

## Glass art in the middle ages in Hungary

Orsolya Mészáros

*The purpose of the article is a short and general summary of glass art in medieval Hungary; specifically, the production process (glass workshops) and the artefacts (glass fragments). Hungarian archaeological research has mostly focused on typological examination of glass products and artefacts. This focus is due to the fact that there have been relatively few excavations of glass ateliers from the 11<sup>th</sup> to the 16<sup>th</sup> century. To date, workshops from this period have been identified only in Pásztó, Diósjenő (Northern Hungary) and Visegrád (Central Hungary), while a great number of glass fragments have come to light in excavations on different sites of royal palaces and urban settlements.*

**Key words:** high fragmentation, royal and urban environment, Venetian imports, Buda, Pásztó, Diósjenő, Visegrád

The Hungarian academic research of medieval glass is based on the largest archaeological glass fragment collection which is located in Budapest, where pieces were found in different sites of the medieval Buda, in the environments of the royal palace and the urban settlement. Because of the high degree of fragmentation of the artefacts and the loss of their structure, a significant amount of the reconstruction work could only be performed by drawing. The scholar, K. Gyürky published several studies and monographs on the Buda glass fragments, furthermore she developed the methodology of the theoretical drawing for the reconstruction of glass articles.<sup>1</sup> Later her followers published studies of the medieval glass fragments of the Visegrád royal palace and smaller archaeological sites (Mester 1997). As a result, more archaeological data of Hungarian medieval glass manufacturing has come to light. Recently, scholars have also had the opportunity to lead more excavations of glass manufacture sites.

### Glass artefacts in Hungary

What determines the manner of Hungarian archaeological glass research is the condition of the artefacts. Medieval glass vessels are too fragmented and they come to light in archaeological excavations. It is only the late 15<sup>th</sup> (more often the 16<sup>th</sup> century), that whole and intact glass vessels have been reserved in collections. However, these vessels were mostly gifts and ornaments so we have very little information on everyday glassware. Academic analysis of the medieval fragments started in the 1980s<sup>2</sup> by classification based on typology, using the analytical method of drawing reconstructions and analogies. The chronology is based on accompanying finds and analogies. Archaeometrical examinations have been performed in a few cases.<sup>2</sup>

The vessels produced in Hungary preserved the influences of imported glass. Their larger, thicker, and less finely fashioned details are suggestive of the Venetian and Bohemian pieces favoured at the time. The most characteristic pieces were drinking glasses, lamps, dishes, jugs, cups, bottles and panes of glass (Gyürky 1974; 1987).

Apart from some early glass finds from the 11–13<sup>th</sup> centuries, more intensive glass usage can be dated to the late 13<sup>th</sup> and the 14<sup>th</sup> century. This period is characterised by small and simply decorated objects: drops decorated glasses, optical decorated cups, jugs, bottles and lamps (Fig. 1, 2, 3). The fragments usually come from the excavations of royal courts or the ecclesiastical centres. From the mid 13<sup>th</sup> and the beginning of the 14<sup>th</sup> century, the glass ves-

<sup>1</sup> Gyürky 1971; 1974; 1982; 1986; 1987; 1991; 1998.

<sup>2</sup> Buda royal palace and urban environment partly, Visegrád royal palace, Diósjenő wooden huts, Pásztó monastic huts partly (Fórizs 2008, 120–125; Gratuze et al. 2002, 565–572).



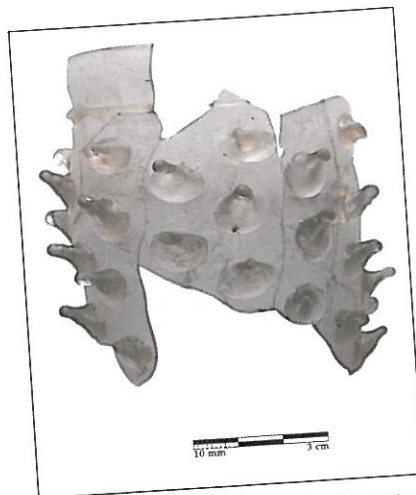


Fig. 1. Drops decorated Venetian drinking glass. Vác city, Hungary (photo: J. Bicskei).  
Obr. 1. Benátská číše zdobená nálepy. Město Vác, Maďarsko (foto: J. Bicskei).

