Instead, we suggest that the headrests were made by casting, filling a mold with crushed glass and heating it until it melted and filled the entire form in a process reconstructed experimentally by Kathleen McCarthy and documented by E. Marianne Stern. Paul Nicholson suggested that they were cast in their broad outline and then carved into shape using lapidary techniques. However, we think it is more likely that the molds were carefully preformed and lined on the inside with the same parting layer used for the glass crucibles from Amarna and Qantir, creating cast objects that required only a final surface polishing to remove any roughness after annealing. To provide sufficient material to completely fill the mold when the glass powder melted, the molds would have been fitted with funnel-shaped extensions similar to those archaeologically documented from the glass workshop in Qantir.

The evidence for this is best seen in the translucent wings of the dark blue headrest. Here, a characteristic pattern of schlieren (areas of slightly different appearance) and a wavy difference in color are accompanied by trails of air bubbles outlining clearly their (stunted) rise to the surface, trailing larger bubbles including the ones that we believe were later filled with patches of other glass, as part of the completion of the object. Together, they show a flow pattern consistent with the exact shape of the crescent being filled with viscous glass melting in situ, sagging as it fills the form completely, while any air trapped in the crushed glass rises to the surface.

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The Collection of Ancient Glass in the Museum of Decorative Arts, Prague: An Overview

A project titled “The Reconstruction of the Lanna Collection of Glass” was launched by Prague’s Museum of Decorative Arts (MDA) in 2016. The core of the collection is Renaissance and Baroque glass. The authors of this note, who collaborated on the project and specialize in these
more recent periods, nevertheless believe that it is important to introduce scholars and others to the museum’s collection of ancient glass.

Although ancient glass forms one of the lesser-known collections in the MDA, it consists of more than 400 items, chiefly vessels. Individual pieces or small groups are frequently featured in exhibitions, catalogs, and other publications,1 but the collection as a whole, which was formed over a century, has not previously been studied. The largest number of objects are connected with the activities of Baron (Freiherr) Vojtěch Lanna (Czech, 1836–1909). While Lanna was a significant donor of ancient glass (as shown in Table 1), his contributions to the collection were even more extensive. Before 1906, he inspired other collectors to add to the museum’s collection, and he also initiated purchases on its behalf from major European antiques dealers. According to Karel Chytíl, the MDA’s director from 1895 to 1911, the collection of glass in 1909 “made up a closed and systematic whole embracing all periods and countries.”2 It was then expanded only sporadically until the late 1970s.

The earliest historical periods in the collection are represented by an opaque blue glass scarab from Egypt3 and Hellenistic bowls made in molds4 and formed around cores. Most of the early vessels are dated to the first to fourth centuries A.D., and they came from the western Roman Empire and the eastern Mediterranean. Finds from the fifth to seventh centuries include Byzantine glass from the eastern Mediterranean and glass from Frankish Germany.

Lanna’s private collection contained at least 450 vessels and other objects made of glass. Before 1906, he donated about 180 vessels to the MDA,5 most of which had been found in Italy. In the museum’s records, Aquileia is listed as the findspot for 44 of these vessels, and many others may have been made there or in Altino. They are surely good from disturbed graves dating from the first and second centuries A.D. Among them are lidded burial urns, aryballoi, numerous toilet bottles of different forms (Fig. 1), and “candlestick unguentaria.”

The vessels supplied by Lanna to the MDA from 1886 to 1906 are generally simple in form and undecorated.

The major part of Lanna’s private collection, consisting of 273 vessels and other objects, including a number of cases of ancient glass fragments, was auctioned by the Lepke company in Berlin in 1911, two years after the collector’s death.6 Illustrations and brief descriptions in the catalog7 show the most valuable specimens: more than 50 core-formed vessels, nine fragments of cameo glass, millefiori bowls, fragments of a bowl with an engraved figural scene, 16 jugs, six double-tube cosmetic bottles, and other forms. Other vessels from Lanna’s collection were eventually acquired by museums in Hamburg,8 Cologne,9 and Corning,10

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3. Scarab no. 79244, from the collections in the Mnichovo Hradiště château, property of Count Wallenstein.

