



ANTÆUS

37

ANTÆUS

Communicationes ex Instituto Archaeologico

37/2021

Sigel: Antaeus

ANTÆUS

37

Communicationes ex Instituto Archaeologico

Communicationes ex Instituto Archaeologico

Distribution of exchange copies by
the Library of the Institute of Archaeology, Research Centre for the Humanities
H-1097 Budapest, Tóth Kálmán u. 4.

General Editor:

FRIDERIKA HORVÁTH

Editorial Board:

VIKTÓRIA KISS, BÉLA MIKLÓS SZŐKE, LÁSZLÓ TÖRÖK, CSILLA ZATYKÓ,
MIHAEL BUDJA, CLAUS VON CARNAP-BORNHEIM,
SIR DAVID M. WILSON

The publication of this volume was supported by special grants of the Hungarian Academy of Sciences
and the Secretariat of Eötvös Loránd Research Network

HU ISSN 0238-0218

Desktop editing and layout by Archaeolingua
Printed in Hungary by the Prime Rate Kft.
Cover by H&H Design

INHALT – CONTENTS

<i>List of Authors</i>	6
<i>Abbreviations</i>	7
<i>In memoriam László Török (1941–2020)</i>	10
<i>István Koncz – Ádám Bollók: Elephant ivory artefacts in the Carpathian Basin during the 6th and 7th centuries: Chronology, distribution and cultural context</i>	15
<i>Miklós Takács: Einige siedlungsarchäologische Überlegungen zum Inhalt der Begriffe „Dorf“ und „Weiler“ im Kontext des Karpatenbeckens des 10.–11. Jahrhunderts – Zur Gräberfeldtypologie von László Kovács</i>	43
<i>László Kovács: Reflexionen auf die Abhandlung von Miklós Takács</i>	67
<i>László Révész: Friedhöfe und Siedlungen im Karpatenbecken des 10.–11. Jahrhunderts: Einige Anmerkungen zur Abhandlung von Miklós Takács</i>	79
<i>Péter Langó: Notes on the 10th–11th-century relations of female jewellery found in the Carpathian Basin with South-Eastern Europe reflected by two types of jewellery</i>	91
<i>György Terei: The relationship of Árpadian-age castles and settlements in Pest county</i>	173
<i>Elek Benkő: The medieval water supply system of Pilis Abbey</i>	193
<i>Katalin Szende: The material culture of urban pragmatic literacy in medieval Hungary</i>	225
<i>Bianka Gina Kovács: Late medieval ceramics with stamped decoration in Central Transdanubia</i>	249
<i>Ágnes Kolláth: The research history of early modern pottery in Hungary</i>	283
<i>Gyöngyi Kovács: Stoves in the Ottoman castle at Barcs, Drava valley, Hungary</i>	329
<i>Béla Miklós Szőke: Gussform eines türkisch-balkanischen Kopfschmuckes von Lenti-Előhegy (Komitat Zala, SW-Ungarn)</i>	381
<i>László Bartosiewicz: Fish consumption in the archiepiscopal residence of Esztergom in the context of fishing, aquaculture and cuisine</i>	387
<i>Erika Gál: Archaeozoological assessment of the refuse deposit of the archiepiscopal residence in Esztergom</i>	421

LIST OF AUTHORS

BARTOSIEWICZ, LÁSZLÓ

Stockholm University
Department of Archaeology and Classical Studies
SE-106 91 Stockholm,
Institutionen för arkeologi och antikens kultur
laszlo.bartosiewicz@ofl.su.se

BENKŐ, ELEK

Institute of Archaeology,
Research Centre for the Humanities
H-1097 Budapest, Tóth Kálmán utca 4.
benko.elek@abtk.hu

BOLLÓK, ÁDÁM

Institute of Archaeology,
Research Centre for the Humanities
H-1097 Budapest, Tóth Kálmán utca 4.
bollak.adam@abtk.hu

GÁL, ERIKA

Institute of Archaeology,
Research Centre for the Humanities
H-1097 Budapest, Tóth Kálmán utca 4.
gal.erika@abtk.hu

KOLLÁTH, ÁGNES

Institute of Archaeology,
Research Centre for the Humanities
H-1097 Budapest, Tóth Kálmán utca 4.
kollath.agnes@abtk.hu

KONCZ, ISTVÁN

Eötvös Loránd University
Institute of Archaeological Sciences
H-1088 Budapest, Múzeum krt. 4/b
fredgar22@gmail.com

KOVÁCS, BIANKA GINA

Institute of Archaeology,
Research Centre for the Humanities
H-1097 Budapest, Tóth Kálmán utca 4.
kovacs.bianka@abtk.hu

KOVÁCS, GYÖNGYI

Institute of Archaeology,
Research Centre for the Humanities
H-1097 Budapest, Tóth Kálmán utca 4.
kovacs.gyongyi@abtk.hu

KOVÁCS, LÁSZLÓ

Institute of Archaeology,
Research Centre for the Humanities
H-1097 Budapest, Tóth Kálmán utca 4.
kovacs.laszlo@abtk.hu

LANGÓ, PÉTER

Institute of Archaeology,
Research Centre for the Humanities
H-1097 Budapest, Tóth Kálmán utca 4.
lango.peter@abtk.hu

RÉVÉSZ, LÁSZLÓ

University of Szeged
Department of Archaeology
H-6722 Szeged, Egyetem u. 2.
reveszlaszlo1986@gmail.com

SZENDE, KATALIN

Central European University
Department of Medieval Studies
H-1051 Budapest, Nádor u. 9.
A-1100 Quellenstraße 51, Wien
szendek@ceu.edu

SZŐKE, BÉLA MIKLÓS

Institute of Archaeology,
Research Centre for the Humanities
H-1097 Budapest, Tóth Kálmán utca 4.
szoke.bela@abtk.hu

TAKÁCS, MIKLÓS

Institute of Archaeology,
Research Centre for the Humanities
H-1097 Budapest, Tóth Kálmán utca 4.
takacs.miklos@abtk.hu

TEREI, GYÖRGY

Budapest History Museum,
Castle Museum, Medieval Department
H-1014 Budapest, Szent György tér 2.
Buda Castle Building E
tereigy@btm.hu

ABBREVIATIONS

ActaArchHung	Acta Archaeologica Academiae Scientiarum Hungaricae (Budapest)
ActaEthnHung	Acta Ethnographica Academiae Scientiarum Hungaricae (Budapest)
ActaOrHung	Acta Orientalia Academiae Scientiarum Hungaricae (Budapest)
ActaMusPapensis	Acta Musei Papensis. A Pápai Múzeum Értesítője (Pápa)
Agria	Agria. Az Egri Múzeum Évkönyve (Eger)
AH	Archaeologia Historica (Brno)
AHN	Acta Historica Neolosiensia (Banská Bystrica)
AJMK	Arany János Múzeum Közleményei (Nagykőrös)
AKorr	Archäologisches Korrespondenzblatt (Mainz)
Alba Regia	Alba Regia. Annales Musei Stephani Regis (Székesfehérvár)
AnalCis	Analecta Cisterciensia (Roma)
AnnHN	Annales Historico-Naturales Musei Nationalis Hungarici (Budapest)
Antaeus	Antaeus. Communicationes ex Instituto Archaeologico (Budapest)
Antiquity	Antiquity. A Review of World Archaeology (Durham)
AR	Archeologické Rozhledy (Praha)
ArchA	Archaeologia Austriaca (Wien)
ArchÉrt	Archaeologiai Értesítő (Budapest)
ArchHung	Archaeologia Hungarica (Budapest)
ArchLit	Archaeologia Lituana (Vilnius)
ArhSof	Археология. Орган на Националния археологически институт с музей – БАН (Sofia)
ARR	Arheološki Radovi i Rasprave (Zagreb)
Arrabona	Arrabona. A Győri Xantus János Múzeum Évkönyve (Győr)
AV	Arheološki Vestnik (Ljubljana)
Balcanoslavica	Balcanoslavica (Prilep)
BÁMÉ	A Béri Balogh Ádám Múzeum Évkönyve (Szekszárd)
BAR	British Archaeological Reports (Oxford)
BMÖ	Beiträge zur Mittelalterarchäologie in Österreich (Wien)
BudRég	Budapest Régiségei (Budapest)
Castrum	Castrum. A Castrum Bene Egyesület folyóirata (Budapest)
CommArchHung	Communicationes Archaeologicae Hungariae (Budapest)
Cumania	Cumania. A Bács-Kiskun Megyei Múzeumok Közleményei (Kecskemét)
DBW	Denkmalpflege Baden-Württemberg (Stuttgart)
EMÉ	Az Egri Múzeum Évkönyve (Eger)
EurAnt	Eurasia Antiqua. Zeitschrift für Archäologie Eurasiens (Bonn)
FolArch	Folia Archaeologica (Budapest)
FontArchHung	Fontes Archaeologici Hungariae (Budapest)
GMSB	Годишник на музеите от Северна България (Варна)
GZM	Glasnik Zemaljskog muzeja Bosne i Hercegovine u Sarajevu (Sarajevo)
GZMS	Glasnik Hrvatskih Zemaljskih Muzeja u Sarajevu (Sarajevo)
HAH	Hereditas Archaeologica Hungariae (Budapest)

Hesperia	Hesperia. Journal of the American School of Classical Studies at Athens (Princeton)
História	História. A Magyar Történelmi Társulat, majd a História Alapítvány folyóirata (Budapest)
HOMÉ	A Herman Ottó Múzeum Évkönyve (Miskolc)
INMVarna	Известия на Народния музей – Варна (Varna)
IstMitt	Istanbuler Mitteilungen (Tübingen)
JAMÉ	A nyíregyházi Jósza András Múzeum Évkönyve (Nyíregyháza)
Jászkunság	Jászkunság. Az MTA Jász-Nagykun-Szolnok Megyei Tudományos Egyesület folyóirata (Szolnok)
JbAC	Jahrbuch für Antike und Christentum (Bonn)
JPMÉ	A Janus Pannonius Múzeum Évkönyve (Pécs)
KMMK	Komárom-Esztergom Megyei Múzeumok Közleményei (Tata)
LK	Levéltári Közlemények (Budapest)
MAA	Monumenta Avarorum Archaeologica (Budapest)
MacAA	Macedoniae Acta Archaeologica (Skopje)
MAG	Mitteilungen der Anthropologischen Gesellschaft (Wien)
MBV	Münchener Beiträge zur Vor- und Frühgeschichte (München)
MHKÁS	Magyarország honfoglalás és kora Árpád-kori sírleletei (Budapest)
MittArchInst	Mitteilungen des Archäologischen Instituts der Ungarischen Akademie der Wissenschaften (Budapest)
MFME	A Móra Ferenc Múzeum Évkönyve (Szeged)
MFME StudArch	A Móra Ferenc Múzeum Évkönyve – Studia Archaeologica (Szeged)
MMMK	A Magyar Mezőgazdasági Múzeum Közleményei (Budapest)
MŰÉ	Művészettörténeti Értesítő (Budapest)
MŰT	Művészettörténeti Tanulmányok. Művészettörténeti Dokumentációs Központ Évkönyve (Budapest)
NÉrt	Néprajzi Értesítő (Budapest)
NMMÉ	Nógrád Megyei Múzeumok Évkönyve (Salgótarján)
OA	Opuscula Archaeologica (Zagreb)
Offa	Offa. Berichte und Mitteilungen des Museums Vorgeschichtliche Altertümer in Kiel (Neumünster)
PA	Památky Archeologické (Praha)
Prilozi	Prilozi Instituta za povijesne znanosti Sveučilišta u Zagrebu (Zagreb)
PrzA	Przegląd Archeologiczny (Wrocław)
PtujZb	Ptujski Zbornik (Ptuj)
PV	Přehled výzkumů (Brno)
PZ	Prähistorische Zeitschrift (Berlin)
RégFüz	Régészeti Füzetek (Budapest)
RGA	Reallexikon der Germanischen Altertumskunde (Berlin)
RT	Transylvanian Review / Revue de Transylvanie (Cluj)
RVM	Rad Vojvođanskih muzeja (Novi Sad)
SbNMP	Sborník Národního muzea v Praze (Praha)
Scripta Mercaturae	Scripta Mercaturae. Zeitschrift für Wirtschafts- und Sozialgeschichte (Gutenberg)
SHP	Starohrvatska Prosvjeta (Zagreb)
SlA	Slovenská Archeológia (Bratislava)
SlAnt	Slavia Antiqua (Poznan)

SIS	Slovanské štúdie (Bratislava)
SMK	Somogyi Múzeumok Közleményei (Kaposvár)
StComit	Studia Comitatus. A Ferenczy Múzeum Évkönyve (Szentendre)
StH	Studia Historica Academiae Scientiarum Hungaricae (Budapest)
StSl	Studia Slavica Academiae Scientiarum Hungaricae (Budapest)
StudArch	Studia Archaeologica (Budapest)
Századok	Századok. A Magyar Történelmi Társulat folyóirata (Budapest)
TBM	Tanulmányok Budapest Múltjából (Budapest)
Tisicum	Tisicum. A Jász-Nagykun-Szolnok Megyei Múzeumok Évkönyve (Szolnok)
USML	Utrecht Studies in Medieval Literacy (Turnhout)
VAH	Varia Archeologica Hungarica (Budapest)
VAMZ	Vjesnik Arheološkog muzeja u Zagrebu (Zagreb)
VMMK	A Veszprém Megyei Múzeumok Közleményei (Veszprém)
WiA	Wiadomości Archeologiczne (Warszawa)
WMMÉ	A Wosinsky Mór Múzeum Évkönyve (Szekszárd)
ZalaiMúz	Zalai Múzeum (Zalaegerszeg)
Zborník FFUK, Musaica	Zborník Filozofickej Fakulty Univerzity Komenského. Musaica (Bratislava)
ZbSNM	Zborník Slovenského Národného Múzea. História (Bratislava)
ZfAM	Zeitschrift für Archäologie des Mittelalters (Köln)
ZHVSt	Zeitschrift des Historischen Vereins für Steiermark (Graz)
Ziegelei-Museum	Ziegelei-Museum. Bericht der Stiftung Ziegelei-Museum (Cham)
ZRNM	Zbornik Radova Narodnog Muzeja (Beograd)

GYÖNGYI KOVÁCS

STOVES IN THE OTTOMAN CASTLE AT BARCS, DRAVA VALLEY, HUNGARY

In memoriam Tibor Sabján

Zusammenfassung: Vorliegender Beitrag widmet sich den Ofen- und Herdüberresten, bzw. Feuerstellenbestandteilen, die im Rahmen der osmanisch-türkischen Palisadenausgrabung bei Barcs, in der Drauregion zum Vorschein kamen, in einem breiteren historischen, archäologischen und völkerkundlichen Kontext. Die Palisade wurde 1567 erbaut und 1664 zerstört. Das während der Ausgrabungsarbeiten zutage geförderte Fundmaterial lieferte eine Vielzahl an Informationen über die Heizungsarten der Wohnräume, die Orte, Gegenstände und Arten des Kochens und der Lebensmitt zubereitung, außerdem über das Fortleben und die Vermischung von Traditionen. Die große Anzahl an Öfen und Herden hängt mit den klimatischen Verhältnissen („kleine Eiszeit“) der damaligen Zeit zusammen.

Bei den Öfen handelte es sich um Schüsselschachelöfen mit Außenbefeuerung, formal gesehen war der untere Bereich meist viereckig und der obere typischerweise scheitförmig mit achteckiger Basis und unterschiedlichen Kuppeln. Die meisten der eingebauten Ofenaugen waren handgedreht, unglasiert und becher-, bzw. krugförmig, allerdings gab es auch relativ viele zwiebelartige Ofenaugen, während glasierte osmanische Varianten kaum vorkamen. Die detaillierte Analyse legt die chronologischen Unterschiede offen.

Im Fundmaterial von Barcs ist die Dominanz der regionalen und balkanischen Merkmale weitaus augenscheinlicher, als im Falle anderer relevanter (ungarischer) Fundorte. Die Merkmale der Öfen von Barcs formten die regionalen Traditionen der Großen Tiefebene und die balkanischen Bräuche gemeinsam, und zwar irgendwo in der Wojwodina, auf dem Gebiet Slawoniens, der Batschka und Syrmiens (heute Kroatien und Serbien), wo die Bevölkerung unter osmanischer Hoheit gemischt war. Das Fundmaterial gibt uns Referenzen für die Bearbeitung jener Öfen des 16.–17. Jahrhunderts mit balkanischen Merkmalen, außerdem kann es bei der Bewertung des archäologischen Fundmaterials des Balkans, bzw. bei der Bestimmung regionaler Merkmale assistieren.

Keywords: stove tiles, stoves, reconstructions, archaeology of Ottoman Hungary, 16th–17th centuries, Drava valley, Ottoman castles

The Ottoman palisaded castle at Barcs was part of the Ottoman Empire's system of border defence in southern Transdanubia, a link in the Pécs – Szigetvár – Babócsa – Segesd chain of border fortresses along the Drava river (*fig. 1*). It was built in 1567, on the north bank of the River Drava, following the capture of Szigetvár by the Ottomans the previous year. The castle served to protect Szigetvár's hinterland, the Drava bridgehead, and the Drava flotilla, ordered to the castle having previously been stationed at Eszék (today Osijek, Croatia).¹ In 1595, during the Fifteen Years' War, the stronghold was abandoned by its garrison, which set it ablaze when it withdrew.² It was recovered by the Ottomans following their capture of Kanizsa in 1600. Up until the end of the 16th century, the castle at Barcs belonged to the Sanjak of Sigetvar (Szigetvár); later, after 1600, it fell within the boundaries of the Kanija (Kanizsa) Eyalet. In 1664, at the time of the winter campaign waged by the poet and general Miklós Zrínyi, the castle was again set on fire and abandoned by its garrison. This was when the only known depiction of it was made: a pen-and-

¹ Roth 1970 158; Szakály 1971 52; Hegyi 2007 I. 98, II. 1327.

² Rövid magyar kronika 1753 (1993) Anno 1595; cf. Kanyar 1989 91; Kerecsényi 1993 258.



Fig. 1. Barcs and other Ottoman border fortresses in southern Transdanubia in Ottoman Hungary (Map: ©Sándor Ősi)

ink sketch that survives to this day in the work *Mars Hungaricus* by Count Pál Esterházy (fig. 2).³ The castle was not rebuilt in the years after 1664 and began slowly to decay. Its garrisons largely consisted of *azab* and *martalos* foot soldiers serving on the river or on its banks; mounted troops and artillerymen also featured, albeit in smaller number. Garrisons were typically between 150 and 220 soldiers in size. Ottoman military payrolls indicate that a significant proportion of those who served at the castle were of Muslim and Balkan heritage.⁴

The site of the one-time Ottoman castle in question is to be found in the centre of today's Barcs, near to the Roman Catholic church on Hősök tere.⁵ Test excavations were conducted on the site between 1989 and 1994. Subsequently, in 2002, and especially in 2003, larger areas were excavated, prior to construction work relating to a new residential complex on Nagyhíd utca.⁶ Extending to around 1500 m² in all, the areas excavated amount to approximately one quarter of the castle area, which, it may be hypothesised, measured 90 × 70 m and covered 0.6–0.7 hectares (fig. 2). The excavations were supplemented in 2017 by a geophysical (magnetometer) survey of the castle's southwestern part.⁷ Researches have confirmed the accuracy of some elements in the Esterházy drawing from 1664 (e.g., the castle's location right next to the River Drava); they have not, however, attested the veracity of its details concerning the bastions or the buildings inside the castle. The depiction published should be seen as a sketch merely, one that was redrawn in a stylised way after the campaign, as were other castle drawings in the *Mars Hungaricus* treatise. At the same time, as a result of the excavations it has been possible to add to the sketch the castle's orientation and approximate dimensions, as well as to glean data on the make-up of its walls and on the buildings within them. That the castle suffered great fire damage on two occasions is proved by layers of debris. Surviving relics of it have facilitated investigations into the lives of ordinary garrison soldiers stationed on the periphery of the Ottoman Empire. Additionally, these relics have yielded insights into archaistic particularities of the region, activities taking place at the castle, and issues of provisioning and trade.⁸

³ Esterházy 1664 (1989) 140.