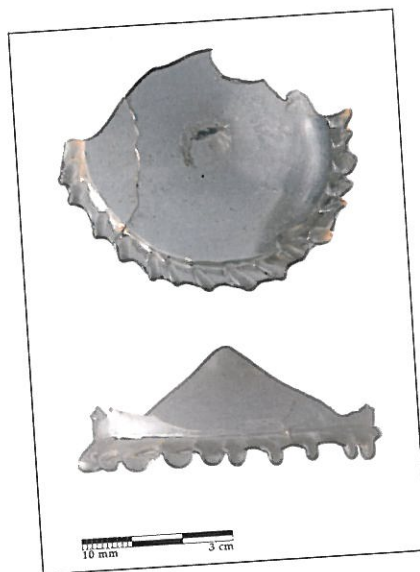


Fig. 2. Decorated ring-footed Venetian drinking glass. Vác city, Hungary (photo: J. Bicskei).  
Obr. 2. Štípaná patka čišky, benátské nápojové sklo. Město Vác, Maďarsko (foto: J. Bicskei).

sels were Italian imports due to the commercial and cultural connections of the Neapolitan Angevin dynasty in the Hungarian monarchy. One of the most frequent and characteristic glass objects was the semi-transparent cup with drops or with optical decorations. They were delivered from the Italian glass centre: Murano and Venice. In the archaeological collections we find copies of such cups from Hungarian or Bohemian manufactures as well, but their quality – in regards to their colour and decoration – was quite different.

The most fashionable and popular glass vessel, the drop ornamented-glass was a typical Venetian product. The small, barrel-formed, fine and transparent glass was decorated with many small drops (Fig. 1, 2). As for the bottles, the Italian anghestera or the double conical bottles occurred in the royal centres, both were decorated with canelures and ribbings. While these vessels were found in secular and ecclesiastical environments, the glass lamps mostly occurred in churches and cloisters. Illustrations of the Angevin legendary manuscripts or woodcuts also represented glass lamps used for different activities in the monastery (for studying in the scriptorium, for the liturgy in church). We know these

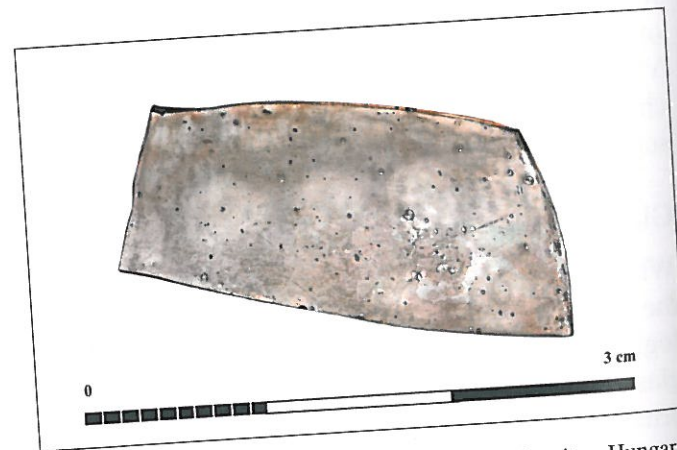


Fig. 3. Optical decorated Venetian glass. Vác city, Hungary (photo: J. Bicskei).  
Obr. 3. Opticky zdobená čiška, benátské sklo. Město Vác, Maďarsko (foto: J. Bicskei).

types of objects existed in the secular environment as well. There was a glass depot explored in a burgher's house in Buda (Gyürky 1991; Mester 2010).