4. Brzová [note 1], p. 63 and fig. 4, no. 3725.


7. Ibid., table, J–O.


TABLE 1
Chronological Overview of the Ancient Glass Collection in the Museum of Decorative Arts, Prague

<table>
<thead>
<tr>
<th>Year</th>
<th>Donated by</th>
<th>Purchase</th>
<th>MDA Inv. No.</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>1886</td>
<td>V. Lanna</td>
<td>L. &amp; L. Hamburger, Frankfurt am Main</td>
<td>404/1–108, 500, 760–763</td>
<td>Miscellaneous, incl. Aquileia</td>
</tr>
<tr>
<td>1887</td>
<td>V. Lanna</td>
<td>L. &amp; L. Hamburger, Frankfurt am Main</td>
<td>968–979</td>
<td>Near Capua, 25–180 crowns</td>
</tr>
<tr>
<td>1888</td>
<td>V. Lanna</td>
<td>R. Forrer, Strasbourg</td>
<td>2882/1–105, 2883/1–61</td>
<td></td>
</tr>
<tr>
<td>1889</td>
<td>V. Lanna</td>
<td>L. &amp; L. Hamburger, Frankfurt am Main</td>
<td>3233</td>
<td></td>
</tr>
<tr>
<td>1890</td>
<td>V. Lanna</td>
<td>L. &amp; L. Hamburger, Frankfurt am Main</td>
<td>4908, 4909</td>
<td></td>
</tr>
<tr>
<td></td>
<td>F. Bock</td>
<td>R. Forrer, Strasbourg</td>
<td>10429–10434, 10507–10509</td>
<td>Cyprus (catalogued in 1906)</td>
</tr>
<tr>
<td></td>
<td>L. &amp; L. Hamburger, Frankfurt am Main</td>
<td>3719–3729</td>
<td>Syria</td>
<td></td>
</tr>
<tr>
<td>1892</td>
<td>V. Lanna</td>
<td>L. &amp; L. Hamburger, Frankfurt am Main</td>
<td>5005–5009</td>
<td></td>
</tr>
<tr>
<td>1896</td>
<td>Th. von Graf, Vienna</td>
<td>E. Ritter Daubek</td>
<td>5470–5488</td>
<td>Foothills of Lebanon, near Beirut</td>
</tr>
<tr>
<td>1906</td>
<td>V. Lanna</td>
<td>L. &amp; L. Hamburger, Frankfurt am Main</td>
<td>6785, 6789–6794</td>
<td>Syria, between Jaffa and Sidon, and at Mount Carmel, 65–400 crowns</td>
</tr>
<tr>
<td></td>
<td>Th. von Graf, Vienna</td>
<td>E. Ritter Daubek</td>
<td>6787, 6788</td>
<td>Nazareth, foothills of Mount Carmel</td>
</tr>
<tr>
<td>1923</td>
<td>Leo Bondy</td>
<td>E. Ritter Daubek</td>
<td>10694–10706</td>
<td>Archaeological research in Beirut</td>
</tr>
<tr>
<td>1932</td>
<td>G. Pazaurek</td>
<td>E. Ritter Daubek</td>
<td>16861–16880</td>
<td></td>
</tr>
<tr>
<td>1933</td>
<td>Moser Collection</td>
<td>E. Ritter Daubek</td>
<td>18709/1–3</td>
<td></td>
</tr>
<tr>
<td>1939</td>
<td>Dr. Vodrážka</td>
<td>H. Schicková</td>
<td>24628</td>
<td>Split</td>
</tr>
<tr>
<td></td>
<td></td>
<td>H. Schicková</td>
<td>24645</td>
<td>Egypt</td>
</tr>
<tr>
<td>1945</td>
<td>Josef Johann Hossner (confiscated)</td>
<td>E. Ritter Daubek</td>
<td>79078, 79079, 79088</td>
<td>Blízce a Mariánských lázní collection</td>
</tr>
<tr>
<td>1946</td>
<td>Count Clary-Aldringen (confiscated)</td>
<td>E. Ritter Daubek</td>
<td>78899, 78900</td>
<td>Teplice-Šanov château collection</td>
</tr>
<tr>
<td></td>
<td>Count Wallenstein (confiscated)</td>
<td>E. Ritter Daubek</td>
<td>79244</td>
<td>Mnichovo Hradiště château collection</td>
</tr>
<tr>
<td>1948</td>
<td>A. Srbová</td>
<td>E. Ritter Daubek</td>
<td>79442</td>
<td></td>
</tr>
<tr>
<td>1953</td>
<td>R. Just</td>
<td>A. Grušová</td>
<td>33355, 33356</td>
<td>200 Kč</td>
</tr>
<tr>
<td>1966</td>
<td>V. Tučková</td>
<td>A. Grušová</td>
<td>68907</td>
<td></td>
</tr>
<tr>
<td>1967</td>
<td>E. Hloupý</td>
<td>A. Grušová</td>
<td>71076–71115</td>
<td>Syria, near Homs</td>
</tr>
<tr>
<td>1976</td>
<td>Starožitnosti antiques shop</td>
<td>A. Grušová</td>
<td>82006</td>
<td></td>
</tr>
<tr>
<td>1977</td>
<td>Starožitnosti antiques shop</td>
<td>A. Grušová</td>
<td>84687, 84688</td>
<td>6000 Kč, 2000 Kč</td>
</tr>
<tr>
<td></td>
<td>Starožitnosti antiques shop</td>
<td>A. Grušová</td>
<td>85458</td>
<td>3000 Kč</td>
</tr>
</tbody>
</table>
and probably elsewhere. Only a few items were purchased by Karel Chytil for the MDA, including a base made of gold glass dating from the fourth century.\(^{11}\)