⁴ Hegyi 2007 II. 1327–1329, III. 1590–1594.

⁵ The site stretches as far as the presbytery garden, several plots along Nagyhíd utca, and the courtyard of the Arany János General School.

⁶ Kovács – Rózsás 1996; Kovács – Rózsás 2010. The author would like to thank the local historian Márton Rózsás and the archaeologists Adrienn Papp, Katalin Éder, László Költő, Judit Szigeti, and Csilla Aradi for their work at the 2002–2003 excavations.

⁷ Magnetometer survey: Gábor Serlegi and Bence Vágvolgyi (Institute of Archaeology, Research Centre for the Humanities).

⁸ Kovács – Rózsás 1996; Kovács – Rózsás 2010. See also Kovács 1998; Kovács 2019, etc. The Barcs research project was supported by the Hungarian Scientific Research Fund (OTKA K 72231).

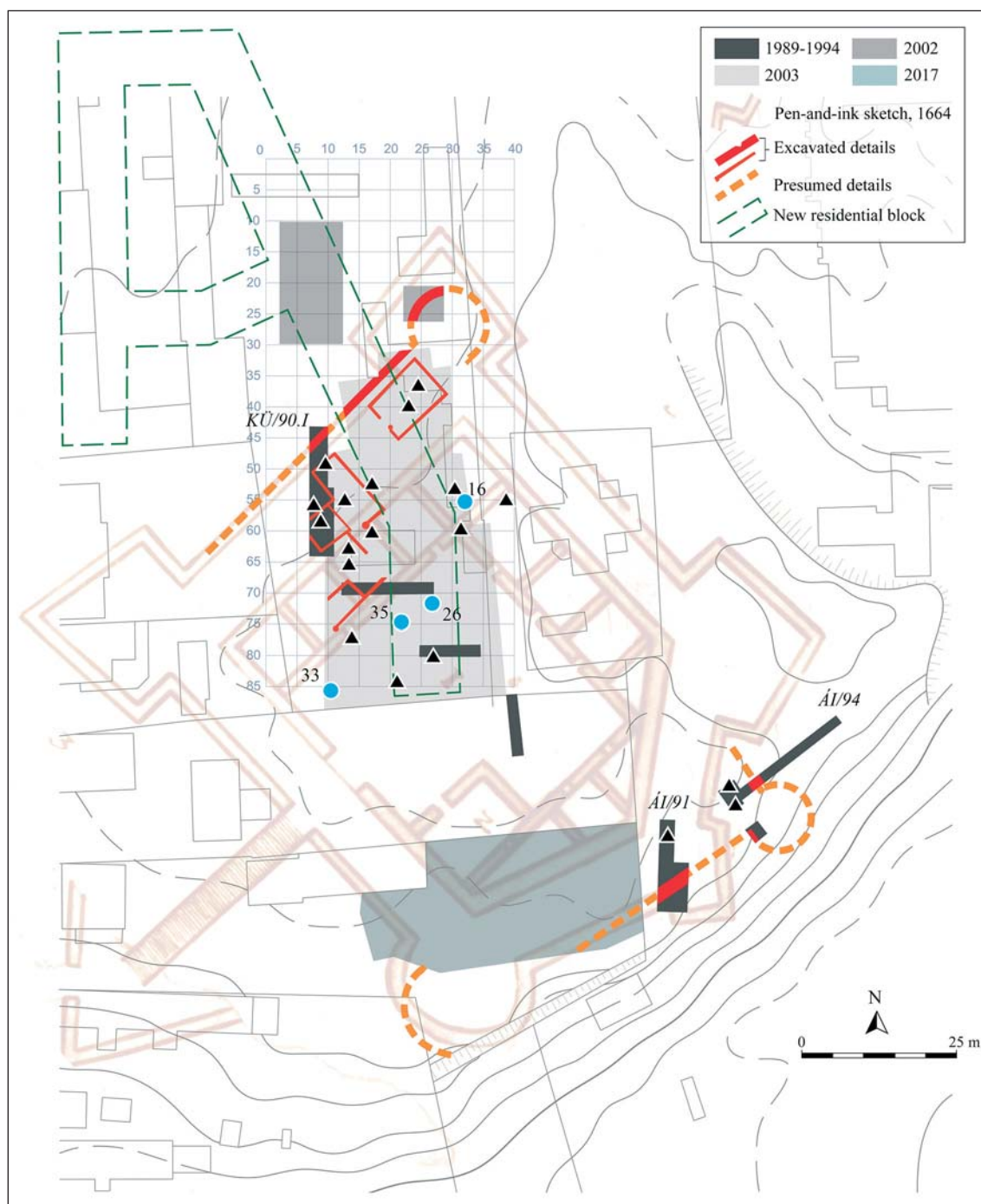


Fig. 2. Barcs, Ottoman castle. The 1664 sketch and the excavated areas with details of the castle wall and remains of the 17th-century buildings.

▲ = Bricked bases of stoves and hearths, ● = Pits with remains of stoves

(Computer graphics: ©Zsolt Réti)

Of the finds excavated, remains of places where fires were kindled (stoves for heating, fireplaces, ovens for baking, and burnt surfaces) make up a significant group. Together with artefacts – pieces of stove wall; stove tiles; thick, hand-fashioned baking dishes and fragments of the bell-shaped covers used with them – these finds furnish much information on the heating of residential spaces, on stoves providing this, on items used in cooking, and on the endurance and mingling of heritages.

Within the group of finds, remains and component parts of cup-tiled stoves (stoves with concave tiles; Hungarian: ‘bögrés szemes kályhák’) constitute an ensemble that is very rich.⁹ They will be examined closely in what follows.¹⁰ Little will be said regarding stove-building techniques and solutions.¹¹ In addition to the stoves, the ovens and other fire-places will be discussed, albeit briefly. For the present study, the 2003 finds will be analysed. In a number of cases it has been thought necessary to involve findings of the test excavations conducted between 1989 and 1994.

Bases of heating stoves, ovens, and other fire-places

On the areas excavated, remains of twenty fire-places (i.e., places where fires were laid) could be observed, among them stoves, ovens, and hearths. When fragmentary burnt surfaces are counted, the number is higher. The remains came to light in various conditions and shapes. Heating-stove bases made from bricks that had survived in good condition, levelled heating-stove and oven bases, bricked surfaces and hearths (*figs 3–8, fig. 9. 2*), pits full of stove parts and components, and brickwork (stove bases) enclosed in pits accompanied by stove tiles (*fig. 9. 1. and 3*), – all were unearthed.¹²

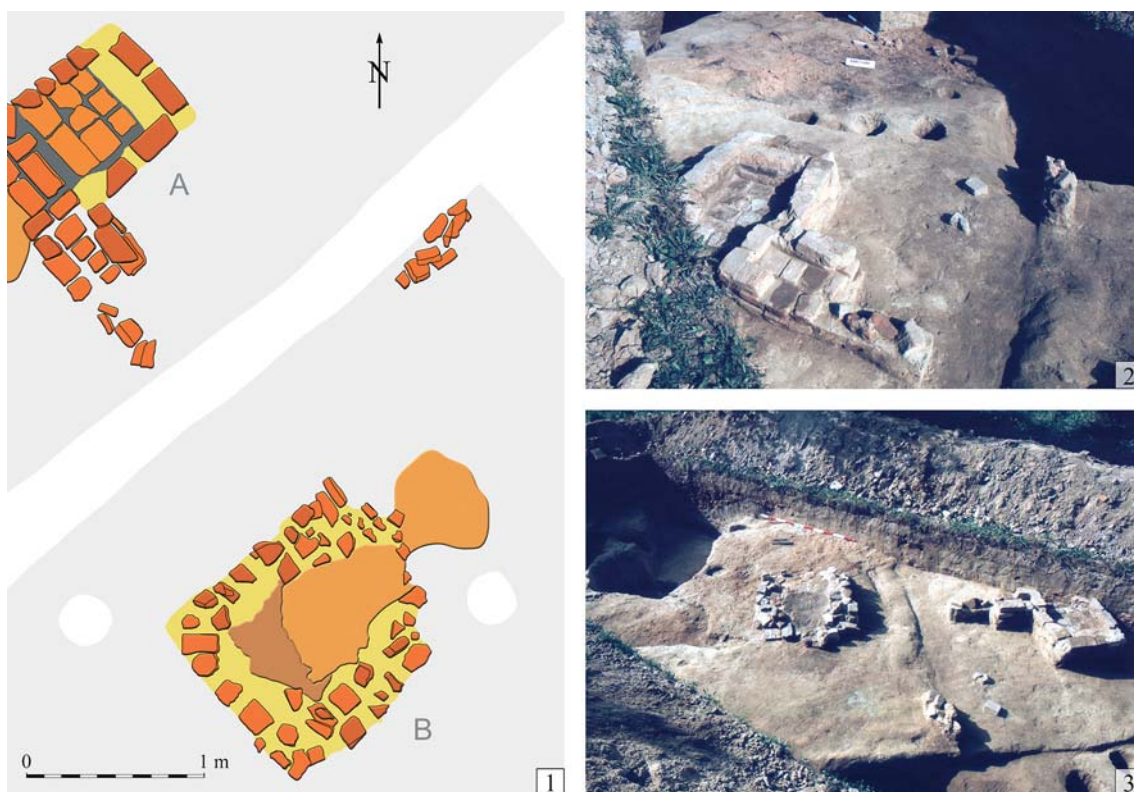


Fig. 3. Barcs, Ottoman castle. 1–3. Stove base and hearth, 17th century. Test Trench KÜ/90.I
(Computer graphics: ©Zsolt Réti)

⁹ ‘Cup-tiled stoves’ are stoves the great majority of whose tiles belong to the cup-shaped type or to variant forms of it that lack dish-shaped vessel-tiles. *Sabján 2001* 292.

¹⁰ The finds can be found in the collection of Barcs’s Drava Museum (today ‘Dráva Közérdekű Muzeális Kiállítóhely’).

¹¹ For observations made in connection with the building techniques used for Ottoman-period stoves in Buda’s Water Town, see *Sabján – Végh 2003* 294–299.

¹² See also *Kovács – Rózsás 2010* figs 5. 2. and 4.

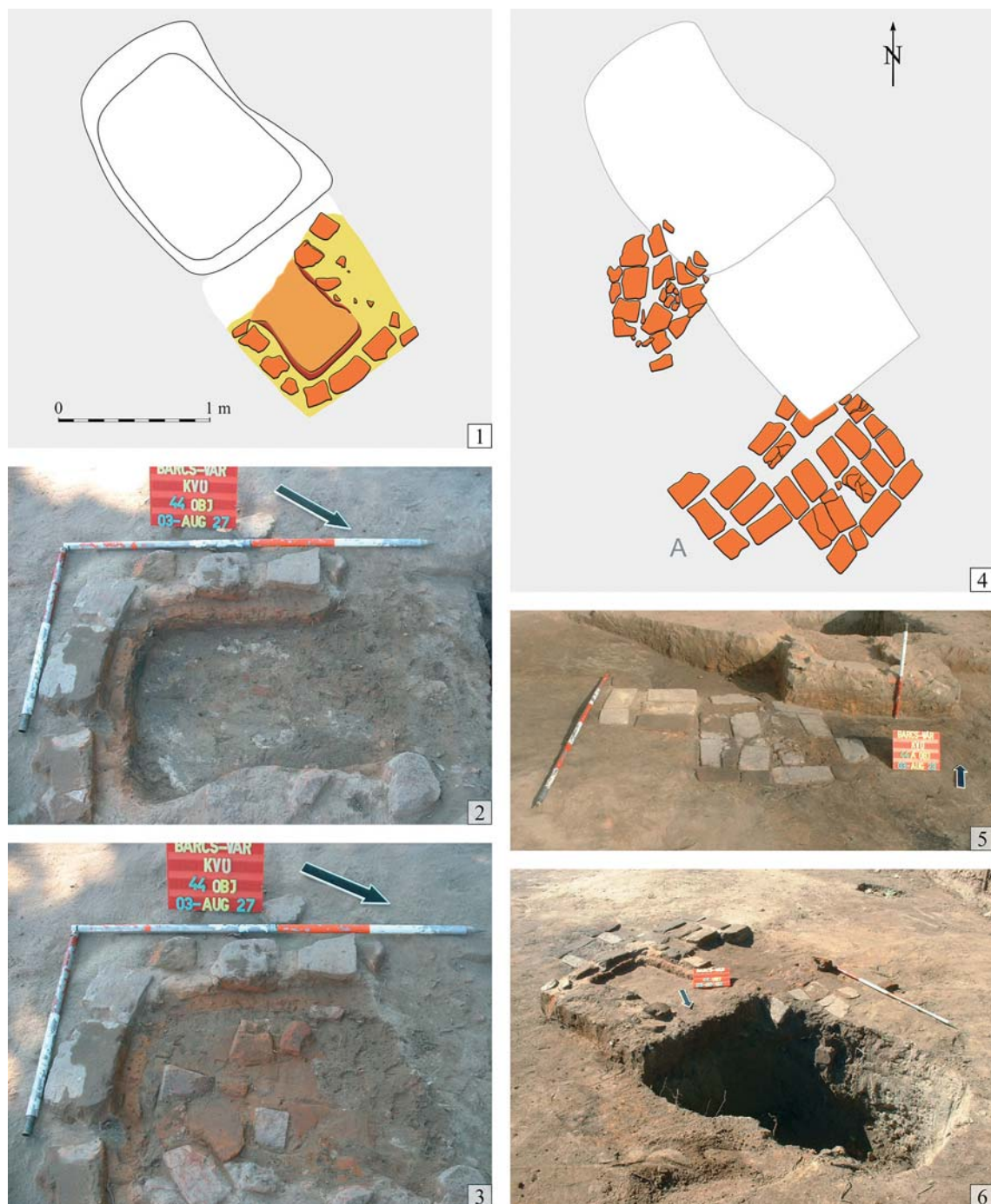


Fig. 4. Barcs, Ottoman castle. 1–6. Stove bases, 17th century, Features 44 and 44A, 2003
(Computer graphics: ©Zsolt Réti)

The bases of stoves consist in most cases of bricks set in clay. Bases with more than 2–3 rows of bricks were not observed, although such bases may have been created. Remains indicative of stoves without brick bases could be identified in one or two cases only. In the light of the brick bases, the lower parts of stoves were rectangular in ground plan; there was no trace of any cylinder-shaped stove at Barcs.¹³ According to measurable brick bases, the sides of stove bases

¹³ For remains of a cylinder-shaped stove from the Ottoman palisaded castle at Újpalánk (Yeni Palanka), see Gaál 2015 147.

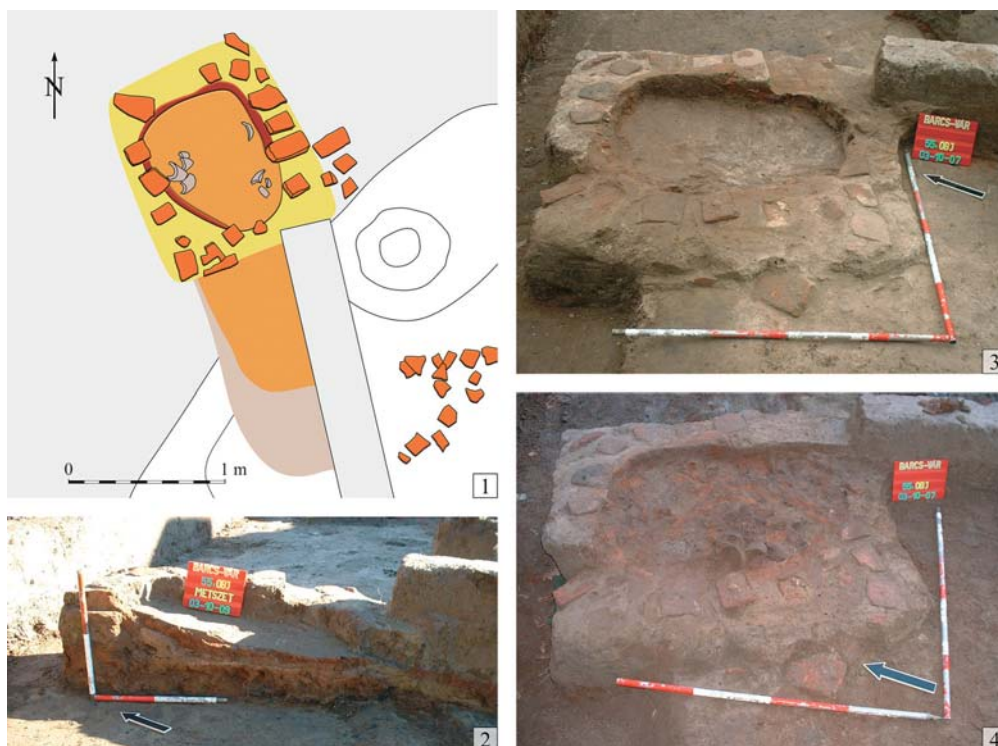


Fig. 5. Barcs, Ottoman castle. 1–4. Stove base, 17th century, Feature 55, 2003
(Computer graphics: ©Zsolt Réti)

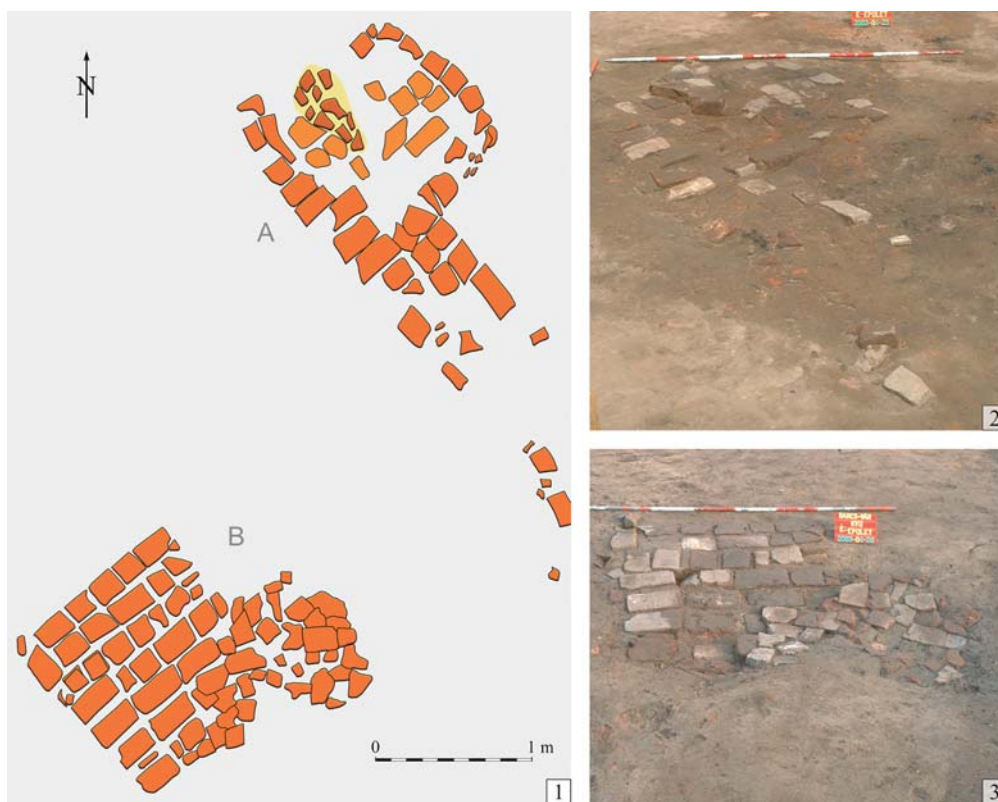


Fig. 6. Barcs, Ottoman castle. Stove bases, brick surfaces, 17th century.
'North building' (Building 1), 2003
(Computer graphics: ©Zsolt Réti)