It is very probable that the spread of glass production into the urban environment was also influenced by Italian glass merchants and craftsmen. According to written sources, at the turn of the 14–15<sup>th</sup> century Venetian glass makers moved to Hungary. In 1360 Peter Glaser founded a glass workshop in Körmöcbánya (Northern part of medieval Hungary, in present day Slovakia). In 1408 Martino de Ungaria pursued his studies in Murano, near Venice at an Italian master's atelier. We know of "Antonius italicus vitripar" in 1438 and "Thomas vitripar" in 1451, which maintained houses in Buda and were granted civic rights of the town.

By the 15<sup>th</sup> century, glass usage spread. Simple vessels were used by different social strata. It is proven by the glass finds in various spots of archaeological excavations (castles,

towns and villages, too). It is presumed that drinking glasses still remained popular; but bottles had more variable forms. Glass as material started to spread into architecture as panes in lead windows (Fig. 4, 5). The first trace is the pane glass fragments from Esztergom, the archbishopric centre, from the turn of the 14–15<sup>th</sup> century. By the 15<sup>th</sup> century the usage of pane glass and lead windows spread in royal courts as well. In the royal palaces of Buda and Visegrád, many pieces of pane glass were found. The late 15<sup>th</sup> century workshop in Visegrád (see below) was very likely the atelier that supplied the court with the pane glass as a high number of such fragments were found in the surrounding of the furnaces. The record from 1491 strengthened this idea. The account book of Hypolit de Este, the archbishop of Esztergom stated that a glass craftsman in Visegrád supplied the Esztergom royal palace with 5000 panes of glass. By the late 15<sup>th</sup> century and the 16<sup>th</sup> century rich aristocrats followed the fashion of using pane glass in their palaces and buildings (Mészáros 2008; 2010).

Another significance of the 15<sup>th</sup> century was the new level of the richness of decoration, the elements of Renaissance motives. Luxurious vessels and artefacts appeared in Buda capital. The artefacts were multi-coloured, decorated by figures and shields as well as golden and enamel painted pieces. By the end of the century it is presumed that the Hungarian glass production grew into its own as an independent industry, but the finest pieces were still imports from Italy. The Hungarian monarchy maintained strong commercial connections with Venice and other glass manufacture centres (Fig. 6).

### Glass production in Hungary

In the age of the Arpadian dynasty (11<sup>th</sup>–13<sup>th</sup> century) the ecclesiastical centres, especially the monasteries, embodied the centres of glass production. They filled their own necessities, supplying the church – both architectural and the liturgical needs – with glass objects. (See below the excavation of the Páztó monastery.) Besides the church, the monarch was the main customer of glass artefacts. We have data from the 14<sup>th</sup>–15<sup>th</sup> centuries that glass ateliers were founded to satisfy the needs of the monarch and the royal court. These ateliers were mostly near the royal palace. (See the Visegrád workshop below.) In these workshops, craftsmen were very often invited to work from abroad. In the late Middle Ages, glass usage began to spread, which re-