In 1886, the MDA purchased from the L. & L. Hamburger company in Frankfurt a series of core-formed vessels and a gold brooch (no. 979) that were said to have originated "near Capua," Italy. These alabastra, oenochoes, and lentoid aryballoi, mostly of blue glass with feathery decoration, zigzag lines, and combed arcades, may have come from disturbed graves and were probably made in Italy (Fig. 2). According to the typology of Donald B. Harden, they belong to Mediterranean group 2, dated to the fourth to early third centuries B.C.\(^{12}\)

Additional pieces (especially from German territory) were supplied in the 1890s by Robert Forrer,

\(^{11}\) Coll. Lanna II [note 6], no. 1655 (today, MDA no. 11962); Drahotová and Brožková [note 5], no. 23.

an antiques dealer from Strasbourg, France. Thanks to Forrer, the MDA now houses more than 40 vessels from late Roman burial sites in Mainz and from the Migration Period in Niederbreisig am Rhein. Forrer also donated items from France and Rome, as well as three small Islamic facet-cut bottles dating from the ninth and 10th centuries (no. 5556a–c).13

The remaining vessels in the MDA’s collection of ancient glass came from the eastern Mediterranean. In 1890, Dr. Franz Bock, a canon, art historian, and collector, donated to the museum nine vessels from Cyprus: “candlestick unguentaria,” globular bottles, and tube-shaped bottles (Fig. 3).

Another series of vessels from the L. & L. Hamburger company made its way to the museum in that same year, with “Syria” listed as the place of origin. This group of 11 vessels contained a deep cast bowl of amber glass from the second or first century B.C., as well as several jugs from the first to third or fourth centuries A.D. (Fig. 4).14

More information is available concerning seven vessels donated in 1896. According to a letter from L. Hamburger,15 these objects came from disturbed graves located between Jaffa and Sidon, and from the vicinity of Haifa and Mount Carmel. They include a mold-blown bottle with a grape design (no. 6789)16 and three vessels decorated with identical blue zigzag trails: a jar with two handles (no. 6792),17 a hemispherical bowl, and an amphoriskos with a single handle (Fig. 5). Parallels among late Roman vessels came from excavations in present-day Israel.18

15. A copy of a letter in German only has survived in acquisition book 6, with nos. 6789–6794.
17. Brožková [note 1], p. 64.
The find-places of additional vessels in the collection are relatively precise. The first series, donated in 1894 by Eduard Ritter Daubek, a politician, traveler, and art collector, was acquired from the “foothills of Lebanon near Beirut in Syria,” and another series reportedly came “from archaeological research in Beirut.” The two series contain bottles of different forms, dating from the second and third centuries, as well as bowls, sack-shaped beakers, a double-tube cosmetic bottle, and a necklace with millefiori beads. The oldest object among them is a toilet bottle of opaque dark red glass from the first century A.D., and the most recent is a bottle with optic-blown ribs. Similar specimens were found in Israel dating up to the Byzantine period (fifth and sixth centuries) and even into the Umayyad period (Fig. 6).

Theodor von Graf, an ambassador to Egypt and an antiques dealer in Vienna, sold two vessels to the MDA in 1896. The highlight of the ancient glass collection is a small jug with two handles from the vicinity of Nazareth, dating from the fourth or fifth century (Fig. 7). The second vessel, a three-handled double-tube cosmetic bottle, from the foothills of Lebanon near Mount Carmel, is probably of the same date (no. 6788).


After World War I, the art collector Leo Bondy donated his collection, including several ancient vessels, to the museum, and in 1932 Gustav Pazaurek provided a small series of vessels, of various dates and from different locations. Apart from bottles and toilet bottles, his gift featured a first-century A.D. “lotus beaker” (no. 16878), probably of Syrian provenance, and a “dolphin flask” (no. 16871), a type that was made in the Rhine Basin between the second and fourth centuries. The series also contained a small jug of opaque white glass with relief decoration (no. 16870), and a date-shaped bottle (no. 16872) that was purchased from the Lanna Collection at an auction in Berlin.