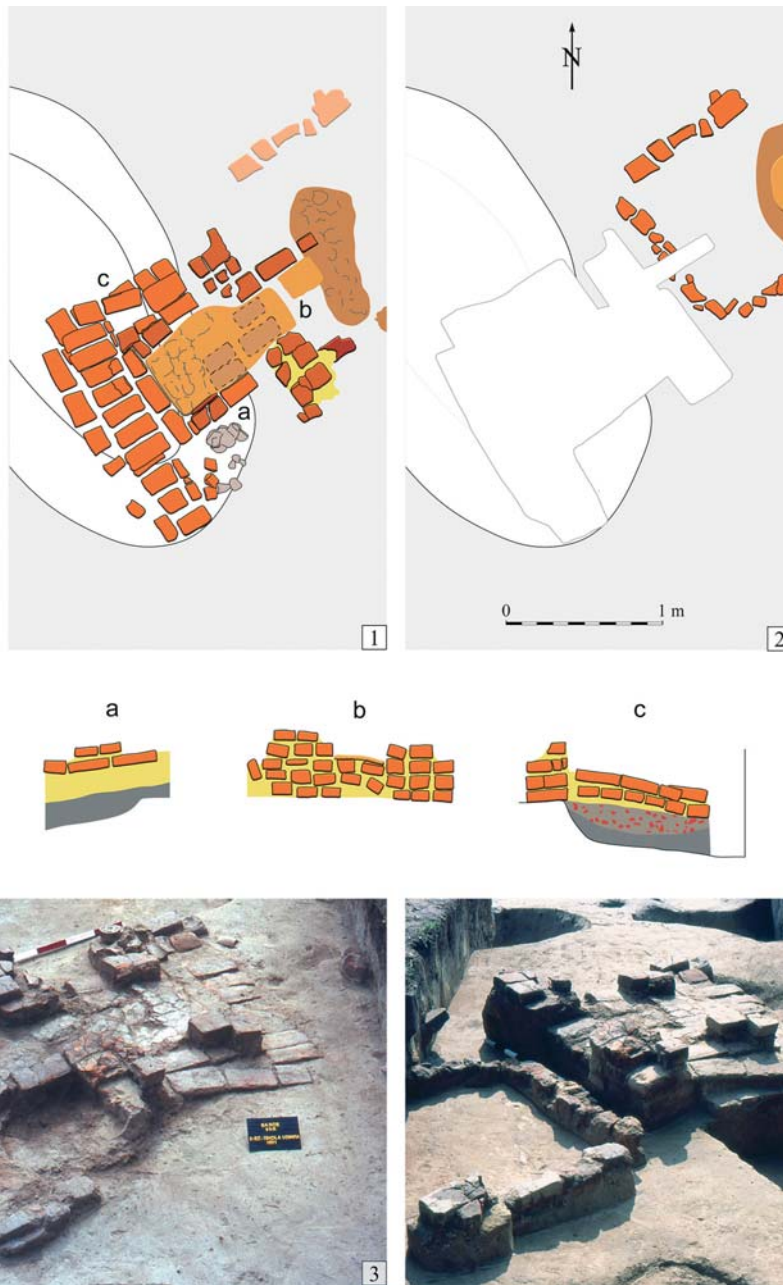


Fig. 7. Barcs, Ottoman castle. Stove base (1) and a burnt surface flanked by bricks (2), 17th century. Test Trench ÁI/91
(Computer graphics: ©Zsolt Réti)

were approximately 70 cm in length,¹⁴ although larger bases, too, were found. The brick bases were protruding slightly from the surfaces of the stoves. The fire surfaces of the stoves (namely the surfaces on which the fire burned) were at the same level as the floors of the rooms;¹⁵ the bases of the fire surfaces were built from bricks and ceramic sherds.

¹⁴ The measurements of traditional stoves in Serbia shaped like those from the 16th–17th centuries are sometimes similar. Width of the mentioned Serbian stove at Osat: 70 cm; depth: 72 cm. *Sabján – Vég* 2003 296, fig. 16. 4a–d (see note 17). The measurements of the base of a 19th-century stove in a monk's cell at Rila Monastery (Bulgaria) are 60 × 60 cm. *Christov – Stojkov – Mijatev* 1957 fig. 37.

¹⁵ As on 15th–16th-century Great Plain ovens and stoves in rooms. *Szabó* 1938 83, 90.



Fig. 8. Barcs, Ottoman castle. 1–3. Oven base, 16th century, Feature 25, 2003
(Computer graphics: ©Zsolt Réti)

A piece of brick wall containing the stokehole of a stove survived in a Belgrade building destroyed in the late 17th century (*fig. 10*).¹⁶ In a number of instances, foundations of brick walls probably containing stokeholes could be encountered at Barcs, too. Stoves were stoked from outside the spaces they heated. According to archaeological and ethnological evidence, this solution counts as general in 15th–20th-century architecture; in this study, two examples from folk architecture in Serbia are presented (*fig. 11*,¹⁷ *fig. 30A. 4a–d*¹⁸).

The bricked and burnt clay surfaces discovered in front of the stokeholes were places where cooking and baking took place.¹⁹ Baking dishes were placed in hot embers or over open fires, as were cooking vessels resting on iron tripods. Cauldrons may have been suspended over fires from poles held up at either end or even from ceiling beams. This solution can be seen, for example, in the 19th-century building at Šumadija (central Serbia) mentioned below (*fig. 11*).²⁰

Feature 25 (*fig. 8*) – in the southern part of the 2003 excavation area – held remains of a fire-place of some kind. It is conceivable that it was the base of a building-related small clay-walled oven; its size (150 × 110/120 cm), larger than the bases of the stoves, may indicate an oven function. The fire area measured 50 × 60 cm. In front of the stokehole was a multilayered, bricked work surface that was bordered by brick walling on the north side. Furthermore, it proved possible to document a continuation of the brick walling that included a stokehole, indicated by a charred beam.

¹⁶ *Marjanović-Vujović 1973* 204, 227, Pls VII–VIII.

¹⁷ Šumadija (central Serbia, 19th century), after *Kojić 1980* fig. 6.

¹⁸ For a traditional Serbian stove at Osat (in Bosnia-Herzegovina), see B. Kojić: *Stara gradska i seoska arhitektura u Srbiji*. Beograd 1949, 158. Quoted by *Sabján – Vég* 2003 296, fig. 16. 4a–d.

¹⁹ *Szabó 1938* 82.

²⁰ See note 17.

At Barcs, no evidence of open-air baking ovens could be identified, although there were probably simple, small baking ovens.²¹ Baking mostly took place with the help of baking dishes and covers for those dishes. Thinned with chaff and thickish, fragments of these bell-shaped baking covers make up a very significant part of the archaeological material from Barcs,²² proving unequivocally the use and popularity of this Balkan-rooted way of baking²³ at the castle.

During the excavations at Barcs, remains of open fire-places, too, were discovered. Insofar as our identification is correct, the free-standing hearth surrounded by bricks that was unearthed in Trench KÜ/90.I,²⁴ and dated to the first half of the 17th century may have been one such find (*fig. 3. 1B*). Its base measured 120 × 120 cm and its fire surface had been repaired a number of times. In the event of cooking using a cauldron, the cauldron may have been suspected from a ceiling beam above the fire, as indicated by numerous such cases in the Balkans in the 19th century (e.g., *fig. 12*).²⁵ According to ethnology data from the Balkans, freestanding hearths stood in the central areas of houses.²⁶

²¹ Simple, mud-walled, small-sized bread ovens in 20th-century Balkan village settings: Szond/Sonta (west Bačka, Voivodina, northern Serbia), *Filipović 1951* 164, fig. 43; Garvan (Tutrakan, Silistra, north-eastern Bulgaria), *Vakarelski 1977* 312, fig. 277.

²² *Kovács 1998* 155–156, 172, and fig. 1. The proportion in the 2003 material is also highly significant.

²³ Baking with dishes supplied with bell-shaped covers can be followed right up to the 19th–20th centuries. *Filipović 1951*, 73–78, 162; *Römer 1966* 390, 398–399, 411; *Tomić 1970*, with additional literature.

²⁴ KÜ = 'Költségvetési Üzem' (demolished).

²⁵ Little Shëngjin (north-western Albania), *Muka 1979* Pl. XVI. For occurrences in Albania, see, e.g., Zavalinë (central Albania), *Muka 1984* Pls IX–X. Examples from Bulgaria: *Vakarelski 1977* 231, figs 198–203.

²⁶ The place of the fire in a Bosnian house is a rectangular hearth in the middle of the house. Above it, on a chain, hangs a pear-shaped cauldron. The entire domestic life of the inhabitants is centred around the fire. *Bátky – Györffy – Viski n. d. [1933–1937]* 184.



Fig. 9. Barcs, Ottoman castle. 1. Pit with stove tiles and debris, Feature 35, 2003; 2. Stove base and bricked surface, Feature 32, 2003; 3. Pit with remains of a stove, Feature 26, 2003

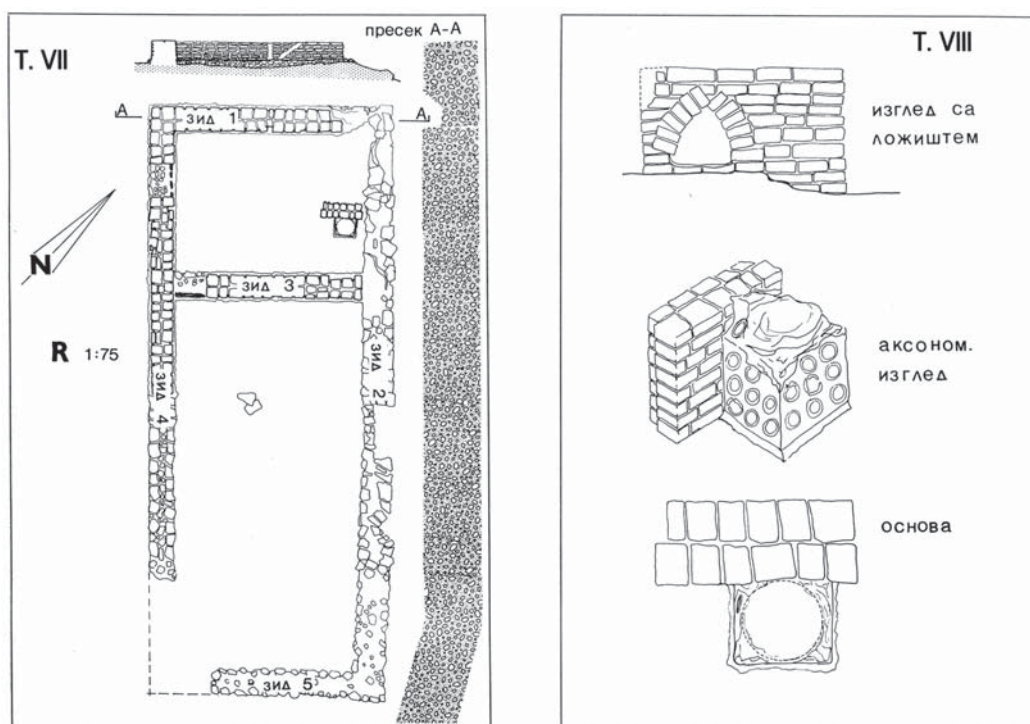


Fig. 10. Belgrade-Donji Grad. Foundations of a house from the second half of the 17th century along with remains of its ruined stove (after *Marjanović-Vujović* 1973 Pls VII–VIII)

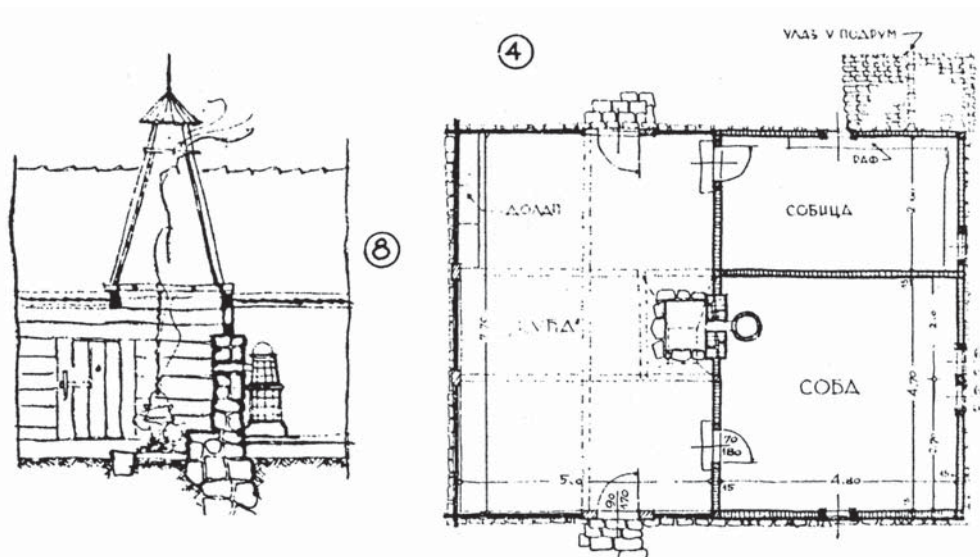


Fig. 11. Stove and hearth in a traditional Serbian house (Šumadija, second half of the 19th century) (after *Kojić* 1980 fig. 6 [details])

In practice, freestanding burnt surfaces are simply signs of the lighting of fires, which may have occurred on many different occasions, since fires were lit not only for cooking purposes, but for other activities also (e.g., casting bullets, keeping warm).²⁷ Cooking may have taken place using pots and dishes placed on smaller clay supports (*topka*), meaning that the fire was

²⁷ *Gaál* 2015 150.

burning underneath the baking dishes and cooking pots.²⁸ A baking cover supported by a cone is mentioned from Kosovo (Serbia).²⁹ Archaeological evidence of fires of this type is, then, merely a burnt surface which on occasion is surrounded by bricks, as, for example, in the case of the fire-place discovered in Trench ÁI/91³⁰ (fig. 7. 2).

Rectangular and oval bricked surfaces of different sizes are harder to explain. At Barcs, they may simply have strengthened beaten-earth floor; however, many may have been the bases of stoves or ovens, or surfaces on which fire-connected work took place.³¹ More precise identification will depend on their locations and their sizes.

We have no archaeological data on them, but we shall mention another two kinds of fire installations that in theory may have existed at Barcs. One is the fire-place, namely a hearth built into walls with a chimney (*odjak*),³² especially a variant built next to walls made of wooden beams.³³ The second type of fire installation is the *tandır*, which in a very simplified form is a pit or a large pot dug into the earth at the bottom of which are burning embers. Flatbread to be baked was placed on its inside walls. This installation has authentic heritages in the Middle East and a number of different variants of it are known.³⁴ It turns out that large pots dug into the earth served as ‘baking ovens’; this type was described by Hans Dernschwam in the mid-16th century during his travels in Anatolia.³⁵

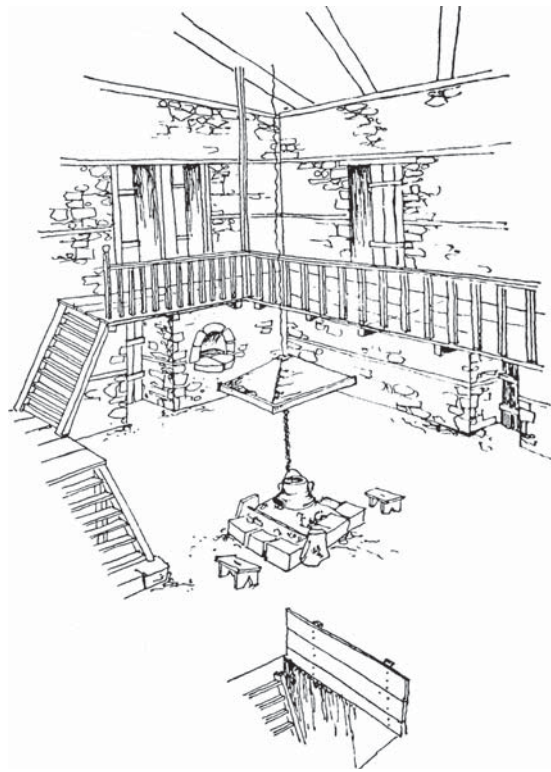


Fig. 12. Open hearth in a traditional Albanian house (Little-Shëngjin, 19th century–early 20th century) (after Muka 1979 Pl. XVI)

²⁸ For conical and pyramid-shaped vessel supports, see Filipović 1951 162–163; Djordjević – Zlatković 2011 38, fig. 5.

²⁹ Sredska, near Prizren, Kosovo, Serbia, 1949. Filipović 1951 fig. 36 (‘Heating of a baking cover, supported by a cone’).

³⁰ ÁI = ‘2. számú Általános Iskola’ (today ‘Arany János Általános Iskola’).

³¹ Bricked surfaces of this kind comprise the bases of 19th–20th-century brick ovens. Sabján 2008 170–171.

³² For hearths built into walls (*odjak*) in Albanian rural settings, see Riza 1985 passim.

³³ Meringer 1900 259, fig. 33 (Jezero [Plaški], Croatia).

³⁴ In the Middle East, *tandirs* have been in use since the 9th century. For a survey, see Shaddoud 2018. Ethnological data from Anatolia: Koşay 1957 Lev. I (Karahöyük köyü – Kültepe).

³⁵ As part of an embassy to Sultan Süleiman the Magnificent (r. 1520–1566) headed by Antal Verancsics, Hans Dernschwam travelled in the Balkans and Anatolia during the period 1553–1555, keeping a diary of his experiences. He described the baking method at issue while on the way to Amasya (north-eastern Anatolia) as follows: ‘Some people have tall, broad-bottomed, wide-mouthed vessels made from fired clay whose middle parts are round and bulbous. Above, at the slightly narrowed rim of each, are broad apertures, as there are below it. The above-mentioned vessels are dug into the earth, with the said apertures open to the air. When baking is about to take place, fire is kindled in the vessel, with the air for it coming in through the apertures. When the vessel is hot enough, the bread dough is fashioned into scone shapes roughly of finger thickness (or more) [which] are then stuck onto the inside walls of the vessel. In this way, stuck to the sides, they are baked a splendid brown.’ Dernschwam 1984 403–404.

Heating installations and cooking sites of various kinds were features of day-to-day life. Examples similar to the stove and oven bases (and other fire-place remains) found on the site of Barcs Castle have been uncovered on other Ottoman-period sites, too. With regard to smaller Ottoman castles in southern Transdanubia, numerous examples are published or mentioned from Dunaföldvár³⁶ and from excavations at Újpalánk (near Szekszárd),³⁷ Ozora,³⁸ Bátaszék,³⁹ and Turbék (near Szigetvár),⁴⁰ although instances occur at many other sites also.

The great number of stoves and other places for fires is probably connected to meteorological conditions. In the climate of the period, signs of the ‘Little Ice Age’ – cold winters and cool, wet summers – appeared increasingly in the Carpathian Basin from the 16th century onwards.⁴¹ For example, the traveller Evliya Çelebi, staying at Zimony (today a part of Belgrade) in January 1664, wrote of bleak weather, mentioning frozen people and animals.⁴² In the medieval period and the early modern period (1300–1800), the ‘Little Ice Age’ brought extreme weather and periods of great cold.⁴³ In the Mediterranean area, Ottoman-era Anatolia, and in the Balkans, hard winters were common. Heating installations were, however, still rare. Because of differences between Mediterranean and North European architecture (and heating installations), in the early modern period winters were more bearable in the Low Countries or in the German territories than they were in Rome or Naples, writes Fernand Braudel.⁴⁴

Chronology

The stove and hearth parts brought to light at Barcs are not uniform as regards their age. On some parts of the castle site, the 17th-century layers have been destroyed.⁴⁵ In the early 17th century, during the rebuilding that followed the destruction wrought by the Fifteen Years’ War, the remains of 16th-century stoves were removed. As a result of the levelling that was conducted, pieces of those parts that protruded became scattered or ended up in pits. During the general landscaping work performed in the post-Ottoman era, remains of 17th-century stoves and ovens disappeared from view.

Among other things, parts of a larger multi-roomed building that had been renovated on a number of occasions were uncovered in the course of the excavations. Some parts came to notice in 1990 and the remainder in 2003 (*fig. 2*).⁴⁶ In the light of the remains, a stove – or hearth – stood in each of the 17th-century rooms. The building probably featured additional rooms to the south, but these could not be outlined definitively: excavation was able to identify vestiges only. On the other hand, the one-time existence of such rooms is attested by stove and hearth remains

³⁶ *É. Kozák 1970* 203, *fig. 28*.

³⁷ *Gaál 2015*.