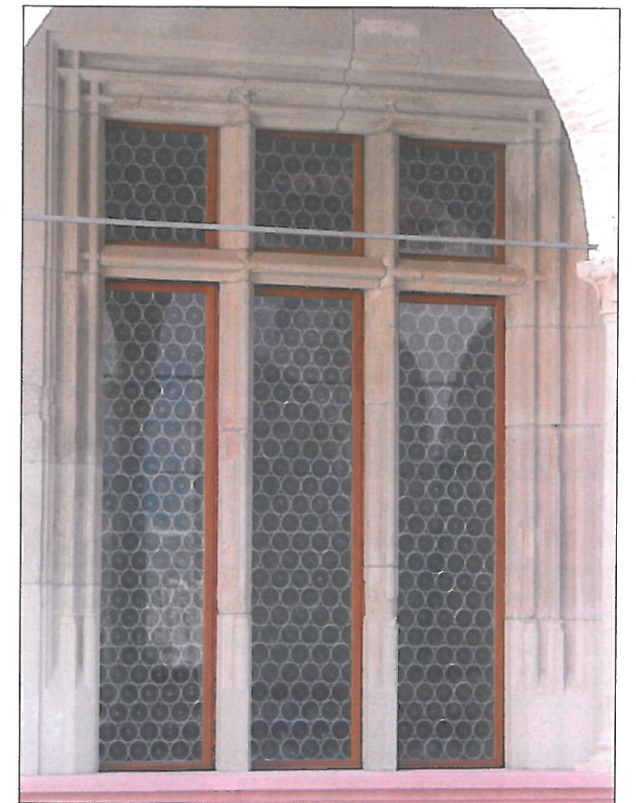


Fig. 4. Reconstructed lead window. Royal palace at Visegrád, Hungary (photo: G. Buzás).  
Obr. 4. Rekonstruované okno. Královský palác. Visegrád, Maďarsko (foto: G. Buzás).

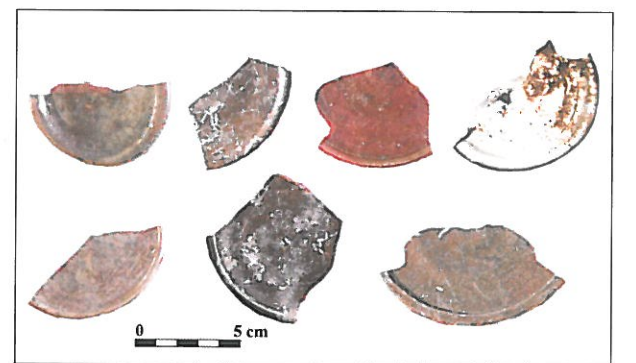


Fig. 5. Fragments of pane glasses. Urban workshop, Visegrád city, Hungary (photo: O. Mészáros).  
Obr. 5. Zlomky okenních terčů. Městská dílna, Visegrád, Maďarsko (foto: O. Mészáros).





Fig. 6. 15<sup>th</sup> century goblet. Somogyvár, Hungary. Hungarian National Museum inv. no. 1929.51 (by Marosi 1987, 648).

Obr. 6. Pohár z 15. století. Somogyvár, Maďarsko. Maďarské Národní Muzeum, inv. č. 1929.51 (podle Marosi 1987, 648).

fragments dated the workshop to the turn of the 12–13<sup>th</sup> century. The latest results of the archaeometrical examinations state that the analysed pieces of glass contained Sodium-calcium-silicat with Ferroxid, while the dendrochronological examination proved that the chops and different basic materials came from the nearby Mátra hill.<sup>4</sup>

**Diósjenő.** Wooden workshop, 14–15<sup>th</sup> century (Fig. 9). This typical medieval wooden atelier was located in Northern Hungary. The excavation campaign was taking place in 1987 and 1995. Location of three huts with different furnaces was explored. The furnaces were made of stone and clustered by clay. The 1<sup>st</sup> furnace was

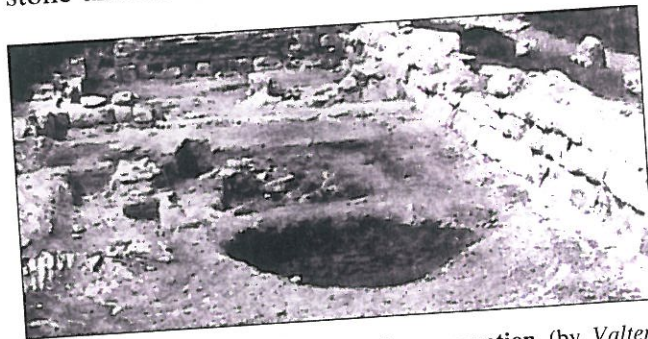


Fig. 8. Pásztó, glass furnace during excavation (by Valter 2002, 434).

Obr. 8. Pásztó, sklářská pec v průběhu výzkumu (podle Valter 2002, 434).

