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## Forgotten glass from Prague in the collections of the Museum of decorative arts in Prague

### ANNOTATION

In 1940 and 1941 The Museum of Decorative Arts in Prague bought eight sets of glass from Prague buildings without further context of their discovery. The assemblages comprise of Gothic, late Gothic and Renaissance glass. Most represented is Renaissance glass, which comes from one large and four smaller sets. These collections enlarge the number of sites with glass finds in the Malá Strana and Old and New Towns of Prague, and present types of glass in the late Gothic style hitherto almost unknown from the Prague environment. Chemical analyses performed by the SEM/EDS method revealed not only the variability of the composition in all periods, but also indicate the possible origins of the glass products.

### SUMMARY

The collections of the Museum of Decorative Arts in Prague contain eight sets of glass (S1–S8), sold to the museum in 1940 and 1941 by the sculptor and painter Leonard Rotter. The glass came from several Prague buildings without further context of the discovery. This text presents this historical glass using the terminology of art-historical styles “regional Gothic”, “Renaissance” and “Baroque”, to which the glass belongs to and whose aesthetics it copies. Within these periods, the glass can be precisely defined both in terms of shapes and – which is very interesting – also in the glassmaking technology used.

Selected fragments of the referred glass vessels were subjected to 19 chemical analyses (**A1–A19**), carried out by the SEM/EDS method (Table 1). Using a scanning electron microscope (SEM), the morphology of the glass in section was observed and the chemical composition was identified (EDS). Analyses were performed on a Jeol JSM 6510 electron microscope equipped with an EDS detector SSD Inca (Oxford Instruments) in backscattered secondary electron (BSE) mode.

The S1 assemblages from an unknown site and from the older layer of the filling of the well in Mostecká Street (S7) are marked as Gothic glass (Figs 2–6) and dated from the second half of the 14<sup>th</sup> to the early or first half of the 15<sup>th</sup> century. These sets include beakers, beakers with applied glass threads and tall beakers with prunts that represent predominance of domestic production. The glass from these sets was made by Gothic technology, i.e. in addition to sand and beech ash, potash ( $K_2CO_3$ , leachate from ash) was added to the batch. This glass was designated as Regional Gothic II (RG II; **A1–A4**).

The sets of glass from the younger layer of the well in Mostecká (S7) and from the “trenches” in Mostecká (S8) were marked as late Gothic and Renaissance (Figs 7–11). The range of vessels and their shapes differs from the previously known finds of domestic provenance from the time of the greatest flourishing of Renaissance glass in the Rudolphine period and can be dated from the 2<sup>nd</sup> to 3<sup>rd</sup> quarter of the 16<sup>th</sup> century. Filigree glass is considered luxury glass, which is represented by four pieces in the MDA sets (Figs 7: 1, 2, 8: 1, 2, 9: 1, 10: 1, 11: 1, 17: 1; **A5, A9**). In late Gothic Germany, red opaque glass was also popular, from which the *kreuse* was made (Figs 9: 7, 10: 7, 11: 7; **A12**). Assemblages S7 and S8 also contain some of the oldest goblets found in Prague (Figs 9: 2, 3, 10: 2, 3, 11: 2, 3; **A10, A11**) and also some types of late Gothic vessels such as *krautstrunk* (Figs 7: 3, 8: 3; **A6**) and *stangenglas* (Figs 7: 4, 8: 4; **A7**), so far unknown from Prague. These vessels were made of Regional Gothic I (RG I) type glass, which continued to be used in the transitional period between Gothic and Renaissance, when Renaissance technology was slowly being introduced. Among the analysed samples there is a goblet (Figs 9: 2, 10: 2, 11: 2; **A10**), whose advanced shape predated glassmaking technology, or technology lagged behind style. On the contrary, in some cases, glass produced by Renaissance technology, but still used for vessels in the late Gothic style, appears already before and around the mid-16<sup>th</sup> century. Filigree glass with white canes were also produced by Renaissance technology – a funnel-shaped cup (Figs 7: 2, 8: 2; **A5**) and a bowl (Figs 9: 1, 10: 1, 11: 1; **A9**). The analysis identified them as regional products, even though their precise processing gives the impression of Venetian glass. Similar chemical composition of the colourless and white glass from the bowl and beaker raises an assumption of the production in the same glass workshop. White glass was made from colourless glass with the addition of Pb-Sn alloy. The red opaque *kreuse* glass (Figs 9: 7, 10: 7, 11: 7; **A12**) was made of potassium-calcium

glass without the addition of refining agent, but with the addition of copper and iron to achieve the red opaque colour.

