-Wilson, 1968, no. 136); Taḵt-e Solaymān (unpubl.), the Gorgān wall (Kiani, 1982, p. 37, fig. 29), and in Qaṣr-e Abu Naṣr (Whitcomb, fig. 59e).

Faceted hemispherical bowls were widely exported, and the best known among them is a bowl preserved in the original condition within the treasury house of Shoso-in at Nara in Japan, to which it was probably presented in 752 (Blair, p. 389, pl. 105; Fukai, pp. 38-39 fig. 28-29). This example demonstrates the artistic zenith of Sasanian cut-glass.

The famous “Tasse de Salomon” (Tallon, p. 29, p. 106-7, no. 238), a golden bowl with a rock-crystal and grenade and glass insets originally preserved in the French royal treasure of St. Denis, has been dated to the 6th-7th century but has remained without Sasanian parallels (*Le trésor de Saint-Denis*, Paris, 1991, no. 10, pp. 80-82).

Early Islamic period (1st-5th/7th-12th centuries). The technique of glass production in Persia greatly improved during the early Islamic period. The general output of glass seems to have grown, and it is also during this period that some of the greatest achievements in the production of glass during the Islamic period were made. Many of the changes seem to have begun in the 9th

century. Whether this was due to a continuation or revival of the achievements reached in the Sasanian period or due to an influence from the ʿAbbasid court has still to be resolved. Early Islamic glass was blown out thinly, especially so for many of the carved vessels of colorless glass common from the 9th-10th centuries. The color pattern gradually changed as light green and yellowish green became less popular. Colorless glass of a very good quality was used for the majority of the cut glass vessels. Unfortunately remains of glass furnaces are not well-known. Numerous furnaces of the 10th-11th centuries are known to have existed within the city of Sirjān, but further research is necessary to verify this. Exports of glass vessels to nearby regions such as Armenia and as far as China are attested (An, 1991, p. 131 fig. 12 and p. 133 fig. 16), while glass from the Syro-Palestinian region was imported.

The finds from the excavations in Nišāpur (Kröger, 1995) and Susa (Lamm, 1931; Hardy-Guilbert, pp. 143, 194-98; Kervran, pp. 211-25) show a large variety of new shapes and techniques. Some types of the Sasanian fashion were continued with slight changes or with decorative patterns such as cut facets applied to new shapes (Kröger, 1984, nos. 184-85, 187-89; idem, 1995, nos. 166-71). Judgment on regional differences, however, will be possible only when the final reports of excavations in Taḵt-e Solaymān, Sirāf, and other sites are published and a broader picture has emerged. Likewise, further research is needed to ascertain whether Khorasan was indeed one of the major glass producing centers in this period.

Techniques unknown during the pre-Islamic era, such as pinching the glass with a metal instrument, were developed in this period (Kröger, 1984, nos. 110-11; idem, 1995, pp. 95-99). Cut and engraved glass gained even more importance, and a whole range of new shapes emerged which is now considered typical for the early Islamic period: miniature bottles, small square bottles, cylindrical and conical beakers, ewers with pear-shaped body and thumb-rest (Plate II), globular bottles with long cylindrical necks, bell-shaped bottles with necks widening conically. Some of the shapes were imitations of metal vessels. Glass was also widely used to make kitchenware, lamps, inkwells, medical or chemical equipment, window-glass, and jewelry (Kröger, 1995, pp. 176-201).

In addition to abstract ornamental motifs, one sees the emergence of new decorative patterns, both figural and non-figural and usually in a highly stylized fashion: differently stylized palmettes, arabesque-like shapes, etc. (Kröger, 1995, no. 133).

Figural themes, usually representing animals such as birds, ibex (Charleston, 1990, no. 28), horse-like creatures, etc. (Kröger, 1984, no. 193), appear for the first time on glass vessels. Writing in the Kufic script could be used as the only decoration or be added to other patterns (Kröger, 1984, no. 81; idem, 1995, nos. 191-92). There are still different opinions concerning the provenance of a bowl of turquoise glass which has a Kufic inscription on the bottom. It can be read as Khorasan and may actually be from that region (Shalem, pp. 91-94) although an Egyptian origin has also been suggested (Pinder-Wilson, 1991 pp. 116-19, fig. 147). Questions of provenance also seem unsettled for the Corning cameo ewer (Whitehouse, 1993, pp. 48-56).

Il-khanid and Timurid periods. Little is known about Persian quality glass production from the Il-khanid and Timurid periods, The glass industry does not seem to have been highly developed, although production of simple blown vessels may be assumed to have continued locally. This is demonstrated by finds of thick-walled flat bottles excavated at Taḵt-e Solaymān (Schnyder, 1975, p. 194; *Islamische Kunst*, no. 203). There is, however, little or no evidence for glass of a higher standard. Contrary to opinions advanced earlier in the 20th century, enameled glass was not produced in Persia, nor does the glass industry seem to have been developed to such an extent that quality glass similar to the early Islamic centuries existed. The reasons for this somewhat unexpected change are still unclear.

Safavid and Qajar periods. The situation in this period seems to be somewhat related to the preceding one, as glass was probably produced only for commercial items and long-distance trade. Shiraz wine is said to have been traded during the Safavid period in long-necked, flat-bodied bottles, often with a twist of glass-thread on the neck (Charleston, 1974, fig. 14a). Glasshouses are reported from Isfahan and Shiraz but seem to have existed in other towns as well. Venetian glass vessels and mirrors reached the Safavid court through Venetian agents. During the 19th century, glass was also imported from Bohemia (Diba, 1983, pp. 188-91).

Much of the glass that came to Europe from Persia in the 19th century was labeled as Safavid, but the largest number of pieces seem to have been produced in the Qajar period (Plate III). Some of these (long-necked bottles, rose-water sprinklers, wine glasses and bottles, nargileh bases, and reverse-glass paintings) are depicted in Qajar paintings (Diba, 1998, nos. 11.25.27-8.42. 56-57. 63a-b).

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