<sup>3</sup> See below the Diósjenő workshop.

<sup>4</sup> Valter 1982; 1994; 2002; Főrizs 2008, 122; Mester 2010, 656.

sulted in manufacturing sites in rural areas as well.<sup>3</sup> Early modern age glass workshops can be easily identified on the basis of surface explorations and written sources. A characteristic chain of glass workshop settlements developed over the centuries, as they exhausted the sources of raw material, glass makers had to always move to new sites. Factories that were isolated and organised for self-sufficiency failed one by one with the establishment of modern large-scale industrial glass production and distribution in the second half of the 19<sup>th</sup> century. Three different sites of explored ateliers will be presented. These are the most well known, documented and analysed workshops (Fig. 7).

**Pásztó.** Cistercian cloister, glass workshop, 12<sup>th</sup>–13<sup>th</sup> century (Fig. 8). The Cistercian monastery (originally Benedictine) in Northern Hungary had a glass workshop on its territory in one of the building complexes for commercial economic purposes. The atelier, discovered in 1985, worked as a two-room atelier of 20 x 7 meter in size. Three stone furnaces were located inside. From the remains of their basement, many glass fragments were dug out. The ceramic

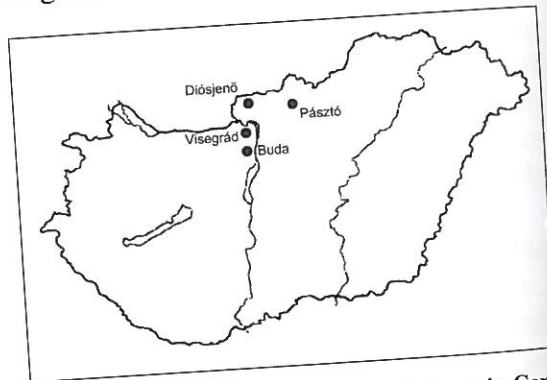


Fig. 7. Excavated medieval glass workshops in Central Hungary.  
Obr. 7. Prozkoumané středověké sklárny ve středním Maďarsku.

2,5 x 3 meter in size. Its long and narrow combustion tube was covered by flat stones, clustered by clay. The arch over the combustion chamber was built with tree branches, as their traces were visible on the inner surface of the clay. At the opening of the furnace, many small stones covered by solidified glass, slag pieces, and fragments of crucibles were also found. It was very likely the blowing furnace. The biggest furnace was 2,65 x 4 meter in size. Its structure and



Fig. 9. Diósjenő, 2<sup>nd</sup> hut: 1 – basement of the hut; 2, 3 – remains of the furnace (by: Mester 2010, 660).



Obr. 9. Diósjenő, sklárna č. 2: 1 – pozůstatky hutě; 2, 3 – reliktů pece. (podle: Mester 2010, 660).

the remains of the glass making process were similar to the previous one. The accompanying finds (ceramics and metal tools) suggest that one hut was used from the end of the 13<sup>th</sup> to the beginning of the 15<sup>th</sup> century while the 2<sup>nd</sup> and 3<sup>rd</sup> huts were erected in the mid-15<sup>th</sup> century. According to the structure of the furnaces and the raw materials of the glass melting, the glass blowing technique remained the same. The only change was the increase in the size of the furnaces.<sup>5</sup>

**Visegrád.** Urban workshop, 14–15<sup>th</sup> century. In the territory of the medieval town two workshops were identified: one from the 14<sup>th</sup> and another from the late 15<sup>th</sup> century. It is very probable that both produced items for the monarch, the aristocrats of the royal curia and the citizens in the immediate area. The earlier workshop was explored in 1984. We must call it a location of glass production instead of



<sup>5</sup> Gyürky – Miklós 1992, 69–90; Mester 1997, 8–10, 105–125; Mester 2010, 659–662.



workshop as its remains were not evident enough for true identification. Furnaces were not explored, but there was a structure of pits and the ruins of a stone surface with millions of glass fragments around with accompanying ceramic and metal finds from the 14–15<sup>th</sup> century. The glass finds involved melting glass, drops of glass, slag and fragments of crucibles. All these traces point to a workshop existed here; however, the ground plan of the workshop could not be sketched or reconstructed. The glass finds suggest that craftsmen produced copies of Italian vessels: dropped glasses and double conical jugs (Mester 1997, 7–8, 127–131; Mester 2010, 657).