³⁸ *Feld et al. 1988* 279, *figs 40–41*.

³⁹ *Pusztai 2003* 308.

⁴⁰ *Hancz 2020a* 227–231.

⁴¹ *Rácz 2003* 236–241; *Rácz 2008* 141–151. See also *Vadas – Rácz 2013* 218–227, with additional literature.

⁴² For example, ‘[...] gales battering everything, [...] the snow killed all the camels, [...] many people perished from the great cold.’ *Evliya 1660–1664 (1985²)* 440–442.

⁴³ For examples from Europe, see *Behringer 2007* 126–128. Rivers and other expanses of water froze over; e.g., Venice’s lagoon froze over many times between 1300 and 1800 (also in 1569, two years after the building of Barcs Castle). In the winter of 1491, tourneys (jousting competitions) were held on Venice’s frozen Grand Canal.

⁴⁴ In Istanbul, for example, ‘while living quarters and kitchen were equipped with fireplaces, the damp chill of the Bosphorus no doubt penetrated the houses once the wood of doors and windows had warped’. *Faroghi 2000* 157.

⁴⁵ On the southern part of the 2003 excavation area (this part includes the Test Trench KÜ/90.II), saplings had at one time been planted, disturbing and partly destroying the 17th-century layers.

⁴⁶ The building walls highlighted in *fig. 2* are 17th century.

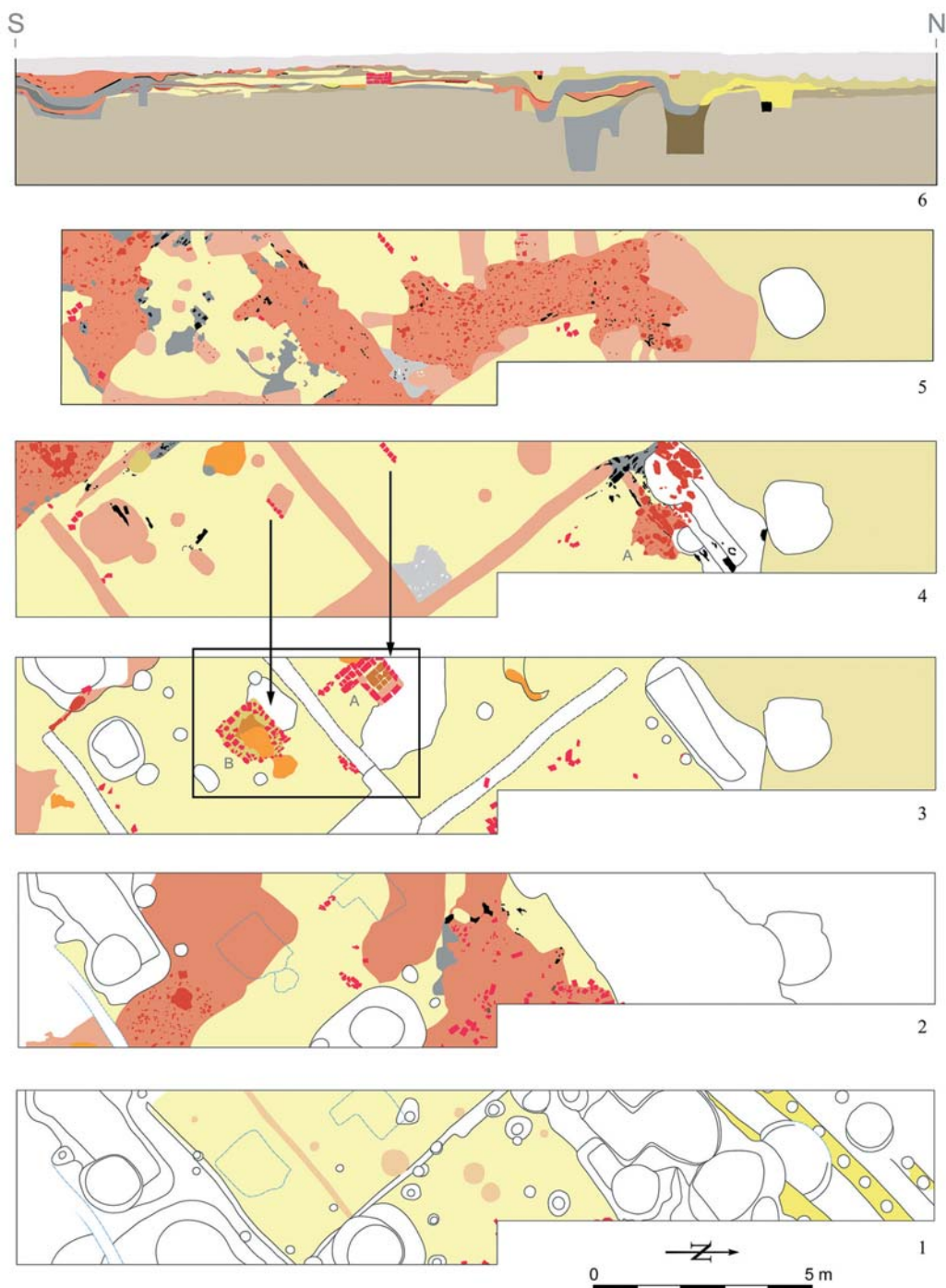


Fig. 13. Barcs, Ottoman castle. Layers of Test Trench KÜ/90.I:
 1. Second half of the 16th century; 2. Debris from ruination at the end of the 16th century;
 3. First half of the 17th century, with stove (A) and hearth (B); 4. Mid-17th century, with the foundations
 of walls of a larger building and with remains of a ruined stove (A);
 5. Debris from the destruction caused in 1664; 6. West wall of the test trench
 (Computer graphics: ©Zsolt Réti)

discovered on this area. The positioning and ground plans of the stoves afford help in recognising traces of the walls belonging to the one-time building and, consequently, in dating these walls and in establishing the different periods in the architectural history of the complex.

In those parts of the castle already excavated, evidence of levelling operations could be observed that were unconnected with work performed following the two great fires on the site. The different layers could be discerned the most precisely in one of the test trenches dug in 1990 (*fig. 13*).

In the north–south test trench cut in 1990 (KÜ/90.I), there came to light remains of a stove and a hearth set in brickwork on a clay floor (*fig. 3*) which covered a reddish debris layer linked to the castle's destruction in the late 16th century (*fig. 13. 3A–B*). When the building in question was refurbished in the mid-17th century, the protruding parts of the stove and the hearth bases were demolished and the bases covered with a layer of clay 30–40 cm deep. The floor of the refurbished building was subsequently covered with a layer of debris from the destruction wrought in 1664. On the basis of the layers, then, the levelled stove and the hearth were in use during the first half of the 17th century, until the middle part of that century at the latest. However, the stove uncovered in the northern end of the trench belonged to the refurbished building already, that is, it was standing in the castle's final period, from the mid-17th century onwards (*fig. 13. 4A*); elements of this stove were found in a pit to the north of it.⁴⁷

Stove remains in the wings of the building that were excavated in 2003 can in part likewise be dated to the first half, or middle, of the 17th century (*figs 4–5*). One stove had been built on the site of an earlier one (*fig. 4. 1 and 4A*). On the other hand, the burnt surface assumable for the space in front of the stove's stokehole had been destroyed during digging in later on.⁴⁸

Stove tiles

Many tens of thousands of finds came to light during the excavations. Animal bones apart,⁴⁹ finds (ceramic, metal, glass, and so on) in 2003 alone amounted to 32,273. Of the finds yielded by the 2003 excavation, 14,067 belonged to the stove-tile category; among them (without differentiating between types) were 144 fully intact stove tiles, 5701 fragments of rims, 8132 fragments of sides and bottoms, and 90 apex-, or crown-pieces of inverted beaker-tiles⁵⁰ (pre-conservation data). Especially in the case of sherds recovered from pits, it proved possible to assemble complete or nearly complete stove tiles in the course of the conservation work.⁵¹

Regarding the material from the test excavations conducted during the period 1989–1994, following conservation 50 completed stove tiles and 1678 stove-tile fragments were documented, from among the 91 intact or completed and the 5696 fragmentary ceramic finds.⁵² Seventeen completed stove tiles belonged to the mid-17th-century stove mentioned above (*fig. 13. 4A*).⁵³

⁴⁷ Kovács – Rózsás 1996 170; Kovács 1998 170, *fig. 15A*. Judging by the large number of unglazed stove tiles discovered, it was a cup-tiled stove that was not supplied with a brick base, its base parts being indicated by blocks of clay.

⁴⁸ Although finds recovered from this digging in are from the Ottoman period, it is conceivable that the digging in took place during landscaping work performed after the cessation of Ottoman rule in Hungary (see also note 45).

⁴⁹ Gál – Bartosiewicz 2016.

⁵⁰ When naming the different stove-tile types, we have tried to use the terminology proposed by Eva Roth Heege. Roth Heege 2012 199–319.

⁵¹ Finds were selected by the following: Gyöngyi Kovács, Katalin Éder, Márton Rózsás. Conservation: Ágnes Zamadits, Zsuzsanna Ba; photographs: Károly Kozma, Péter Hámori, Gyöngyi Kovács; drawings: Katalin Nagy; computer graphics: Zsolt Réti. Many thanks for their work.

⁵² Kovács 1998 155. The counting up of the 1989–1994 finds occurred after conservation (*op. cit.* 176, n. 3). Data collection regarding the 2003 material took place a few years ago, before conservation, and was focused on certain basic data only. It is not possible to amalgamate the data for the 2003 finds and the data for the earlier ones; the data serves basic orientation purposes merely.

⁵³ For the stove-tile finds from the test excavations, see: Kovács 1998 170–174, *figs 14–15A*.

The overwhelming majority of the stove-tile finds belong to unglazed beaker- and cup-tiles, and to inverted beaker-shaped tiles with apices. Here it should be remarked that in the material from the Ottoman castle at Barcs recovered hitherto, just one fragment of a dish-shaped vessel-tile with an angular opening has been identified, and no find at all from a panel-tile.

Glazed Ottoman concave stove tiles

In the excavation material recovered, the proportion of glazed Ottoman stove-tile finds is very modest and almost all examples are fragments or fragmentary. A total of just one almost fully intact example recovered from the castle's moat and five tiny fragments attest to the presence of this type of artefact in the finds from the test excavations of 1989–1994.⁵⁴ Amounting to 278 pieces, such finds make up 2 per cent of the stove-tile finds of 2003; there was just one intact glazed Ottoman stove tile among the 2003 finds.

As regards shape, these stove tiles resemble tall beakers, or else shallower or deeper cups; they have side-walls profiled by a rib and horizontal, wider or narrow grooved brims (*fig. 14. 1–5, A*). They were made on a fast wheel, from clay mixed with fine sand. They are light brown to brown in colour; their inner surfaces are coated in most cases with green glaze, more seldom with light brownish yellow glaze. The outer diameters of the brims vary between 12 cm and 15 cm, the inner diameters between 9 cm and 12 cm. In cases where these can be measured or deduced, their depths vary between 9 cm and 10.5 cm. Counting as a rare example is a shallow, dish-like (completable) stove tile (*fig. 14. 3*) whose depth is 4.5 cm. Remains of clay coating can be seen on a number of the brims, and, more seldom, on inside surfaces also. Clay found its way onto stove tiles when the outer surfaces of stoves were given a thin coating of clay by way of finishing.⁵⁵

In publications brought out in Hungary, glazed Ottoman stove tiles often feature in passing only, accompanied by one or two drawings or photographs, although detailed descriptions, processings, and richer illustrations also occur.⁵⁶ Basically, two main types of stove tiles can be discerned: a deeper type with a narrower brim and a shallower type with a wider brim. (The pieces from Barcs fall into one or other of these two categories.) Such stove tiles are glazed on their inner sides; glazes are green in the majority of cases, yellow more rarely,⁵⁷ brown more rarely still. There are also examples made using a poured glaze technique (used in Gyula). These glazed Ottoman stove-tile types are likewise known from 16th–17th-century archaeological material recovered on the Délvidék ('Southern Great Plain'), on territories that today belong to Serbia and Croatia.⁵⁸ Finds of the type also occur in material from excavations in southern Romania.⁵⁹

⁵⁴ Kovács 1998 172.

⁵⁵ Similar observations were reported by Tibor Sabján in connection with Ottoman stoves in Buda's Water Town district. *Sabján – Végh 2003* 295.

⁵⁶ From larger castles and towns in Hungary, e.g., Pécs: *Fehér 1959* 115–119, 131–132, Pl. X. 1–15; Esztergom: *Fehér – Parádi 1960*, 42, Pl. XXVIII. 2; Eger: *Fodor – Kozák 1970–1971* 150, 155, figs 18–19, 45; Szolnok: *Kovács 1984* 44, 122–123, Pl. 26. 1–4, 6, *Ádám 2018* 235–236, figs 20–26; Visegrád: *Gerelyes 1987* 174, fig. 5. 4, 7; Segesd: *Magyar 1988* 143, fig. 14. 6, fig. 15. 1–2; Vác: *Tettamanti 1994* 110, Pl. 25. 1; Buda: *Gerelyes 1991* 31–34, 38, 40, 47, fig. 14. 3–5; *Sabján – Végh 2003*; Székesfehérvár: *Kolláth 2010* 84–85, cat. nos. 286–287; Kanizsa (Nagykanizsa): *Kovács 2003* 159, fig. 7. 7; Gyula: *Szalai 2017* 481, fig. 3. 17–20.

⁵⁷ *Sabján – Végh 2003* 296.

⁵⁸ Bács (Bač, Voivodina, Serbia): *Nadj 1961* 95, Taf. XIV. 5–10 (with mentions of other archaeological sites); Belgrade: *Marjanović-Vujović 1973* 215, (227), cl. 23; *Bikić 2003* 88, Tip XVI/4–5, 154–155, fig. 34; Eszék (Osijek, Croatia): *Radić 2015* cat. nos 140–146; in the catalogue, a stove-wall fragment with stamped decoration (cat. no. 139) also features (cf. Gyula: *Szalai 2017* 481, fig. 3. 22).

⁵⁹ Turnu Fortress (Turnu Măgurele, Teleorman county, on the left bank of the River Danube). *Gaşpar 2019* 135, cat. no. 53, Pl. VI. 3a–b (dated to the 16th–17th centuries in the text, to the 17th–18th centuries on fig. VI).



Fig. 14. Barcs, Ottoman castle: 1–5, A. Glazed Ottoman stove tiles, 6–11, B. Small dish-shaped stove tiles (Photographs: ©Károly Kozma, drawings: ©Katalin Nagy)

Unglazed concave and convex stove tiles

The unglazed stove tiles from Barcs present a rather uniform picture. During data compilation (before conservation) in connection with material recovered during the excavation work in 2003, 143 fully intact stove tiles of various kinds were registered, in addition to fragments of such tiles. All of the finds are made from clay containing fine sand. As regards colour, they are brown, brownish red, or, owing to secondary firing, brick red.

Beaker-, and cup-tiles with circular openings

Beaker-tiles with circular openings (*figs 15–16*). The overwhelming majority of the concave stove-tile finds are beaker-tiles with circular openings⁶⁰ that were made on a hand-turned potter's wheel. As regards shape, they have nearly straight side-walls, and they generally taper a little towards the bottom and broaden somewhat towards the rim, which is unpronounced. Sometimes they are cylindrical. These tiles are rather coarse in finish, with much roughness inside. They show emphatic signs of having been made on a hand-turned wheel. No example with a master's mark on its base has been found.⁶¹ Tiles have rims that are 11–12 cm in diameter, bases that are 5.5–6 cm in diameter, and depths of 12–13 cm. On many, the lower part has been 'carved' (cf. e.g., *fig. 15. 1, 4–5*), thus removing the sharp edge where the base and the wall parts met, thereby narrowing the base part, of significance when tiles were being mounted on stoves. On account of their locations and the layers they contain, Features 26 and 35 at Barcs can be dated to the 16th century (in view of the historical data for the castle, to the second half of that century). Among the constituent parts of the stoves reassembled using material from these pits, simple beaker-tiles lacking brims predominated. It is impossible to generalise on the basis of these alone, but following surveys of material from other features and layers it would appear that at Barcs the use of simply made, brimless, beaker-shaped stove tiles is characteristic of the 16th century rather than of the 17th century (although not exclusively so).

Cup-tiles with circular openings (*figs 17–18*). Two types of cup-shaped stove tiles have come to light at Barcs. In its execution and in its shape, the first type resembles the beaker-shaped stove tiles, differing only in that it has an inwardly slanting brim or a horizontal narrow one. A significant proportion of the tiles from a mid-17th-century stove unearthed in Trench KÜ/90.I are of this type (*fig. 17*),⁶² but in the Feature 16 stove, too, there are many such tiles (e.g., *fig. 18. 4*). The average diameter at the rim is 12 cm, depths are 10–12 cm, and diameters at the base are 5–6 cm. According to observations made during excavation work, at Barcs stove tiles of this kind came to light more in material recovered from 17th-century pits: in these pits their proportions were more significant. Fashioned on a fast potter's wheel, carefully wrought, and delicately finished, tiles of the second type are characterised by narrow bases, plump, bulbous bodies grooved around, and by broad, inwardly slanting grooved-around brims. The average diameter of these tiles at the rim is 12–13 cm, their average depth 11–12 cm, and their average diameter at the base 5–6 cm. A good deal fewer finds at Barcs can be assigned to this second type (cf. *fig. 18. 2–3*) than can be to the first. Only in the case of Feature 16 can their occurrence be linked to a specific stove. As regards age and shape, near parallels of these tiles occur in an assemblage of finds recovered in Buda,⁶³ while more distant parallels crop up in an assemblage unearthed at Baja.⁶⁴ Both settlements were Ottoman-inhabited.

⁶⁰ In the Hungarian specialised literature, the naming of beaker-shaped ('pohár alakú') and cup-shaped ('bögre alakú') stove tiles is inconsistent (cf. *Kocsis – Sabján – Tóth 2006* 111, n. 351); it cannot fully be reconciled with the terminology used in Central Europe (Switzerland, southern Germany). In the present study, generally, examples with straight sides and unprofiled rims are called beaker-tiles or beaker-shaped stove tiles (even when in shape and size they do not correspond to the medieval tube-like beaker-tiles from Central Europe), while those with more-or-less curving side-walls and rims each profiled with an inner edge are termed cup-tiles or cup-shaped stove tiles.

⁶¹ The general lack of base stamps (namely the very rare use of them) was, perhaps, characteristic of the region; no base stamp was seen on any Ottoman-era, hand-turned vessels from Barcs.

⁶² See also *Kovács 1998* fig. 15A.

⁶³ *Éder 2014* 287, 291–292, fig. 32. The collapsing of the stove can be dated to the early part of the first half of the 17th century (*op. cit.* 296).

⁶⁴ *Kovács 2006* 284, fig. 10. 8. The closing of the pit had probably occurred by the middle third of the 17th century (*op. cit.* 290).