Renaissance glass from the ante 1620 period forms the large assemblage from Karlovo Square (S4) and four smaller sets (S2, S3, S5, S6; Figs 12–20; A5–A9, A11–A13, A15, A16, A18, A19). Most of the finds are goblets of simple variants (Figs 12: 1, 3–12, 18, 23, 13: 1, 3–5, 7–11, 18: 1, 2, 19: 1, 20). A goblet with lion mascarons on the stem and the foot made of blue glass belongs to the more lavish shapes (Figs 12: 1, 13: 1; A15). Two sets (S4, S6) included jugs with optic blown ribs (Figs 12: 20, 14: 20, 15: 1, 16; A16, A19). Two bottles made of light blue opaque glass can be classified as less common finds – a four-sided bottle made of cased glass and a multi-sided bottle with optic blown lenses (Figs 12: 32, 33, 14: 32, 33). Most of the analysed vessels were made by Renaissance technology. During the production process, the amount of potash ( $K_2CO_3$ ) in the glass batch was significantly reduced, and limestone ( $CaCO_3$ ) was added. Table salt ( $NaCl$ ) started to be included in order to clarify the bubbles. This was confirmed in almost all analysed Renaissance samples (with the exception of A7). In Renaissance, variously coloured and newly also opacified products appear. A light blue-white opaque four-sided bottle (Figs 12: 32, 14: 32; A18) with an increased content of  $P_2O_5$  and the residue of an undissolved apatite particle unequivocally indicates opacifying with the help of bone meal, which was a widespread practice in the Bohemian lands (Jonášová/Cílová 2012, 333, tab. 1: vz. 3).

The glass assemblage from Karlovo Square (S4) contains a fragment of the lower part of a lamp (Figs 12: 25, 14: 25; A17) of a very surprising composition. The low contents of  $K_2O$  and  $MgO$  and the absence of  $P_2O_5$  indicate natron glass into which alumina was introduced by the sand used. Natron glass was made from the mineral salt – natron – mainly in the area of the Roman Empire from the 6<sup>th</sup> century BC and its production continued until the 9<sup>th</sup> century AD (Wedepohl 2003, 13 and 84). The identified composition indicates that the fragment of the lower part may come from an antique pendant lamp, or from a Carolingian funnel-shaped goblet. This find can also be interpreted as an “antique” in the Renaissance period.

The presented finds extend the published collections of Gothic and Renaissance glass from Prague and provide a new perspective on the composition of glass from these periods.

**Fig. 1.** Prague, part of the Prague Heritage Reserve with approximate location of the glass finds (added by S. Babušková to the map downloaded from <geoportal.cz>). **S2** – corner [sic] of Dlouhá / Jlovcová Streets; **S4** – Karlovo Square No. 551/II; **S5, S7, S8** – Mostecká Street No. 274/III (U Hermannů House); **S6** – Újezd No. 450/III; **S1, S3** – sets of unknown location.

**Fig. 2.** Prague, finds from unlocated site S1. Drawing reconstruction of vessels (MDA, inv. no. 25 324). All drawings in this article by H. Sedláčková, 2023.

**Fig. 3.** Prague, finds from unlocated site S1. Collection of Gothic glass (MDA, inv. no. 25 324). All photographs in this article G. Urbánek, 2023.

**Fig. 4.** Prague, find from unlocated site from the set S1 on the Figs 2: 10, 3: 10 (MDA, inv. no. 25 324). The lower part of a beaker with the inward dome in the centre of the base highly pushed up.

**Fig. 5.** Prague 1-Malá Strana, No. 274/III, Mostecká 21, U Hermannů House; S7 set. Drawing reconstruction of vessels from the older layer of the in-filled well (MDA, inv. no. 26 390).

**Fig. 6.** Prague 1-Malá Strana, No. 274/III, Mostecká 21, U Hermannů House, S7 set. Gothic glass from the older layer of the in-filled well (MDA, inv. no. 26 390).

**Fig. 7.** Prague 1, Malá Strana, No. 274/III, Mostecká 21, U Hermannů House; S7 set. Drawing reconstruction of late Gothic and Renaissance glass vessels from the younger layer of the in-filled well (MDA, inv. no. 26 390).