The other unambiguous find was a workshop that was a stone building of 29 x 10 meter in size (Fig. 10). The building, composed of four rooms, was divided into two symmetrical workshops. Each workshop consisted of two rooms and in each room there was one furnace. Their size was approximately the same: 3x3 meter: one rectangular and one oval shaped in each workshop for glass blowing and tempering. A storehouse connected to the building, and there was a well outside the building. There were no intact glass objects inside the workshop. Only glass fragments and semi-finished pieces of vessels and window panes came to light (Fig. 5). According to archaeological dating and some written sources, the atelier and its glass production can be dated to the late 15<sup>th</sup> century, and it worked for the royal family and royal court (Mészáros 2008; 2010).



Fig. 10. Visegrád, urban workshop. Remains of the furnaces: 1, 3 – oval; 2, 4 – rectangular (by: Mészáros 2010, 680–682).  
Obr. 10. Visegrád, městská dílna. Pozůstatky pecí: 1, 3 – oválné; 2, 4 – pravoúhlé (podle: Mészáros 2010, 680–682).

### Conclusion

Hungarian archaeological academic research of medieval glass has mostly focused on typological examination of glass products and artefacts. It started in the 1980s' by classification of the largest medieval glass fragment collection which is located in Budapest.

Beginnings of the intensive medieval glass usage in Hungary can be dated to the late 13<sup>th</sup> and the beginning of the 14<sup>th</sup> century. This period is characterised by drops decorated glasses, optical decorated cups, jugs, bottles and lamps. The fragments usually come from the excavations of royal courts or the ecclesiastical centres. From the mid 13<sup>th</sup> and the early 14<sup>th</sup> century a great part of the glass vessels were Italian imports. It is very probable that the spread of glass production into the urban environment was influenced by Italian glass merchants and craftsmen. By the 15<sup>th</sup> century glass usage spread in different social strata. New level of richness of decoration, elements of Renaissance motives appeared on the vessels. The luxurious artefacts appeared mostly in Buda capital. By the end of the century the Hungarian glass production grew into its own as an independent industry, but the finest pieces were still imports from Italy.

As regards the glass production in the medieval Hungary, there have been relatively few excavations of glass ateliers from the 11<sup>th</sup> to the 16<sup>th</sup> century. To date, significant workshops from this period have been identified in Pásztó, Diósjenő (N-Hungary) and Visegrád (Central Hungary). The glass workshop in Pásztó that belonged to the Cistercian monastery is the earliest, it can be dated to the turn of the 12–13<sup>th</sup> century. A typical medieval wooden atelier was located in Diósjenő. It had two periods: one hut was used from the end of the 13<sup>th</sup> to the beginning of the 15<sup>th</sup> century while two huts were erected in the mid-15<sup>th</sup> century. In urban environment, in Visegrád a very well designed and large workshop worked in the late 15<sup>th</sup> century. Its stone building was divided into two symmetrical workshops. It produced items for the order of the monarch, the aristocrats of the royal curia and the citizens in the immediate area.