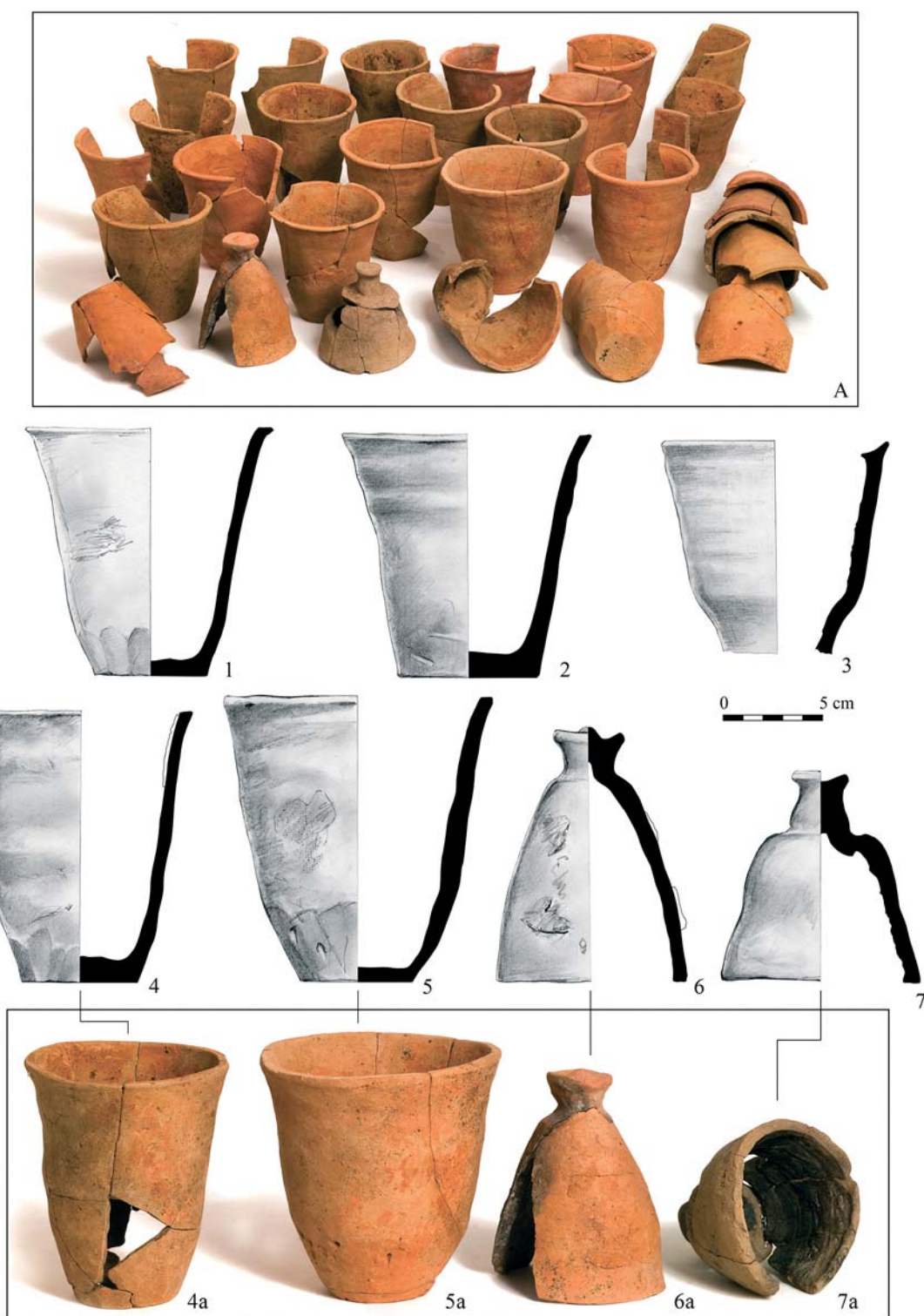


Fig. 15. Barcs, Ottoman castle. A, 1–7. Stove tiles from Feature 26, 2003, second half of the 16th century (Photographs: ©Károly Kozma, drawings: ©Katalin Nagy)



Fig. 16. Barcs, Ottoman castle. 1–6, A. Stove tiles from Feature 35, 2003, second half of the 16th century (Photographs: ©Károly Kozma, drawings: ©Katalin Nagy)

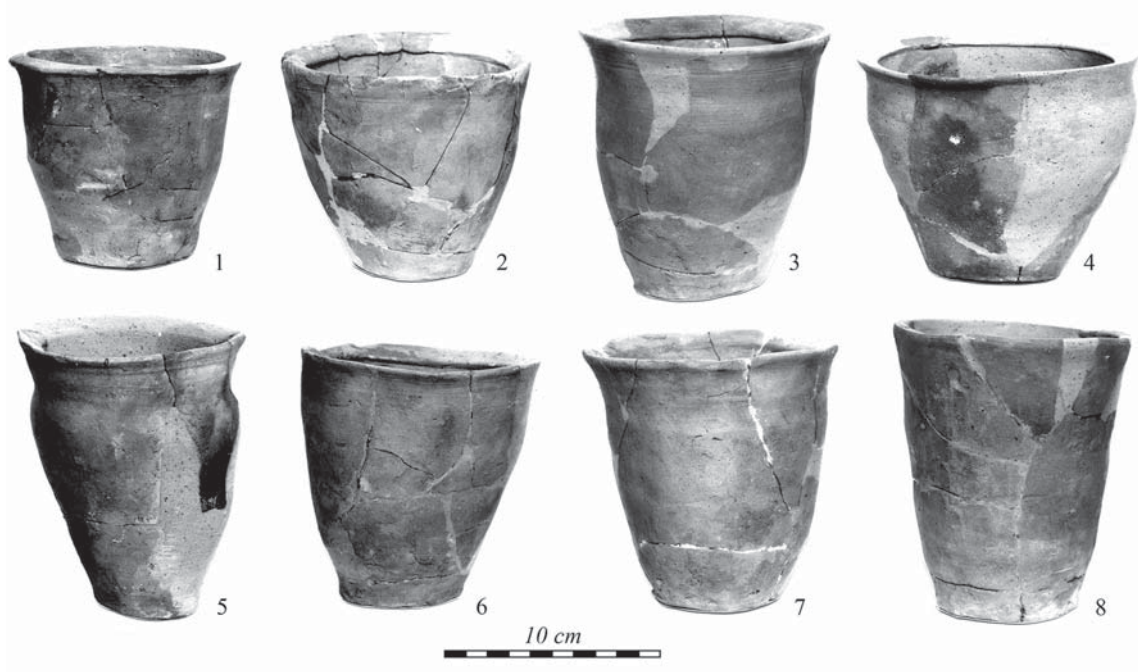


Fig. 17. Barcs, Ottoman castle. 1–8. Tiles from a stove from the mid-17th century. Test Trench KÜ/90.I (Photographs: ©Krisztina Pálfay)



Fig. 18. Barcs, Ottoman castle. 1–4. Stove tiles from Feature 16, 2003, 17th century (Photographs: ©Károly Kozma, drawings: ©Katalin Nagy)

The incidence of the beaker- and cup-shaped types of stove tile can be documented in the Carpathian Basin from the late medieval period onwards. Cup-shaped stove tiles are the most frequently occurring, most characteristic, concave tiles on stoves discovered on the Great Plain, but are also common in the case of stoves found in eastern Transdanubia.⁶⁵ Late cup-shaped tiles from eastern Transdanubia are fully identical with those from the Great Plain.

Generally speaking, these tiles are dated to the 14th/15th–17th/18th centuries,⁶⁶ a timespan that can be narrowed to the 15th–16th centuries in late medieval village and castle settings.⁶⁷ More precise dating is harder in cases where relics occur jumbled together.⁶⁸ Examples from the 16th–17th-century period show unequivocally not only that the archaic, late medieval shape lived on, but also that the original production technique continued to be employed.⁶⁹

Little plate- and dish-shaped tiles (*fig. 14. 6–11, B*)

Stove tiles featuring little plates or little dishes and stove tiles with lobed (rosette, quatrefoil) openings influence the picture in Barcs only slightly, so few are they.⁷⁰

Tiles of this kind were placed on stoves next to larger tiles. Maybe they served as decoration and were mounted on the lower parts of stoves at the corners.⁷¹ In the case of those at Barcs, however, such positioning could not be proved, nor – on the basis of Balkan stoves – that they might have been mounted on domes with walls that were a good deal thinner than the walls of the stove bodies. Just a few such tiles (approximately 10–12 pieces) have come to light at Barcs, at different locations of the areas excavated. A number of intact pieces were discovered in a heap (*fig. 14B*); these, on the basis of where they were,⁷² may have been from the above-mentioned mid-17th-century stove (Trench KÜ/90.I).

Made on a hand-turned wheel, all kinds are encountered, among them deeper and shallower examples. The diameter at the rim of the deeper ones is 8.5–9 cm, the depth 5.3–6 cm, and the diameter at the base 4.3–4.6 cm. The shallower tiles include some whose diameter at the rim is

⁶⁵ *Sabján 2001* 293, 305, 307; *Sabján 2002* 61.

⁶⁶ *Sabján 2001* 324: *fig. 18*.

⁶⁷ Beaker-tiles from medieval settlements and castle settings, e.g., Ágasegyháza (environs of Kecskemét, Great Plain), *Szabó 1938* 92, *fig. 423*; Tolna-Mözs (southern Transdanubia), *Vizi 2010*, examples with marks on the bottom; Felsőnyék, Ozora, Sarvaly, Öcsény (eastern part of Transdanubia). In the material from the last-mentioned locations, thick-walled, beaker-shaped tiles are characteristic whose rims are 7–10 cm in diameter and whose depths are 18–20 cm. *Sabján 2001* 305, 307, 309.

⁶⁸ On the Babócsa-Nárciszos site, beaker-tiles recovered from Ottoman-era pits have been dated to the 16th–17th centuries and tiles found in pieces of stove wall to the medieval period. *Magyar 1990* *fig. 19. 1–3*. See also stove tiles from Raholca Castle (Ružica, Croatia), many of which are similar to those from Barcs; they date from the 14th–17th centuries. *Radić – Bojčić 2004* 229–233, *cat. nos. 464–481*.

⁶⁹ Regarding southern Transdanubia and the Délvidék ('Southern Great Plain'), see (for example) the following: Pécs: *Fehér 1959* 117, *Pl. X. 17*, 16th–17th centuries; Eszék (Osijek, Croatia): *Radić 2015* *cat. no. 148*, 16th–17th centuries; Belgrade (Serbia): *Bikić 2003* 115–116, *fig. 13*, as 16th-century Central European ceramic continuing late medieval traditions.

⁷⁰ On the Great Plain and in eastern Transdanubia there were stoves with richer exteriors that were decorated with them. *Sabján 2001* 293, 307, 309.

⁷¹ *Kocsis – Sabján – Tóth 2006* 111 (Visegrád). From among the Ottoman-era finds from the area around the Öregtorony at Dunaföldvár and from Visegrád Castle, Tibor Sabján mentions fragments of stove walls where a little plate-shaped tile was located near the corner edges of the stove, because here the back parts of the cup-shaped tiles at right angles to one another would have touched one another. He writes that the Visegrád fragments are 'rather clearly from an Ottoman-built stove for which earlier Hungarian material was reused. The very same suspicion may arise in connection with fragments from Dunaföldvár, too.' *Sabján 2001* 299. See also: a small plate-shaped stove tile from Babócsa in a stove-wall fragment, age uncertain. *Magyar 2002* 98, *Diagram 7* (= *Magyar 1990* *fig. 19. 1*).

⁷² They occurred around the survey points 45/10–50/15, among 17th-century burnt red debris (code 611). See also *Kovács 1998* 170, *fig. 15A*.

7–8 cm, whose depth is 4 cm, and whose diameter at the base is 5–5.5 cm. In a number of cases, the lower parts of these are ‘carved’, in the same way that the lower parts of the crudely worked beaker-shaped stove tiles are.

On examples that are shallow but broader at the mouth, diameters at the rim are 11–11.5 cm, depths 3–4 cm, and diameters at the base 6–8 cm. On these the rims are grooved, and on one of them a cone is to be found on the inner side of the base. A fragment of the base of a stove tile differing from the above-mentioned pieces (diameter at the base: 7.5 cm, measurable depth: 3.8 cm) is decorated with a three-petal rosette stamped on the inside. The last-mentioned examples belong to the little plate-shaped types from eastern Transdanubia, from the area between the Danube and the Tisza rivers, from the flatlands east of the River Tisza, and from Southern Great Plain area.⁷³

Beaker-tiles with quatrefoil openings (*fig. 19*)



Fig. 19. Barcs, Ottoman castle. Beaker-tile with a quatrefoil opening from the early 17th century. Test Trench ÁI/91 (Photograph: ©Krisztina Pálfay)

Beaker-shaped stove tiles with quatrefoil (four-lobed) openings are likewise represented by only a few fragments.⁷⁴ As regards the more complex pieces, on each of which the middle of the opening is covered by a pierced clay disk, fragments from three such tiles came to light during the test excavations conducted in 1991. They were found around the brick base of a stove (datable on the basis of a coin to the first half of the 17th century) that was unearthed in the south part of the castle (Trench ÁI/91, *fig. 7. 1*). They were in the company of beaker-shaped and cup-shaped stove tiles, and may have been mounted on the one-time stove as decoration. Their diameters at the rim are 10–12 cm.

This type of stove tile occurs in 15th–17th-century settlement sites on the Great Plain, and also comes to light in Ottoman castles in Transdanubia. More complex examples similar to the ones from Barcs (i.e., supplied with a disk in the middle) are rarer; on the Great Plain, they were used only on more richly-made stoves.⁷⁵ Stove tiles of this type do not occur in the material recovered from the Ottoman castle at Szekszárd-Palánk (Yeni Palanka).⁷⁶ With regard to a stove tile of this kind from Bátaszék, an Ottoman castle, the researcher who has published the piece hypothesises that it may have come to the castle in the 16th century as a product from Ete or from the Great Plain.⁷⁷ Dated to the 15th–16th centuries but brought to light in the company of Ottoman-era concave stove tiles, a tile of this kind from Segesd may – in the light of the Barcs and Bátaszék examples – likewise have been part of an Ottoman (Ottoman-era) stove.⁷⁸ It cannot be excluded that the quatrefoil stove tiles each supplied with a disk in the middle found at the castles at Segesd and Barcs came from a Hungarian pottery workshop on the Great Plain.

⁷³ *Sabján 2001* 294, 307; *Sabján 2002* 62.

⁷⁴ *Kovács – Rózsás 1996* 170, 178, *fig. 15. 2*; *Kovács 1998* 172, *fig. 14. 1–3*.

⁷⁵ *Sabján 2001* 293. Cf. vicinity of Kecskemét: *Szabó 1938* 96, *fig. 439*; Nyársapát, Building 16: *Benkő 1980* 346, Pl. 45. 6; Szentkirály-Felsőszentkirálypuszta, Building 25: *Gerencserek 2002* cat. no. 262 (P. Havassy); Juliskaháza (formerly Bács-Bodrog county): *Gerencserek 2002* cat. no. 87 (G. Tomka).

⁷⁶ Just one trefoil tile fragment has been published that may have been made in a workshop in Ete. *Gaál 2015* 167, Pl. 2. 1.

⁷⁷ *Pusztai 2003* 308, *fig. 3*.

⁷⁸ *Magyar 1988* 143, *fig. 15. 4*.

Inverted beaker-tiles with an apex or crown part (*fig. 15. 6–7, fig. 16. 1–3, figs 20–23*)

A number of finds belong to convex stove tiles that once decorated the domes of stoves. Most such dome tiles were versions of the onion-shaped design; as well as these, bell-shaped and conical stove tiles have also come to light.

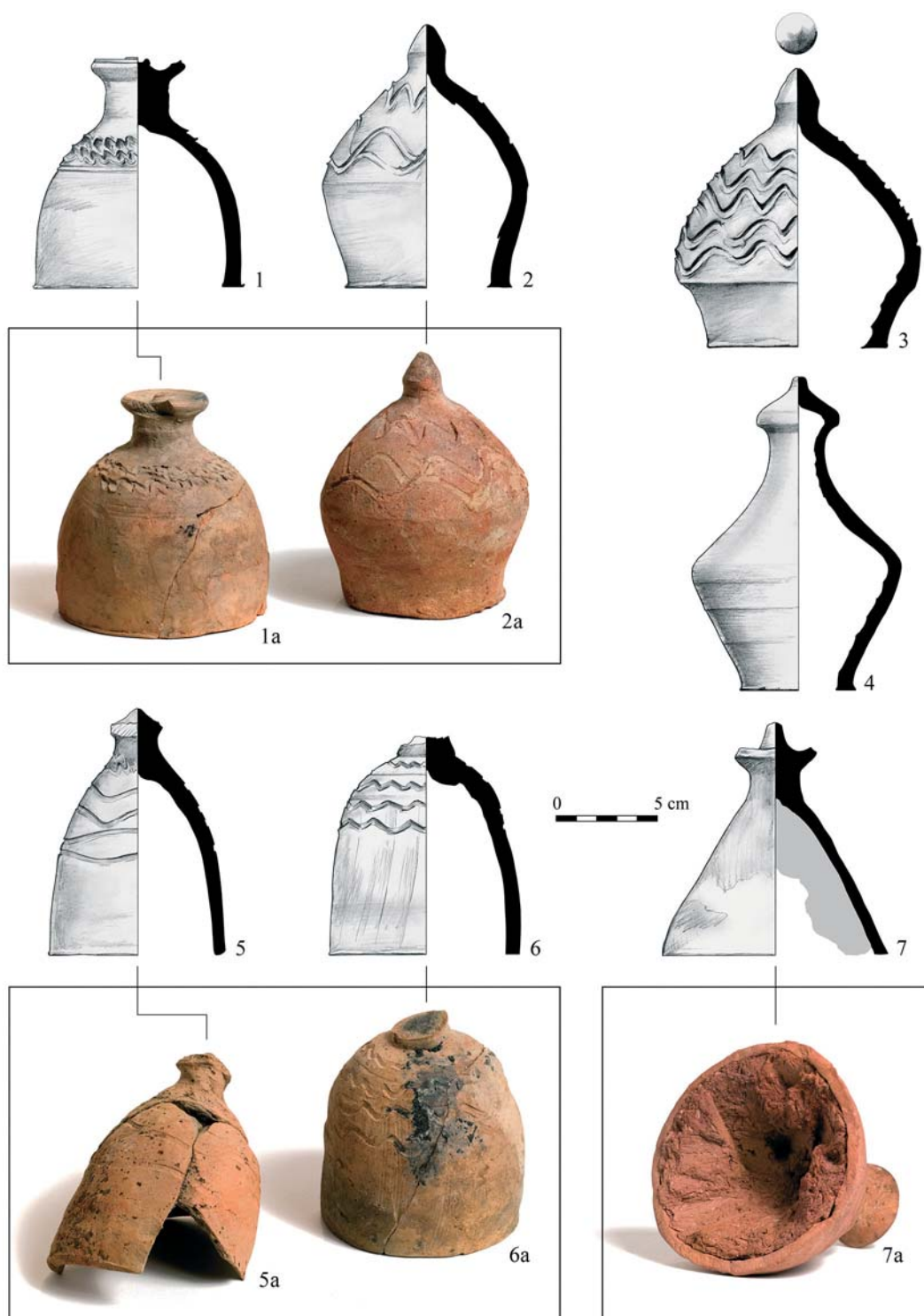


Fig. 20. Barcs, Ottoman castle. 1–7. Inverted beaker-tiles with an apex part
(Photographs: ©Károly Kozma, drawings: ©Katalin Nagy)

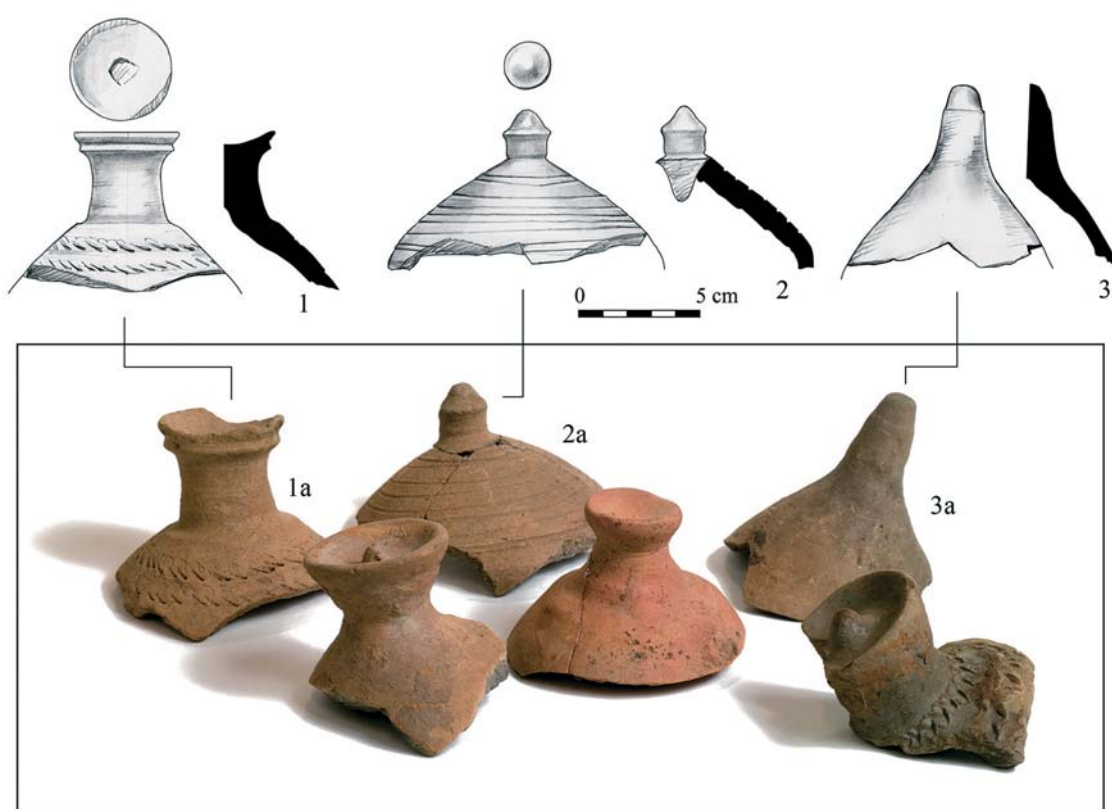


Fig. 21. Barcs, Ottoman castle. 1–3. Fragments of inverted beaker-tiles with an apex part (Photographs ©Károly Kozma, drawings: ©Katalin Nagy)



Most onion-shaped stove tiles were made on a hand-turned potter's wheel. Built up from coils of clay, they were not made fully smooth on the inside and some are rough. They are sooty on the inside and a number were found filled with mud (*fig. 20. 7*). In more than one case, a thin layer of mud could be seen on the outside surfaces also. Most have a diameter across the rim of 10–11 cm (8.5 to 13 cm) and heights of 12–13 cm (9.5 to 14.5 cm). Especially remarkable is a 'jug-shaped' stove tile (a variant of the onion-shaped type) (*fig. 20. 4*). Its diameter across the opening is 5.5 cm and its height 15.7 cm. On the basis of fragments, some onion-shaped tiles were surely larger in size (*fig. 21. 2*). In closed assemblages of finds, only a few tiles, 3–5 merely, could be identified as having been used for dome decoration.