Shortly after World War II, the MDA received items from the confiscated property of German art collectors and the Czech aristocracy. Examples include the collections of Josef Johann Hossner from the Planá u Mariánských Lázní château, Count Wallenstein in the Mnichovo Hradiště château, and Count Clary-Aldringen in the Teplice-Sanov château. The museum also sporadically obtained small donations from collectors and made purchases in the Starožitnosti antiques shop in Prague.

The last major series of acquisitions, consisting of 40 vessels and pieces of jewelry, possibly from the environs of Homs, arrived at the MDA in 1967 from the estate of Emanuel Hloupý (Figs. 8 and 9). Among these objects were a deep ribbed bowl (no. 71091), a pear-shaped toilet bottle of opaque red glass, a jug of purple glass, several other toilet bottles, and a feeding bottle, all of which date from the first or second century A.D. Most of the other vessels from the Hloupý estate are late Roman. They include an ovoid jug with a trail on the neck (no. 71076) and a variant with a tall, slender neck with several rows of trails; a jug with traces of blue glass in the main light green glass (no. 71113); and two cosmetic jars, one of rich blue glass with a zigzag trail applied between the rim and the body, and the other a two-handled jar of light blue-green glass (see Figures 8 and 9). One of two double cosmetic bottles is a luxury specimen with elaborate handles, and it has been

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22. Ibid., p. 65, no. 47.
25. Coll. Lanna II [note 6], no. 1745 (two vessels) = Coll. Pazaurek, nos. 1508 (today, MDA no. 16870) and 1507 (date-shaped bottle; today, MDA no. 16872).
26. Hloupý was an art collector and patron who worked on the construction of a sugar refinery in Syria in the 1960s.
27. Hejdová [note 1], p. 11, bottom.
28. The most similar parallels are found in Isings [note 14], pp. 150–151, form 120d.
displayed several times (no. 71088). The group also includes an amphoriskos of yellow glass, with handles of blue glass (no. 71079). The highlight of the series is a jug with four handles, a globular body, and a folded foot; it dates from the Byzantine period (no. 71078). Parallels from the fifth and even sixth centuries are known. The Hloupý Collection also contains several pieces of late Roman jewelry (nos. 71110, 71111, and 71114): circular pendants with relief decoration of horses, and jug- and basket-shaped pendants from Syria/Palestine (nos. 71112 and 71115).

The ancient glass collection in Prague’s Museum of Decorative Arts evolved, at an uneven pace, over a period of nearly 100 years. The time before 1906 is associated primarily with Vojtěch Lanna’s efforts to create in the museum an overview of the development of glass. His death in 1909 was followed by a slower period of acquisition that was broken only with the arrival of the donation by Emanuel Hloupý, who provided a series of high-quality glasses from the eastern Mediterranean.

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30. Hejdová [note 1], cover.


32. For circular pendants, see, for example, Stern [note 31], pp. 378–382, nos. 211–215.

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**Geography of Antimony in Roman and Early Medieval Colorless Glass**

This note, provided as an interim and summary report on research made possible by the Rakow Grant for Glass Research, is an indication of what can be achieved from the synthesis of a large amount of geographically recorded glass data. Specifically, it focuses on changing patterns in antimony in colorless glass in Britain between the third and fourth centuries. The assumption is that antimony falls out of use in the third century, and this can be used to track Britain’s access to fresh glass and the glass trade.

As part of my doctoral dissertation at the University of Oxford, I assembled an extensive database of chemical values of glass. The glass values were taken from previous volumes of the *Journal of Glass Studies*, the *Annales* of the International Association for the History of Glass (AIHV), Historic England Research Reports (formerly English Heritage Reports and Ancient Monument Laboratory Reports), and other literature from the authors who published in those journals. These values were expanded by fresh analyses conducted at the Research Laboratory for Archaeology and the History of Art at the University of Oxford. This database approach was used to better address the nature of glass in Roman and early medieval Britain, particularly patterns of sourcing and recycling.

* * *

**Acknowledgments.** This note would not have been possible without the generosity of the Rakow Grant for Glass Research, which was awarded by The Corning Museum of Glass. I am especially grateful to two members of the staff of the Juliette K. and Leonard S. Rakow Research Library there: James A. Galbraith, chief librarian, for all of his assistance, and Gail P. Bardhan, reference and research librarian, whose encyclopedic knowledge of the collection was invaluable. I also thank Peter Bray of the University of Oxford for his collaboration on Roman antimony.

1. The Rakow Research Library, which contains the world’s largest collection of works on glass, was immensely helpful in this study. It provided access to otherwise unavailable out-of-print books and gray literature containing published values of chemically analyzed first- to eighth-century glass, predominantly from western Europe. A complete list of the papers used is available from the author.
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