### Literatur

- Fórizs, I. 2008: Üvegekészítés Magyarországon a kezdetektől a XVIII. századig. (Glass production in Hungary from the beginnings to the 18<sup>th</sup> century.) A Miskolci Egyetem Közleménye A sorozat, Bányászat, 74, 113–136.
- Gratuze et al. 2002: Gratuze, B. – Uzonyi, I. – Kiss, Á. – Elekes, Z. – Mester, E., A study of Hungarian medieval glass composition. Preliminary results. In: Jerem, E. – T. Bíró, K. (eds.), Archaeometry 98. Proceedings of the 31<sup>st</sup> Symposium, Budapest, Hungary, April 26–May 3, 1998, Oxford, 565–572.
- Gyürky, K. 1971: Glasfunde aus dem 13.–14. Jahrhundert im mittelalterlichen Dominikanerkloster von Buda. Acta Archaeologica Academiae Scientiarum Hungaricae, 23, 199–220.
- Gyürky, K. 1974: Venezianische und türkische Importartikel im Fundmaterial von Buda aus der ersten Hälfte des 16. Jahrhunderts, Acta Archaeologica Academiae Scientiarum Hungaricae 26, 413–424.
- Gyürky, K. 1982: Középkori üveg régészeti leletek rekonstrukciójának módszerei, kísérletek néhány budai üvegtöredékekkel (Reconstruction methods of medieval glass finds. Attempts on some glass fragments from Buda), Communicationes Archaeologicae Hungariae 2, 153–167.
- Gyürky, K. 1986: Az üveg. Katalógus. (The Glass. Catalogue.) Budapest.
- Gyürky, K. 1987: Mittelalterliche Glasfunde aus dem Vorhof des königlichen Palastes von Buda, Acta Archaeologica Academiae Scientiarum Hungaricae 39, 47–68.
- Gyürky, K. 1991: Üvegek a középkori Magyarországon. (Glasses in medieval Hungary.) Budapest.
- Gyürky, K. 1998: Az ablakok üvegezéséről és az ablaküvegfestményekről a középkori Magyarországon (Über die Verglasung der Fenster und über die Glasmalerei im mittelalterlichen Ungarn), Budapest Régiségei, 32, 267–290.



- Gyürky, K. – Miklós, Zs. 1992: Középkori üveghuta feltárása a Nógrád megyei Diósjenő közelében (Freilegung einer Glashütte nahe der Gemeinde Diósjenő, Komitat Nógrád. Datierung des Keramik-Fundgutes und der Glashütte), *Archaeologiai Értesítő* 119, 69–90.
- Marosi, E. (ed.) 1987: Magyarországi művészet 1300–1470 körül I–II, Budapest.
- Mester, E. 1997: Középkori üvegek. (Medieval Glasses.) Visegrád.
- Mester, E. 2010: Üvegművesség a középkorban és a kora újkorban. (Glass art in the Middle Ages and the Early Modern Age.) In: Benkő, E. – Kovács, Gy. (eds.), *A középkor és a kora újkor régészete Magyarországon (Archaeology of the Middle Ages and the Early Modern Period in Hungary)*, Budapest, 643–675.
- Mészáros, O. 2008: Archaeological remains of the medieval glass workshop in the 15<sup>th</sup> century royal residence Visegrád, Hungary. In: Flachenecker, H. – Himmelsbach, G. – Steppuhn, P. (eds.), *Glashüttenlandschaft Europa. Beiträge zum 3. Internationalen Glassymposium, Regensburg*, 168–172.
- Mészáros, O. 2010: 15. századi városi üvegműhely és környezete Visegrádon. (A Fifteenth-century Glass Workshop and Its Environs in Visegrád.) In: Benkő, E. – Kovács, Gy. (eds.), *A középkor és a kora újkor régészete Magyarországon (Archaeology of the Middle Ages and the Early Modern Period in Hungary)*, Budapest, 675–689.
- Valter, I. 1982: Das Zisterzienserkloster Páztó. Geschichte und neue archäologische Forschungsergebnisse, *Analecta Cisterciensia*, 38, 129–139.
- Valter, I. 1994: Quelques établissements proto-industriels en Hongrie. In: Pressouyre, L. (ed.), *L'espace cistercien*, Paris, 391–400.
- Valter, I. 2002: Adatok a páztói monostor gazdasági életéhez (Data to the economic life of the Páztó monastery). In: Csiffáry, G. (ed.), *Historia est. Írások Kovács Béla köszöntésére (Historia est. Writings to the honour of Béla Kovács)*, Eger, 425–435.