Fig. 22. Barcs, Ottoman castle. Inverted-beaker stove tiles with a pointed apex from Feature 33, 2003, second half of the 16th century (Photograph: ©Péter Hámori)

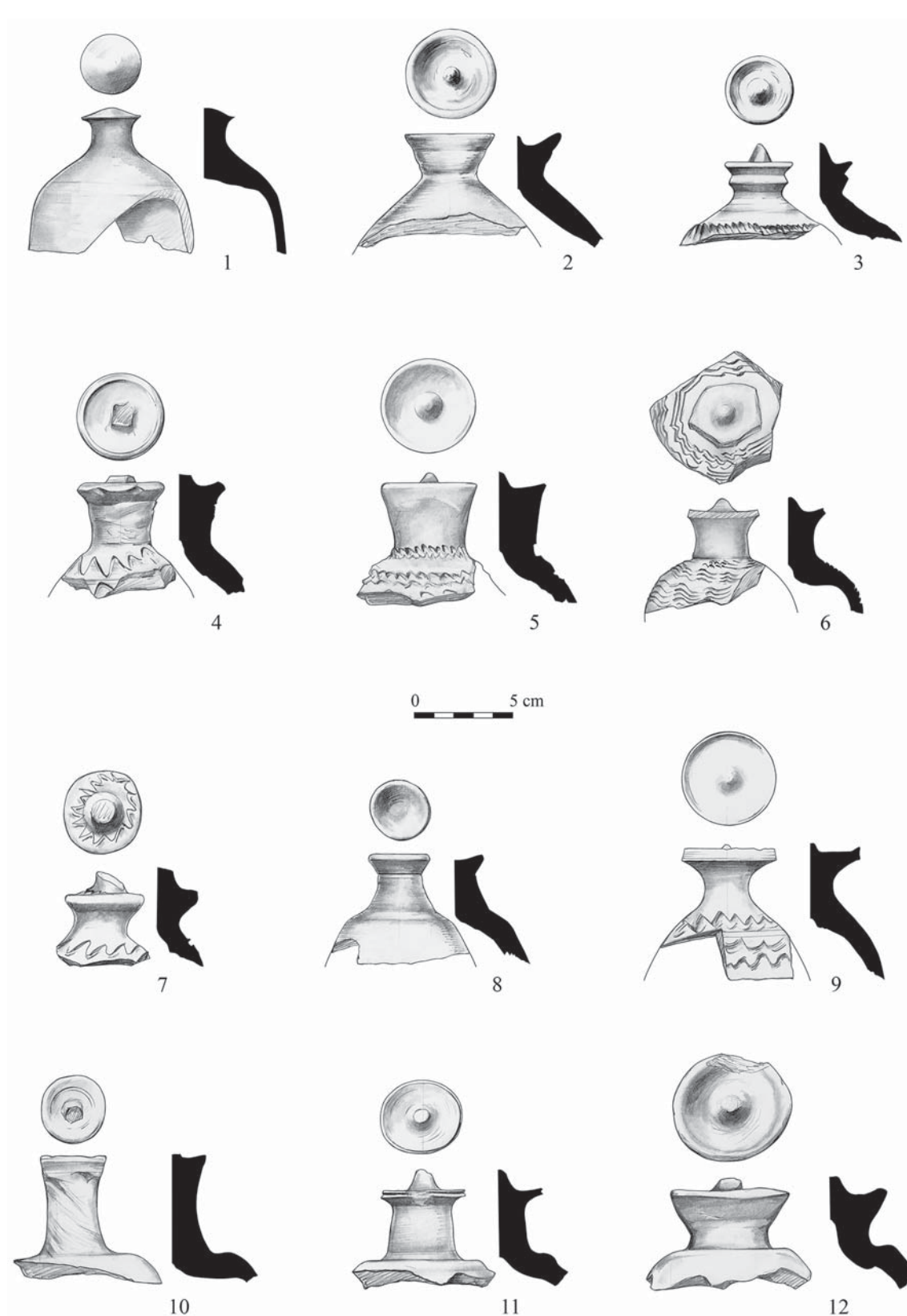


Fig. 23. Barcs, Ottoman castle. 1–12. Apex (or crown) pieces of inverted beaker-tiles
(Drawings: ©Katalin Nagy)

With regard to shape, the pinnacle parts of inverted-beaker stove tiles vary. There are 1) simple pointed apexes (e.g., *fig. 21. 3*, *fig. 22*), 2) complex apexes, (on one such, *fig. 21. 2*, the apex had been put on subsequently), and 3) small bowl-like elements on shorter or longer stalks with an apex in the middle; this last type is the most common (*fig. 23*).

The surfaces of inverted beaker-tiles with an apex part were either left undecorated or were decorated with irregular, incised wavy lines, with wavy lines put on using a comb, with slanting incised grooves, or with deep parallel lines running round the outside. In some cases, even the inside surfaces of the small bowl-like elements on stalks are decorated with wavy lines (*fig. 23. 7*). Methods of decoration and motifs show kinship with the decoration featuring on hand-turned pots of the time known from the region.

On cup-tiled stoves found on the Great Plain and in eastern Transdanubia, inverted beaker-tiles with an apex part feature almost invariably.⁷⁹ While parallels of our apexed stove tiles of types 1 and 2 are known from 15th–17th-century sites across broad areas of the Carpathian Basin,⁸⁰ it has been hard thus far to find analogies of our tiles of type 3. In material recovered from Újpalánk (Yeni Palanka), an Ottoman stronghold in eastern Transdanubia, no type-3 stove tiles were discovered.⁸¹ At the Babócsa-Nárciszos site (in the neighborhood of Barcs) – formerly an Ottoman-inhabited location – stove tiles were recovered that are entirely similar to them.⁸² Indeed, they show such high degrees of correspondence with the Barcs ones that the possibility of a common workshop emerges. Published kindred finds from Ráholca Castle (Ružica, northern Slavonia, Croatia), on the other side of the River Drava, are significant for investigation of their links and roots. The majority of the Ráholca finds have been dated to the 14th–16th centuries, but the stove tiles which – like those from Barcs – feature apexed small bowl-like elements on their points have been assigned to the 16th–17th centuries, based on parallels from Babócsa.⁸³

Material composition investigations

According to results yielded by petrographic analysis of ceramic finds, the material composition of the stove tiles shows resemblance to that of vessels found at the castle.⁸⁴ On the basis of this composition, the Ottoman glazed stove-tile fragments looked at were in the main in one group with the Ottoman glazed vessels, while the fragments of unglazed stove tiles fashioned on a hand-turned potter's wheel were chiefly in one group with some of unglazed vessels made using this last-mentioned technique. Consequently, the stove tiles in question may have been made in the same geographical areas as the vessels corresponding to them; the workshop or workshops cannot, however, be specified.

Stove-wall remains

Although many more were found, just 230 stove-wall pieces were packed away for study. A significant percentage of them came from pits. They are fragments that bear impresses of concave stove tiles of various kinds. There are flat pieces, pieces of corners, pieces of perpendicular and horizontal edges, and pieces of polygonal structures. Also occurring are shoulder fragments from

⁷⁹ *Sabján 2001* 296, 308.

⁸⁰ *Sabján 2001* 296, 308. Cf. e.g., villages in the Kecskemét area (*Szabó 1938* 94–95, figs 432–435); Bátaszék (*Pusztai 2003* fig. 3); Decs-Ete (*Vizi 2012* 231, Pls 11–13); Szekszárd-Újpalánk (*Gaál 2015* 170–171, Pl. 5. 4–6); Visegrád (*Kocsis – Sabján – Tóth 2006* 111, fig. 30); Buda (*Éder 2014* fig. 1, fig. 32).

⁸¹ *Gaál 2015*.

⁸² *Magyar 1990* 113, Pls 35–42 (dated to the 16th–17th centuries), fig. 20. 1–4, fig. 21. 3 (dated to the medieval period); *Magyar 2003* 104, fig. 7. 1.

⁸³ *Radić – Bojčić 2004* cat. nos 483–489.

⁸⁴ *Kreiter – Pánczél 2016* 104–111 (Fabrics 6–7).

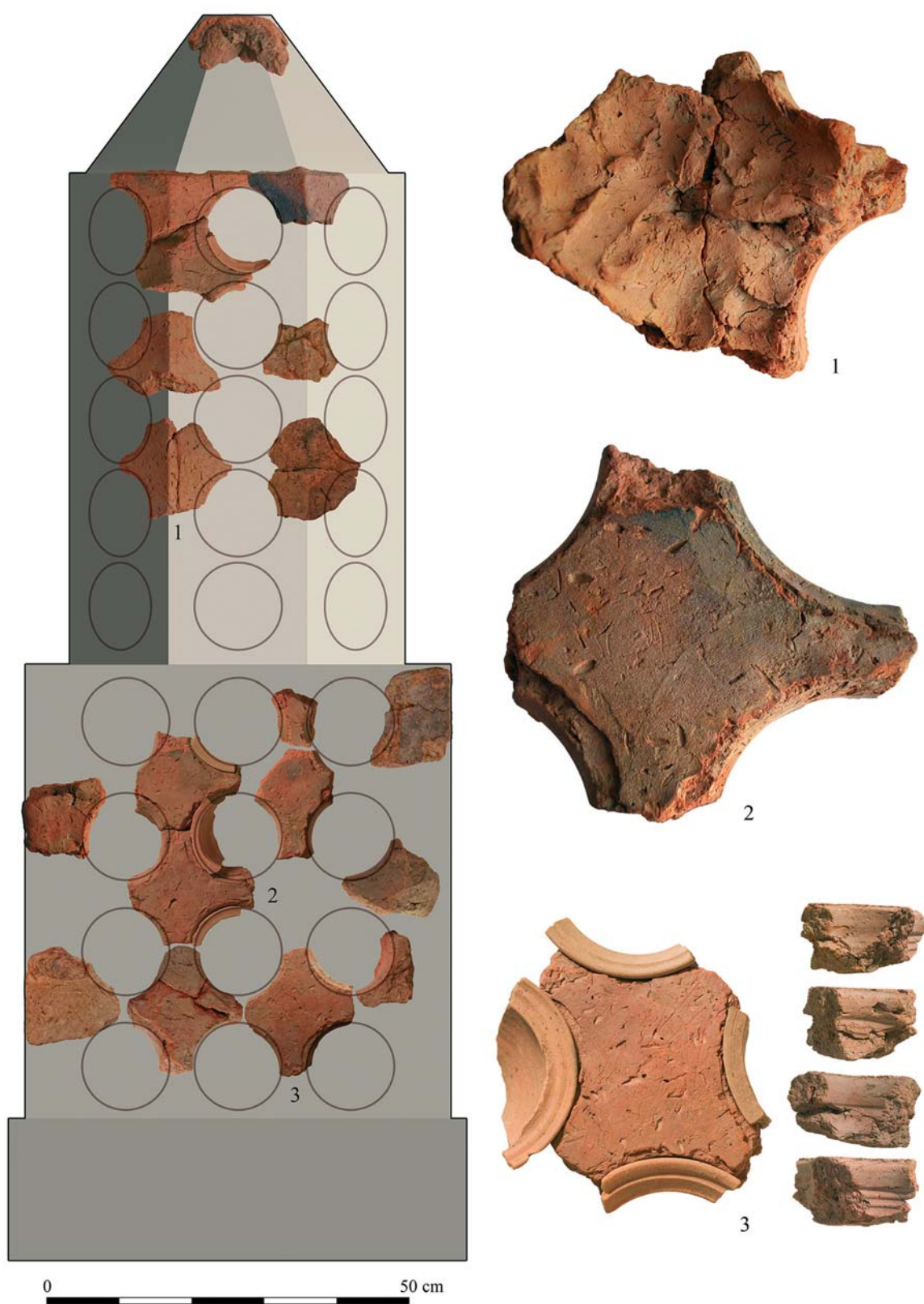


Fig. 24. Barcs, Ottoman castle. Stove reconstructed using pieces of stove wall recovered from Feature 16, 17th century (Photographs: ©Károly Kozma, ©Gyöngyi Kovács; computer graphics: ©Zsolt Réti)

the upper areas of the upper parts of stoves, dome fragments, pieces of decorative ribbing, and so on.⁸⁵ All preserve important information regarding not only the shapes and particulars of stoves, but also the manner of their construction. Moreover, they can also be used in the reconstruction of stoves (*fig. 24, figs 26–27*). The investigations showed that a number of pits contained finds from one stove approximately.

The fragments

Flat pieces of stove wall

These are from the rectangular-based lower parts of the stoves. Among the flat pieces are examples marked by only one or two concave stove tiles, but also examples marked by four such tiles. On the basis of the marks made, the relationships of the tiles to one another can be determined, and also their density and arrangement, in which minor irregularities, not geometrical precision, can be observed. The distance of the tiles from one another is generally ca. 2–3 cm, sometimes barely 1 cm.

Judging by the impresses, the tiles of a stove differed in size (the tiles themselves also show this), but judging by the material available it is not possible to report categorically that larger-sized stove tiles were mostly used for the lower parts of stoves and smaller-sized tiles for the upper parts,⁸⁶ although it is likely that larger-sized tiles were indeed used on the lower parts. On the other hand, this much is certain: tiles of different sizes were used on stoves, and the sizes of tiles may have influenced the parameters of stoves (see, e.g., the differences between the stoves from Feature 16 and Feature 35 respectively; *figs 24 and 27*). In the case of the stove from Feature 16, it could be shown that its tiles differed from each other not simply as regards shape, but also as regards production technique employed.

Perpendicular edges with two sides that form a right angle and corner fragments

These belonged to the lower parts of stoves. When they bear impresses of concave stove tiles, these pieces acquire an importance in establishing the measurements of parts of stoves.

Horizontal edges (stove shoulders)

Less could be ascertained from the fragments of horizontal edges. The perpendicular areas of these bear the impresses of concave stove tiles; the horizontal expanses indicate the widths of stove shoulders. Horizontal edges recovered from Feature 26 permitted the hypothesising of two stove shoulders for the lower part of the stove (*fig. 26*).

Fragments of the octagonal upper parts of stoves

These pieces are from the multi-sided upper bodies of stoves. On the basis of their obtuse angles, these upper bodies were invariably octagonal prisms. Their angles are not always geometrically correct; but even with allowances for differences, no structures other than prisms with eight sides are possible. Here it should be noted that no finds indicative of cylindrically-shaped upper parts were found in the material investigated. On the majority of pieces, marks made by one, two, three, or even four concave stove tiles are to be seen. A large section (assembled from pieces) of the eight-sided upper part of a stove was recovered from Feature 16 (*fig. 25*). With sides 20 cm across, with impresses of tiles, and with marks indicating the incorporation of a dome on the upper shoulder, this part is one of the more spectacular stove-wall fragments.

⁸⁵ Similar stove-wall fragments reached the Museum from the 1989–1994 test excavations, among them a number of pieces from the above-mentioned mid-17th-century stove (Test Trench KÜ/90.I).

⁸⁶ This was observable on the stoves found in Buda's Water Town. Cf. *Sabján – Végh 2003* 288.



Fig. 25. Barcs, Ottoman castle. Larger piece of the upper part of a stove recovered from Feature 16, 17th century
(Photographs: ©Gyöngyi Kovács)

Upper shoulder fragments

Of the fragments from the upper sections of the stoves, a couple were set aside. The upper shoulder assembled from fragments discovered in Feature 16 has already been mentioned. The upper shoulder of the stove that took shape on the basis of finds from Feature 35 was decorated with a ledge (*fig. 27*); some elements of the merlons were arched in shape and some were pointed. Evidence of the fitting of a dome is visible on some fragments.

Dome fragments

These pieces yield information about the shapes of the various domes (for basic types, see *fig. 28*). One such fragment (Feature 16), in the shape of a truncated pyramid, is from the topmost part of a dome. Its base was tailored to the octagonal prism upper part (*fig. 24*).

A number of the fragments came from semi-spherical, or roughly semi-spherical, domes; domes of this kind were in many cases decorated with inverted-beaker stove tiles with an apex part (*figs 26–27*). According to the specialised literature, inverted-beaker stove tiles with an apex part (onion-shaped tiles) were generally mounted on domes at depths that allowed only their upper parts – the shoulders and apexes of the onion shapes – to protrude.⁸⁷ However, the design of such inverted-beaker stove tiles at Barcs, the extent of their decoration, and sometimes the clay remains from the dome wall observable on their brims all attest that these tiles were mounted on their domes at depths of 2–5 cm in general, meaning – in the case of the decorated tiles at least – that more than the top half of each tile protruded from its dome. This is supported by another observation: on a few dome fragments – on average 3/4–7 cm thick – recovered at Barcs, stove-tile impresses 1–2 cm deep (!) can be seen.

It is conceivable that the castle once featured a dome or domes on which smaller concave tiles were mounted; this, however, could not be proved. It is certain that flat-topped stoves, too, once stood in the castle, although no flat tops were identified.

Decorative elements

Semi-circular in cross section, ribbings decorated with fine incisions came to light mostly among the stove fragments from Feature 35; the stove in question was decorated with these ribbings, as well as with ledge elements similar in style to those mentioned above. The ribbings and the merlons together formed a single decorative scheme (*fig. 27. 2–3*). Some of the stray finds recovered may well have come from this stove.

⁸⁷ Sabján 2001 296. See also Szabó 1938 91.