**Fig. 8.** Prague 1, Malá Strana, No. 274/III, Mostecká 21, U Hermannů House; S7 set. Younger layer. **1** – tankard, **2** – beaker decorated with white filigree, **3** – *Krautstrunk*, **4** – *Stange glass*, **7** – lower part of a goblet with a hollow stem (?), **8** – storage bottle (MDA, inv. no. 26 390).

**Fig. 9.** Prague 1-Malá Strana, Mostecká. Building trench probably in the No. 274/III; S8 set. Late Gothic and Renaissance glass; i. a. **11** – fragments of the bottom and of the upper part of a bottle-shaped vessel or jug (MDA, inv. no. 26 502).

**Fig. 10.** Prague 1-Malá Strana, No. 274/III, Mostecká 21, U Hermannů House; S8 set. Range of the finds (MDA, inv. no. 26 502).

**Fig. 11.** Prague 1-Malá Strana, No. 274/III, Mostecká 21, U Hermannů House; S8 set. **1** – fragments of a bowl with white filigree, **2, 3** – fragments of goblets, **7** – lower part of a red opaque glass *kreuse*, **8** – upper part of a table

bottle with ribs, **9, 10** – storage bottles, **11** – fragments of the bottom and of the upper part of a large bottle-shaped vessel or jug (MDA, inv. no. 26 502).

**Fig. 12.** Prague 2-New Town, No. 551/II, Karlovo Square 34; S4 set. Renaissance glass. This set consists of 13 goblets, mainly lower parts with differently shaped stems (**1, 3–12, 18, 23**). Only in four cases were the cups also preserved – one goblet with a double ring on the stem has a part of a half-oval cup with optic blown decoration; in two cases only undecorated half-oval cups remained (**3, 12, 23**). A cup of glass with the remains of coloured enamel painting probably had a chalice shape (**18**). According to the small fragments of the cups above the stems, a half-oval shape can also be assumed for the other two pieces (**7, 8**). Others: **13** – beaker (*spitzbecher*), **16** – beaker (*korbmuster*), **19** – taller beaker, **20** – jug, **22** – lens-shaped bottle, **24** – beaker or *Stange glass*, **25** – lamp, **26, 27, 29** – storage bottles, **31** – four-sided bottle, **32** – four-sided undecorated bottle, **33** – six-sided bottle. Fragments Nos. 2, 14, 15, 17, 21 and 28 and 30 were not drawn (MDA, inv. no. 25 447).

**Fig. 13.** Prague 2-New Town, No. 551/II, Karlovo Square 34, S4 set. **1, 3–5, 7–11** – remains of Renaissance cups, **13** – beaker (*spitzbecher*; MDA, inv. no. 25 447).

**Fig. 14.** Prague 2-New Town, No. 551/II, Karlovo Square 34; S4 set. **20** – upper part of a jug with optic blown ribs and perhaps the rest of her bottom, **22** – lower part of a lens-shaped bottle, **24** – lower part of a beaker or *Stange glass* made of violet glass, **25** – lower part of a lamp, **32** – the remains of the lower part of a four-sided bottle made of cased glass, **33** – lower part of a six-sided bottle with optical lenses (MDA, inv. no. 25 447).

**Fig. 15.** Prague 1-Malá Strana, No. 450/III, Újezd 40; S6 set. **1** – fragment of a jug, **2–4** – pharmacy bottles, **5** – blood suction flask, **6** – faceted ball (MDA, inv. no. 25 005).

**Fig. 16.** Prague 1-Malá Strana, No. 450/III, Újezd 40; S6 set. Upper part of a jug with ribs (MDA, inv. no. 25 005).

**Fig. 17.** Prague 1-Malá Strana, No. 274/III, Mostecká 21; S5 set. Range of Renaissance glass finds (MDA, inv. no. 25 461).

**Fig. 18.** Prague 1-Old Town, corner [sic] house between Dlouhá and Jalovcová Streets; S2 set. Renaissance goblets (MDA, inv. no. 25 372).

**Fig. 19.** Prague, unknown location; S3 set. **1** – fragment of a Renaissance goblet, **2** – fragment of a Baroque beaker (MDA, inv. no. 25 378).

**Fig. 20.** Prague, unknown location; S3 set. Remains of a Renaissance goblet with optical diamond decoration (MDA, inv. no. 25 378).

**Tab. 1.** Table of chemical analyses of glass sets S1, S4, S6, S7, S8 from MDA by the SEM/EDS method [wt. %].

*Translation by Linda Foster*