## Resumé

### O. Mészáros: Sklářské umění středověku v Maďarsku

Archeologický výzkum středověkého skla v Maďarsku se zaměřuje hlavně na typologické zkoumání skleněných produktů a artefaktů. Skleněné nádoby objevené při archeologických vykopávkách se dochovaly velmi torzovitě. Pouze ty z pozdního 15. století, a v daleko větší míře ze 16. století, se dochovaly v nálezových kolekcích v úplnosti. Vědecké zhodnocení středověkých zlomků začalo v 80. letech 20. století typologickou klasifikací založenou na kresebných rekonstrukcích a tvarových analogiích. Základnou se stala největší archeologická sbírka zlomků skel, která je uložena v Budapešti a pochází z různých míst středověké Budy (z prostředí královského paláce i městského osídlení).

Intenzivní využívání skla v Maďarsku lze datovat do pozdního 13. a 14. století. Toto období je charakterizováno malými jednoduše zdobenými nádobami: číše s nálepy nebo číšky, džbány, lahve a lampy s optickým dekorem (Fig. 1, 2, 3). Zlomky obvykle pocházejí z výzkumů královských dvorů nebo církevních center. Nádoby datované do poloviny 13. a počátku 14. století pocházejí z Itálie a jsou dokladem obchodních a kulturních vazeb vládnoucí dynastie neapolských Anjouovců. Nejčastější a nejtypičtější nádobou byla číše z kvalitního skla s nálepy nebo optickým dekorem. Je velmi pravděpodobné, že rozšíření produkce skla do městského prostředí bylo ovlivněno italskými obchodníky a řemeslníky.

Od 15. století se sklo velmi rozšířilo. Jednoduché nádoby byly používány v různých společenských vrstvách. Dokládají to nálezy z archeologických výzkumů různých míst, např. na hradech, ve městech i vesnicích (obr. 4, 5). Typickým znakem tohoto období byla skla bohatě zdobená prvky renesančních motivů. V Budě se objevily luxusní nádoby a artefakty.

Předpokládá se, že koncem 15. století se výroba skla v Maďarsku stala samostatným a nezávislým odvětvím. Nicméně nejjemnější výrobky byly stále dováženy z Itálie (obr. 6).

Co se týká výroby skla ve středověkém Maďarsku, bylo prozatím prozkoumáno relativně málo skláren z období mezi 11. a 16. stoletím. Významné výrobní lokality tohoto období byly rozpoznány v Páztó, Diósjeno (severní Maďarsko) a Visegrad, zatímco velké množství skleněných střepů bylo objeveno při vykopávkách v různých lokalitách královských paláců a městských sídel (obr. 7). V cisterciánském klášteře v Páztó byla sklářská dílna pro tamější oblast. Byla dvoupřístorová o velikosti 20 x 7 m se třemi kamennými pecemi uvnitř. Keramické zlomky datují dílnu na přelom 12. a 13. století (obr. 8). Typická středověká lesní sklárna byla identifikována v Diósjeno (obr. 9). Byly zde prozkoumány tři jednoduché přístřešky s různými pecemi. Doprovodné nálezy (keramické a kovové nástroje) dovolují vyslovit domněnku, že jeden z nich byl používán od konce 13. do začátku 15. století, zatímco ostatní dvě byly postaveny v polovině 15. století. V městském prostředí, ve Visegradu, byly identifikovány dvě dílny. Jedna ze 14. a druhá z pozdního 15. století. Významnější byla ta z 15. století: samotná stavba složená ze 4 místností byla rozdělena do dvou symetrických částí (obr. 10). Je velmi pravděpodobné, že obě dílny produkovaly výrobky pro krále, dvorní šlechtu a obyvatele blízkého okolí.