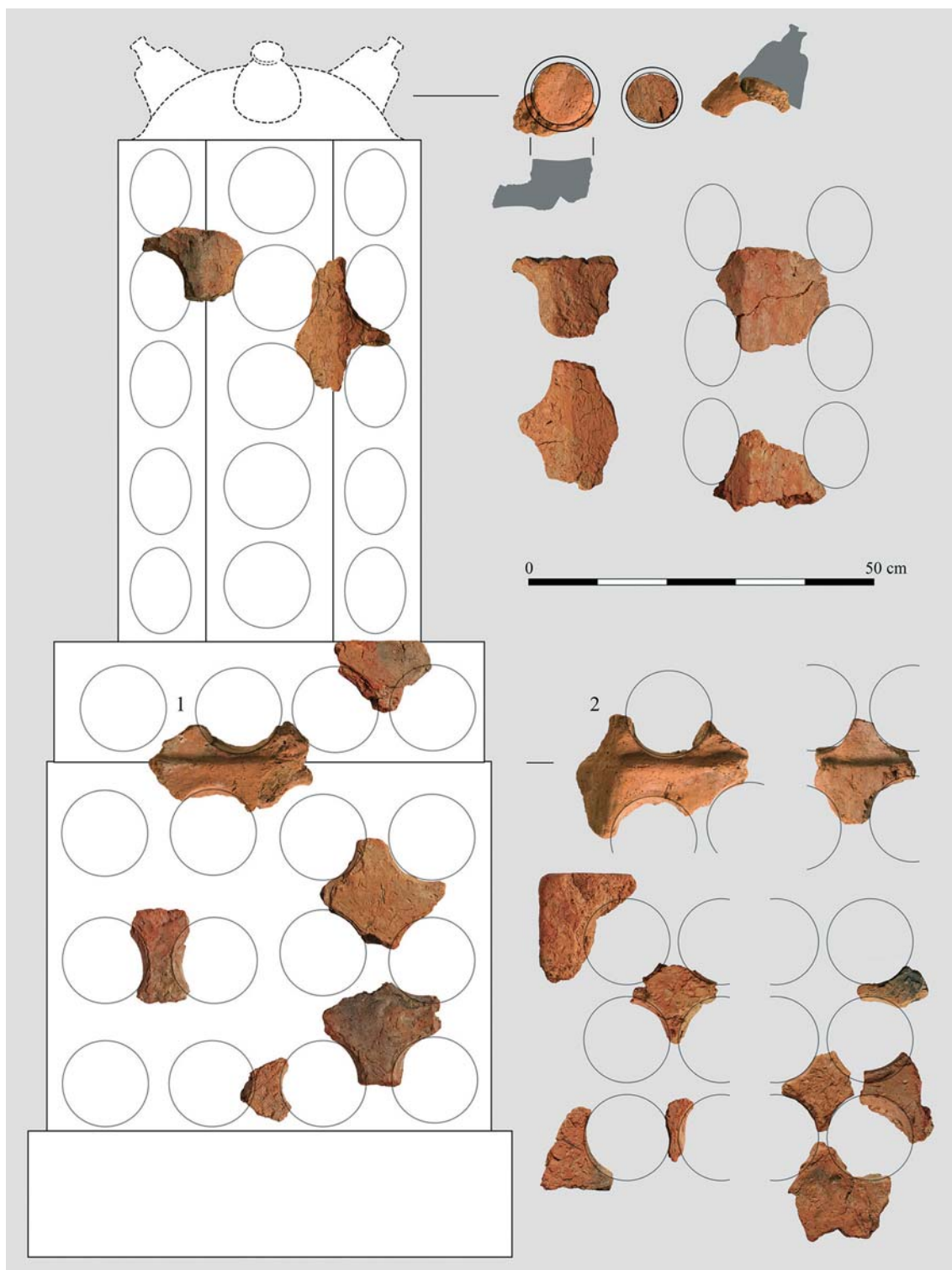


Fig. 26. Barcs, Ottoman castle. Stove reconstructed using pieces of stove wall recovered from Feature 26, second half of the 16th century (Photographs: ©Károly Kozma, ©Gyöngyi Kovács; computer graphics: ©Zsolt Réti)

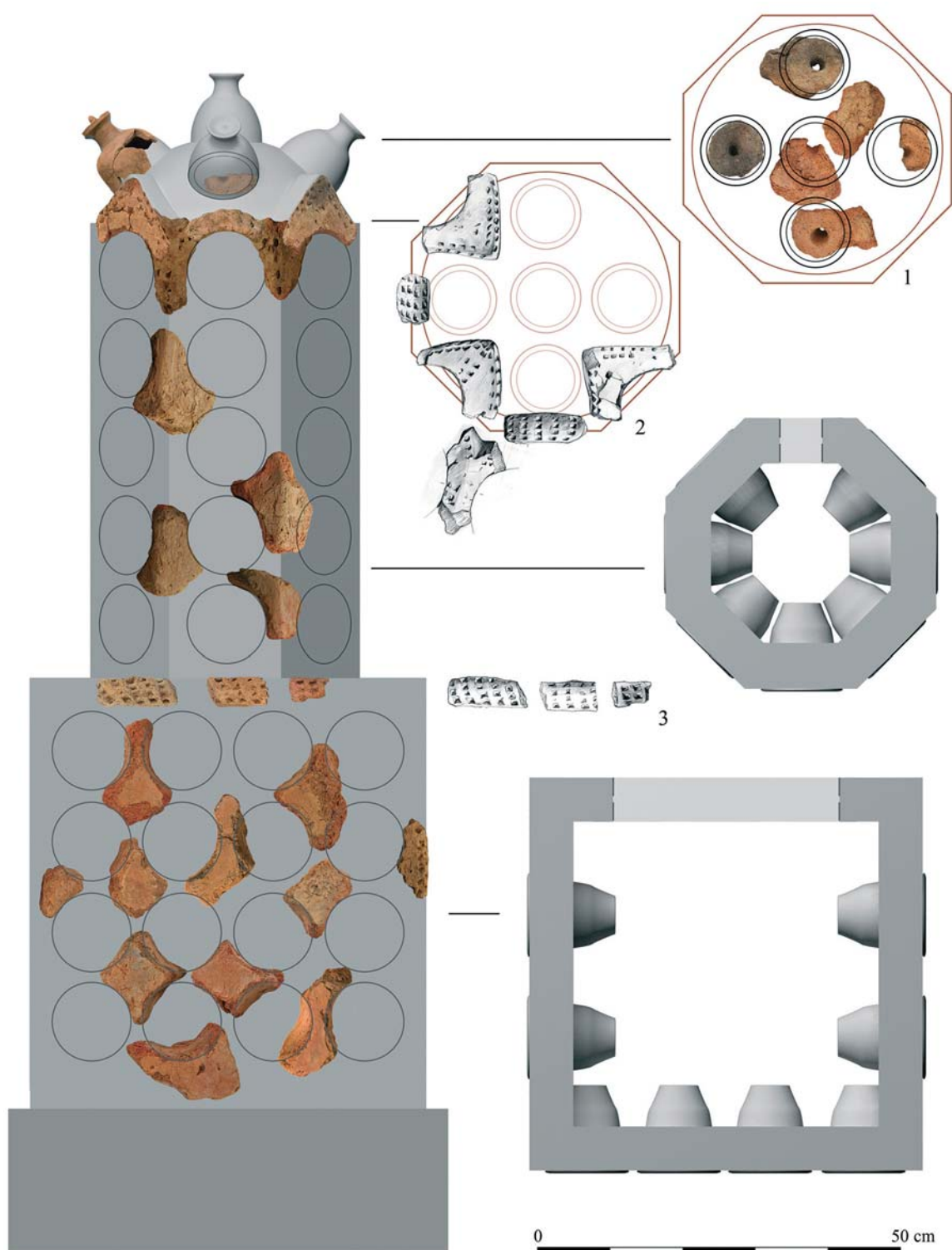


Fig. 27. Barcs, Ottoman castle. Stove reconstructed using pieces of stove wall recovered from Feature 35, second half of the 16th century

(Photographs: ©Károly Kozma, ©Péter Hámori, ©Gyöngyi Kovács; drawings: ©Katalin Nagy; computer graphics: ©Zsolt Réti)

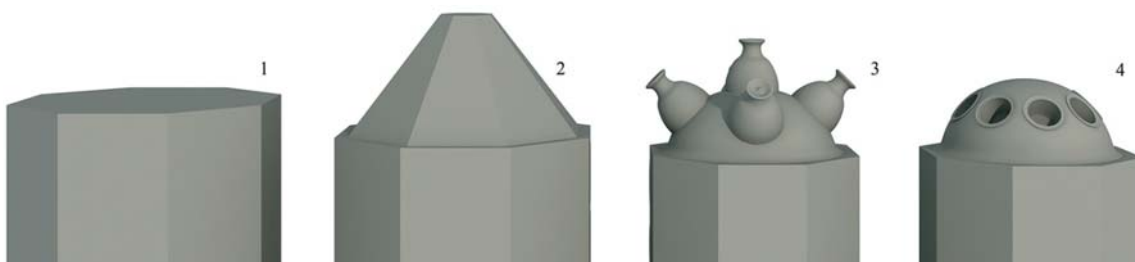


Fig. 28. Barcs, Ottoman castle. 1–4. Stove dome variants
(Computer graphics: ©Zsolt Réti)

Stove-building observations (fig. 29)

Stoves were built of clay or mud, without the use of a frame in most cases. On many fragments, the use of flattened coils of clay during the stove-building work can be observed (*fig. 29. 3–4, 6–7*)⁸⁸ and, in one or two cases, marks made by supporting framework (used for the building of domes, for example) (*fig. 29. 5*).⁸⁹ Marks made by pressing and shaping can be identified on the rough inner surfaces (e.g., *fig. 24. 1*), as can those made by insertions. The outer surfaces of stoves were given a thin coating of mud (*fig. 29. 2*) which was then made smooth. A number of pieces feature finely smoothed surfaces in areas next to places where tiles would have been (e.g., *fig. 24. 2*). Generally speaking, the thickness of stove walls was 5–7 cm.

Encountered among the fragments of stove walls are remains of rendered wall pieces. These fragments come from the walls of buildings and sometime bear marks made by wattle.

It is very probable that clay sourced locally was used not only for the walls of the buildings,⁹⁰ but also for the walls of the stoves and ovens. The clay used for the stoves contains fine sand, but the mud (especially the mud coating applied externally) generally contains chaff as well. Feature 33 yielded many stove-wall finds containing chaff, but also cereal seeds suitable for archaeobotanical investigations (*fig. 29. 1*). According to the sanjak tax registers for 1579, civilian inhabitants of the settlement at Barcs paid tax after wheat and rye.⁹¹ Wheat and rye seeds may well be identified in the wall remains in the future.

Chronology, parallels, reconstructions

The stoves in the castle were stoves with concave tiles (and convex ones on the domes). Judging from the tiny quantity of glazed stove tiles recovered, the number of stoves in the castle that featured glazed Ottoman examples was fairly small. On the basis of the large number of unglazed beaker-shaped and cup-shaped finds recovered, stoves in the castle were built using unglazed tiles essentially.

⁸⁸ For their use in folk architecture, see *Sabján 1988* 51–54. For the coiled-clay technique used to build the Ottoman-era tiled stoves in Buda's Water Town, see *Sabján – Végh 2003*.

⁸⁹ *Miklós – Sabján 1992* 128.

⁹⁰ *Kreiter – Pánczél 2016* 117.

⁹¹ From the 1579 tax register for the Sanjak of Sigetvar (Szigetvár) (München, Bayerische Staatsbibliothek. Orientalische Handschriften, Cod. Turc. 138); data published by *Rúzsás 1979* 9.



Fig. 29. Barcs, Ottoman castle. Pieces of stove wall: 1. Tempered with chaff (Feature 33); 2. With a thin layer of coating (Feature 16); 3–4. With clay coils (Feature 26, see *fig. 26. 1–2*); 5. With marks made by a support frame (Feature 16); 6–7. With clay coils (Feature 26 and Feature 33) (Photographs: ©Károly Kozma, ©Gyöngyi Kovács)

Stove built with glazed Ottoman concave stove tiles

According to observations, 70 per cent of the glazed Ottoman stove-tile fragments recovered were from an area in the middle of the 2003 excavation site.⁹² The finds memorialise a stove built using glazed tiles. They made it ‘more elegant’ than most of the stoves at the castle. However, because the surfaces excavated had been disturbed appreciably earlier on, it proved impossible to identify other remains of the stove. As regards its type, it probably resembled stoves discovered in Buda’s Water Town (there will be more on these below).⁹³

Data on stove parts other than tiles are seldom encountered in the specialised literature. Rare is information regarding finds of this type, although in some instances mention is made of pieces of stove walls that bear impresses of stove tiles (e.g., finds at Dunaföldvár, Gyula). Prominent from this point of view is an ensemble of finds from Buda’s Water Town. Two Ottoman-period stoves once stood in a building of medieval origin there that was altered in the Ottoman era. This building may have burnt down in the late 17th century, in one of the two Christian sieges of Ottoman Buda at that time (namely, in the siege of 1684 or that of 1686). Stove debris was discovered in the cellar of the house; during excavation, pieces of stove wall, stove tiles, and mud bricks from the bases of the stoves came to light. The stoves assembled on the basis of the finds show heating devices describable as Balkan in type. The principal parts of this kind of stove are a rectangular-based lower part, an upper part in the form of an octagonal prism, and a domed part. The stoves reconstructed by Tibor Sabján are of two kinds: without a base and with a base. As well as glazed concave stove tiles, footed bowls and Renaissance glazed panel-tiles were built into the Buda stoves.

An antecedent for the processing of the stove elements archaeologically was provided by above-mentioned remains of a stove brought to light in a suburb of Belgrade. Datable to the second half of the 17th century, this one-time stove was uncovered in a room of a building destroyed in 1688. Featuring green-glazed concave stove tiles, the lower part of the stove had stayed relatively intact (*fig. 10*).⁹⁴

Various parallels of the type represented by the Buda stoves exist in ethnological material from the Balkans. Stoves can preserve 16th–17th-century characteristics and in this way can offer information important for the evaluation of material from the Ottoman period in Hungary. In a study published in 1959, Géza Fehér the Younger drew attention to this type of stove, as well as to parallels from Bosnia and especially Bulgaria.⁹⁵ Tibor Sabján collected and analysed additional data from the Balkans, from Bosnia, Serbia, and Bulgaria (*fig. 30*).⁹⁶ The list of Bosnian examples has been lengthened by high-quality stoves with glazed tiles in Svrzo’s House in Sarajevo (Bosnia and Herzegovina) (*fig. 31*) that was rebuilt in the 18th century. Admittedly, in terms of shape they do not resemble the reconstructed Water Town type (e.g., the upper parts are not polygonal prisms). Next to one of the stoves in Svrzo’s House is a small bathroom (*hamamjik*) (*fig. 31. 2*).⁹⁷ An oven-equipped stove featuring glazed tiles can be seen on the ground floor.

⁹² In company with the stove-tile finds (around survey point 60/25), rare and distinctive artefacts came to light on the area in question, such as a belt-plate made from walrus tusk, a fragment of an Iznik vessel, and a seal with Arabic lettering. These artefacts are from the 16th century. Kovács *et al.* 2014 162.

⁹³ Sabján – Végh 2003 282, 284.

⁹⁴ Marjanović-Vujović 1973 204, (227), cl. 23, Pls VII–VIII.

⁹⁵ Fehér 1959 131–132, cf. Bakardschiew 1956 figs 42, 58–61.

⁹⁶ Sabján – Végh 2003 295–299, figs 16–18. See also Meringer 1900 figs 30–32.

⁹⁷ Sabján – Végh 2003 296.

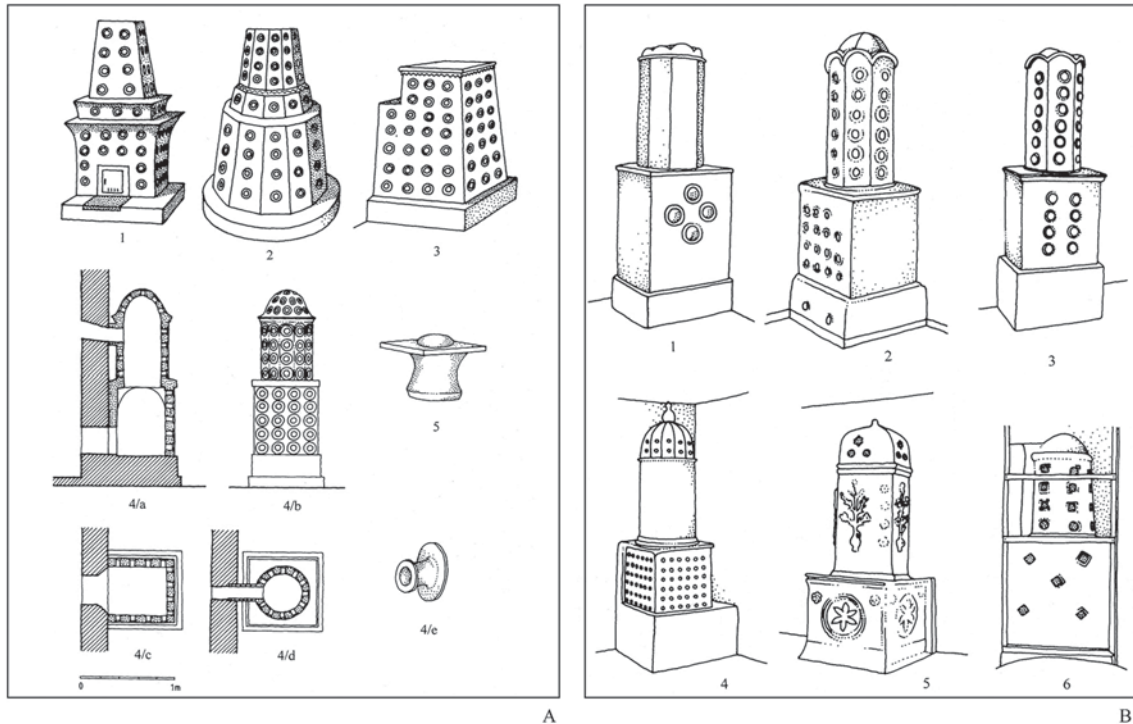


Fig. 30. Traditional stoves from the Balkans (after *Sabján – Végh 2003* figs 16–17):
 A: 1–3. Bosnian stoves from Travnik, Jajce, and Dolnja Tuzla (after *Meringer 1900* 259, 30–32);
 4. Serbian stove from Osat, 4a. Section, 4b. View, 4c–d. Ground plans,
 4e. Tile (after *Kojić 1949* 158); 5. Balkan convex stove tile.
 B: Bulgarian tiled stoves: 1–3. Rila; 4–5. Arbanis; 6. Etropole (after *Bakardschiew 1956* 54–60)



Fig. 31. Stoves in the Svrzo House in Sarajevo (Bosnia and Herzegovina), 18th century.
 2. Next to one stove is a small steam bath (*hamamjik*) (Photographs: ©Gyöngyi Kovács)

On the basis of the archaeological finds published and/or referred to, more nuanced evaluation of issues linked to Ottoman-era stoves with glazed elements (e.g., social background, chronology, shapes, workshops, stove builders) is at present barely possible. Nevertheless, some conclusions can be drawn, as follows:

- Of those stove elements that are datable, many are from the 17th century. A significant proportion of stoves featuring glazed stove elements are, therefore, probably also from the 17th century.
- Glazed Ottoman stove tiles often come to light together with stove tiles of other types, which suggests and can prove in a given location the concurrent and parallel presence of different types of tiles and tiled stoves.
- On the basis of the incidence of Ottoman glazed stove tiles, it seems for the time being that during the Ottoman period in Hungary stoves with glazed elements tended to stand in towns, larger centres, and more important locations,⁹⁸ although not exclusively by any means. Such stove elements may be found in smaller castles, too, in the company of stove tiles of other kinds.⁹⁹
- In certain locations, for example at Ozora Castle, glazed Ottoman stove elements are completely lacking, and, it appears, the situation is similar at Bátaszék.¹⁰⁰ On the site of Újpalánk Castle (Yeni Palanka), just two glazed Ottoman glazed stove-element fragments have come to light; there, too, stoves with glazed elements were in effect absent.¹⁰¹
- The Balkan links, and Balkan parallels, of the stoves are indubitable, but Balkan parallels that are currently known date from the 18th–20th centuries mainly; the characteristics of these parallels cannot be projected unequivocally onto material from Hungary in the 16th–17th centuries. Judging by the material from the Balkans, stoves in Hungary may also have been various from the point of view of shape: the octagonal prism form of the upper parts of the reconstructed Water Town glazed-tiled stoves was in all likelihood just one of a number. On the other hand, this form may have been common in Ottoman Hungary.¹⁰²

Stoves with unglazed concave and convex tiles

Even while the excavations at Barcs were still under way, it seemed that some assemblages of stove-wall remains might prove more or less suitable for stove reconstructions. In what follows, a few such assemblages recovered at the time of the 2003 excavations are presented. During the processing of the finds, emphasis was placed on attempting to establish the shapes of stoves.

Assemblages and reconstructions with a contribution by Zsolt Réti

Prior to the reconstruction work, numerous data were recorded for every single find. Unfortunately, it was not possible to make photogrammetric evaluations. From other standpoints also, our findings may mislead, because, for example, 1) only the more characteristic stove-wall pieces

⁹⁸ See note 56.

⁹⁹ Dunaföldvár-Öregtorony. *É. Kozák 1970* 204–205 (with fragments of the clay walls in which sat stove tiles); Vál-Gótikus templomtorony. The tower was the central building of the one-time Ottoman palisaded castle; glazed Ottoman stove tiles were recovered principally from a late 17th-century pit in which a complete set of copper vessels was also discovered. *Hatházi – Kovács 1996* 48–49, 55, fig. 27. 3–6; Csókakő Castle. Relatively many Ottoman glazed stove tiles came to light that could be linked to a stove in an Ottoman-era storeyed building. *Hatházi – Kovács 2019* 39; Szigetvár-Turbék. The palisaded stronghold was built around the *türbe* of Sultan Süleyman the Magnificent. *Hancz 2020b* 294–297, figs 27–29.

¹⁰⁰ Ozora: *Geregyes – Feld 1986* 177; Bátaszék: *Pusztai 2003* 308.

¹⁰¹ *Gaál 2015* 168, Pl. 6. 11–12.

¹⁰² *Sabján – Végh 2003* 300.

were packed away and documented, 2) only on one side of the schematised model were the fragments largely reassembled, and 3) unevennesses could not be reconstructed in the models.

Based on the remains, all three stoves reconstructed had rectangular-based lower parts. The obtuse angles of edges on fragments of upper parts showed that those parts were octagonal prisms. However, the widths of sides differed, depending on the measurements of the stove tiles. Finds attest to domes of differing shapes.

The outlines of individual stoves were determined on the basis of surviving elements. That is to say, the principal features of the stoves reconstructed were decided in accordance with the stove-wall pieces themselves that were placed onto the surfaces of schematic drawings, in places where they fitted (*figs 24, 26–27*) and with the average measurements of the stove tiles. The approximately 70 × 70 cm ground plan was in all three cases worked out from stove pieces and stove tiles (and from the precisely measurable stove bases uncovered in the excavation area). Starting out from remains unearthed, an average of three rows of bricks was hypothesised for the bases of stoves.

Generally speaking, the stove walls are 5–7 cm in thickness, as mentioned above. The beaker-shaped and cup-shaped tiles are generally 10–12 cm deep; as a result, they protruded from the walls into the stoves' interiors (*fig. 27, fig. 32. 2*). On the basis of pieces of wall that preserve impresses of multiple stove tiles, tiles were arranged in vertical and horizontal rows on the lower parts of all three stoves, albeit not too precisely; as regards the upper parts of the stoves, each side featured just one vertical row of tiles. The distance between the tiles was 1–3 cm. In the case of all three stoves, the flat back surface of the lower part adjacent to the wall featured a stokehole; the upper part there featured an aperture for a pipe that took away the smoke.¹⁰³

When determining the number of tiles built into a stove, attention was paid to the quantity of intact and reconstructable tiles gleaned from a given feature. Care had to be taken that stove tiles fitted in with the inner spaces of stoves, especially at the corners. In reality, this problem was amenable to solution in multiple ways: 1) the stove tiles at the corners were 1–2 cm smaller, 2) the stove tiles at the edges tapered more strongly or were trimmed towards the bottom by means of carving, 3) the depths of stoves were greater than their widths by a few centimetres, and 4) the side walls of stoves featured fewer tiles.

Planning of the details was helped by data from research into the late medieval and Ottoman eras in Hungary, as well as into ethnology. In the ascertaining of heights and domes, and in the interpretation and understanding of many small formal marks, guidance is provided chiefly by the characteristics of the above-mentioned 18th–20th-century Balkan stoves (*figs 30–31*), but also by the archaeological remains. The display-type stoves in Syrzo's House in Sarajevo are rather different from the Barcs stoves with their unglazed stove tiles, although the Sarajevo stoves nevertheless proved useful when the details of the Barcs stoves were being worked out. In the case of the stoves reconstructed, heights of approximately 155–170 cm were arrived at as a result of the assembly work. The heights of the glazed-tiled stoves in Buda's Water Town, and of the 19th–20th-century Balkan stoves of this type, are 200–210 cm.¹⁰⁴ According to the analogies, the stoves in Barcs were short on the basis of the reconstruction work, although, their heights can be increased, for example, by raising the lower parts.

¹⁰³ *Sabján – Végh 2003 296, fig. 16. 4a.*

¹⁰⁴ The reconstructed heights of the stoves with glazed tiles that were unearthed in Buda's Water Town are 205 cm; the height of a similar 20th-century Serbian stove is 210 cm. *Sabján – Végh 2003 293, and fig. 16. 4a–b.* The height of the above-mentioned 19th-century stove in a monk's cell at Rila Monastery is 200 cm. *Christov – Stojkov – Mijatev 1957 fig. 37.*

During the reconstruction-focused processing work, we followed an order that was not chronological. With one of the late assemblages, we began with finds from Feature 16, because in this assemblage there were the most pieces that could be put back together, pieces that could establish the measurements of the stove, but also because the material was interesting on account of the use of different types of stove tiles together with one another.

a) Feature 16 (*figs 24–25*)

Feature 16 was a pit on the eastern edge of the area excavated in 2003. Approximately 1.5 m in diameter at its outer edge, it was circular in shape, narrowing from the top to the bottom. It was more than 2 meters (228 cm) deep after it had been excavated fully. Among other things, stove-tile finds along with pieces of stove wall and wall fragments from a building came to light from the pit. On the eastern edge of the pit, fractured remains of the base of a one-time stove (Feature 32; *fig. 9. 2*) were identified that could be linked to the stove fragments. These remains were an 80 × 80 cm brick surface already sunken down (in our view, a surface for baking) and, next to it, a scorched hearth with pieces of brick wall (remains of the stove).

At the time of modelling, we opted for a stove base featuring three rows of bricks, on account of the remains. From the fragmentary finds, the number of stove tiles estimable could be put at roughly 60–70 (cf. e.g., *fig. 18*).¹⁰⁵ With this number in mind, stove tiles were incorporated into the model: reckoning with stove tiles featuring a diameter at the opening of 12 cm on average, on each of three outer sides of the lower part of the stove there were tiles in three vertical columns and four horizontal rows, while on each of seven sides of the octagonal prism upper part there were tiles in five vertical columns (no tiles were assigned to the side which held the pipe through which the smoke escaped). In this way, the number of tiles ‘built in’ was 71 (*fig. 32. 1*). Then again, arranging the tiles on the two side surfaces not in three columns but in two gave a total of 63 tiles, thus harmonising the planned number with the archaeological finds. As mentioned above, hand-turned beaker- and cup-shaped tiles on the one hand and good-quality cup-shaped ones on the other were built into the Feature 16 stove, in roughly equal measure.

On the basis of the impresses, the distance between the stove tiles on the flat pieces of stove wall was 3–4 cm. On two perpendicular surfaces forming right angles with one another, at the corners of the stove’s lower part, there were differences of 3–4 cm in the distances of the tiles from the edge, while on the upper part, too, there were also minor differences in the distances between the tiles and the edge. In other words, the distances of the tiles from the edge were not the same on adjacent sides. Clearly, the reason for the differences was that this way tiles fitted more easily into the stove’s interior space. The stove pieces provided exact data on the widths of the one-time shoulders (3 cm and 8 cm). On the basis of a surviving fragment from it, the dome of the stove resembled a truncated pyramid whose base followed from the shape and measurements of the stove’s upper part, with one side being 20 cm in width. On the fragment’s inner side may be seen the impress made by a small part of the framework that held up the dome during the construction work.¹⁰⁶ The stove’s wall was uneven in thickness, 6–7 cm generally speaking. It was thicker at the corners, thinner on the dome.

By means of the above calculations, it was in the end possible to establish the stove’s ground area as measuring 63/65 × 65 cm and its height as reaching approximately 170–172 cm. It is our belief that, starting out from the archaeological material, we have arrived at a form that (nearly) accurately depicts the mass of the stove and many of its details, at the same time offering possibilities for variations. Feature 16 and the collapsed stove it contained can – on the basis of the pit’s location and the finds there – be dated to the 17th century.

¹⁰⁵ In the case of the stoves in Buda’s Water Town, Tibor Sabján counted 66–68 stove tiles, a figure matchable with the archaeological material. *Sabján – Végh 2003* 294.

¹⁰⁶ *Miklós – Sabján 1992* 128, *fig. 10*.

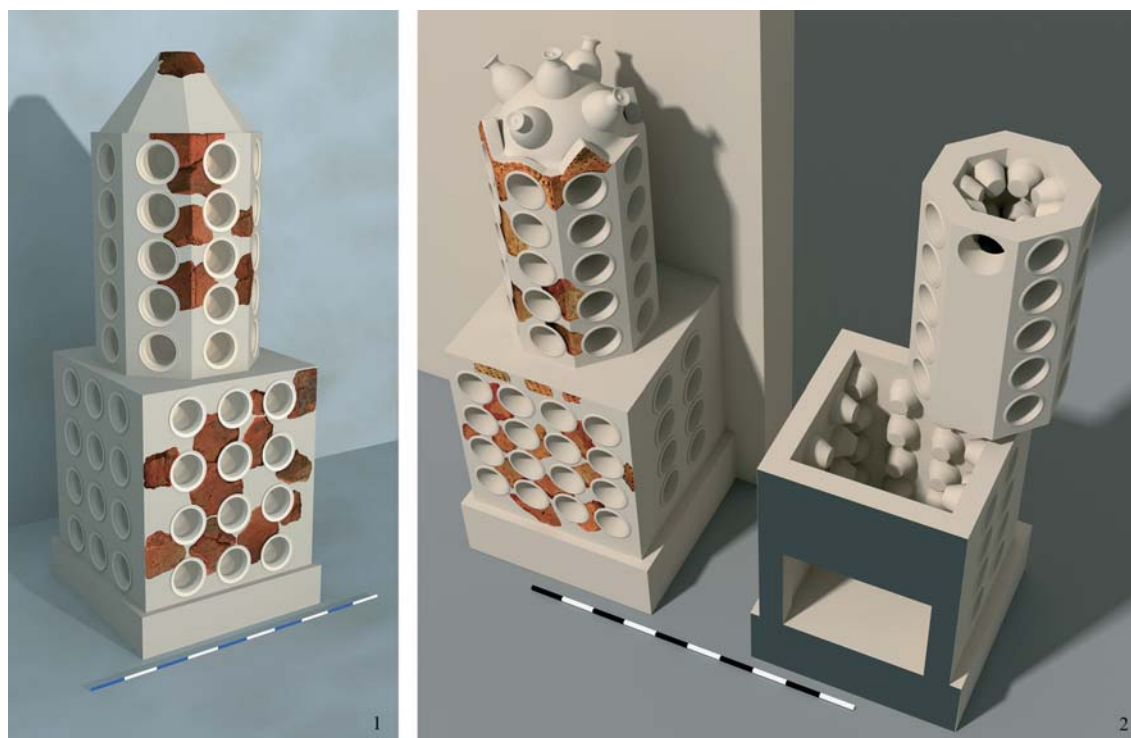


Fig. 32. Barcs, Ottoman castle. 3D models of the stoves reconstructed on the basis of finds from Features 16 (1) and 35 (2)
(Computer graphics: ©Zsolt Réti)

b) Feature 26 (*fig. 26*)

This feature was a pit complex in the southern half of the 2003 excavation area: the north-western part of a pit had been disturbed by the digging of another one. The mouth of the later (northern) pit was somewhat circular; its diameter was roughly 220 cm and its depth after complete excavation 310 cm. The depth of the earlier (southern) pit was 196 cm. In the filling of the later pit, two debris layers could be observed. Beneath the upper layer of red debris stretched a layer of clay. Beneath this was the lower layer of debris, in which there were remains of a stove. The stove parts appeared at a depth of 190–200 cm. Many intact tiles, many fragments of tiles, larger pieces of stove wall of various kinds, wall consisting of bricks set in clay, and a few remains of plastered wall were unearthed (*fig. 9. 3*). The stove debris was in fact sealed off by the layer of clay. The stove's base was not found in the vicinity of the pit; it would seem that when the ruins were being cleared, everything (i.e., the stove's brick base, the brick-built walling that was probably around the stokehole, the stove tiles, and the pieces of stove wall) ended up in the pit. The stove material found in it could be dated to the second half of the 16th century; it was placed in the pit when the destruction wrought during the Fifteen Years' War was being cleared away.

Among the pieces of stove wall were flat pieces of side wall, shoulder fragments, angled pieces from an octagonal prism upper part, and fragments of a dome. Impresses made by stove tiles on the fragments varied significantly with regard to the distances between them (1–7 cm). Our view is that the fragments are probably remains of different sides of one stove, but it is conceivable that they are pieces of more than one stove. On the basis of some of the fragments, a model was created. A number of pieces were positioned on various planes in open schemes, thus giving opportunities for re-evaluation. On the basis of impresses made by stove tiles, no shoulder fragments could be allocated to areas where an octagonal prism upper part and a four-sided lower part would have met. For this reason, we postulated a lower part with two units, and shoulder

pieces were assigned to different sides of a hypothesised lower part. Similarly to pieces from Feature 35, the dome fragments from this stove preserve shallow impresses made by inverted-beaker stove tiles with an apex part.

Different calculations were performed in connection with the number of stove tiles recovered (e.g., *fig. 15*). If 16 stove tiles are postulated for the front side of the stove's lower part, eight for each of the two sides at right angles to it, 35 for seven sides of an upper part and four – according to the archaeological data – for the dome, then 71 stove tiles would be needed. There are in the archaeological material 40 tiles that are intact and 30 that are stuck back together or capable of completion, that is to say 70 tiles in total (there are also some fragments). Accordingly, the hypothesised number of stove tiles and the actual number unearthed approximate to one another or even match.

c) Feature 33

This pit and its finds can be dated to the second half of the 16th century. Large-sized and amorphous, the 116-cm-deep pit was located at the southern edge of the 2003 excavation area. In its filling, especially in the lower third of it, a great amount of stove debris came to light that was burnt and featured pieces of larger size. The debris contained many intact and fragmentary stove tiles, as well as many small-sized intact and fragmentary bricks. Besides remains of wattle-marked daub and a few stove pieces made from sandy material, the debris contained in large measure stove fragments made from chaff-bearing material (cf. *fig. 29. 1, 7*). The tiles (57 intact or capable of completion, as well as other fragments) were mostly beaker-shaped, although unglazed cup-shaped tiles, and glazed Ottoman concave tiles, too, were found among them. In addition to inverted beaker-tiles with a bowl-like element, onion-shaped stove tiles with a simple pointed apex likewise featured (*fig. 22*). As regards composition, the assemblage is more mixed than the find complexes from Features 26 and 35; it appears to be more archaic, because of the use of strongly chaff-bearing adobe to build the stove.

d) Feature 35 (*fig. 27*)

Feature 35 made its appearance in the southern part of the 2003 excavation site, as a red patch measuring approximately 100×80 cm. It turned out, in the course of its investigation, that this patch covered not only a pit full of stove debris, but also, next to this pit, the damaged base of a stove (*fig. 9. 1*). The pit, 240 cm in diameter and 170 cm in depth, contained many pieces of stove wall, along with 21 intact concave stove tiles and a large number of fragments of such tiles. The pit and its relics can be dated to the second half of the 16th century.

Among the fragments of stove walls are flat pieces bearing impresses of stove tiles, pieces with edges at right angles, pieces of octagonal prism upper parts, and dome fragments, but also elements that once served as decoration. On the lower part, the distance of the stove tiles from one another is 2 cm on average. The thickness of the stove wall varies; on average it is 6–7 cm, a little thicker at corners. The dome wall is 3.5–4 cm thick. Starting out from the pieces of stove wall and a calculated average size for stove tiles, a stove on a base of three rows of bricks was modelled. The base's size was deduced; it was calculated to have been 62×62 cm. The height of the stove, including its dome, was likewise calculated: it was set at 155 cm. On the basis of the finds, the dome was decorated with five inverted-beaker stove tiles each with an apex part. The stove tiles set in the wall of the dome left circular marks in it that were 1–1.5 cm deep. In the middle of each such mark is a hole whose diameter is 1–2 cm. The dome was girded round – probably not all the way round – by a ledge which consisted of three peaked and two arched elements; all these elements were decorated with notches.

Across Europe, ledges and battlements on the top parts of stoves can be found on decorated and less decorated glazed and unglazed stoves of the most various kinds from the medieval period on. In respect to the 15th–17th-century material recovered in Hungary,¹⁰⁷ the 17th-century unglazed, triangular crown-tiles with moulded front panels found, for example, at Báticaszék, in south-eastern Transdanubia, and in Baja, on the Great Plain, deserve mention, as coming from Ottoman-inhabited locations.¹⁰⁸ However, the decorative ledge at Barcs does not consist of crown-tiles, but of arched and peaked elements. Nothing similar to it is currently known in the material recovered in Hungary. Consisting of arched sections, the ledges that border the domes of 19th-century stoves at Bulgaria's Rila Monastery (*fig. 30. B2–3*) are only faintly reminiscent of those at Barcs.¹⁰⁹ The Rila stoves were made by Bulgarian or Aromanian artisans.

As well as ledge elements, other – likewise notched – fragments have come to light at Barcs. In the model, these 4-cm-wide pieces, which are semi-circular in cross section, were placed on the upper edges of the stove's lower part, although it is not certain that they would have been there on the stove itself.¹¹⁰ Elements partly similar to those from Barcs that came to light during excavations at the Ottoman palisaded castle at Báticaszék decorate the stove edges on schematic stove drawings.

The aggregate number of intact and glued concave stove tiles is 50 (of these, five are inverted-beaker stove tiles) (e.g., *fig. 16*); a number of fragments that underwent conservation are currently unavailable. The number of tiles used for the stove could not be established precisely. If 16 stove tiles are hypothesised for the front surface of the lower part of the stove and eight for each of the two side surfaces, 35 for seven sides of the octagonal prism upper part (the eighth side was for the smoke pipe), and five for the dome, then the number of tiles arrived at is 72 (*fig. 32. 2*). With regard to the side surfaces of the lower part, a different allocation of tiles is conceivable in which the real and the assumed quantities approximate to one another.

Review

As mentioned earlier, rectangular-based lower parts, octagonal prism upper parts, and dome solutions of various kinds were the formal characteristics of the unglazed stoves in question.¹¹¹ Beaker-shaped and cup-shaped stove tiles were built into the bodies of stoves, and inverted-beaker tiles with apex parts into the domes – to the exclusion of almost all other types. No evidence was found to suggest that pre-used stove tiles were built into the stoves.¹¹² The conspicuously high number of intact stove tiles from Feature 26 might possibly point to a dismantled stove. The stoves were all stoked from outside the spaces they heated.

¹⁰⁷ Holl 2002 11–18. For simpler unglazed triangular stove tiles decorated on the front side, see *Gerencserek* 2002 cat. nos. 148, 150, 152, 154. (Gy. V. Székely). For regional characteristics, see *Sabján* 2001, with reconstructions of medieval stoves from Külsővat, Ete, Sarvaly, Galgahévíz, and the Great Plain.

¹⁰⁸ Báticaszék: *Pusztai* 2003 fig. 3; Baja: *Holl* 2002 17, Pl. II. 15, *Kovács* 2006 284, fig. 11.

¹⁰⁹ *Bakardschiew* 1956 59–60, cf. *Sabján – Végh* 2003 296, fig. 17. 2–3.

¹¹⁰ Placing decorative elements on a medieval stove (Germany): *Roth Heege* 2012 209, Abb. 325; *Roth Heege* 2018 37, fig. 5.

¹¹¹ This design may have been common in Ottoman Hungary, although it was not the only one. For example, a tiled stove reconstructed on the basis of wall pieces recovered from an Ottoman-era pit in Visegrád's Alsóvár had a rectangular-based lower part and an upper part shaped like a pyramid. *Kocsis – Sabján – Tóth* 2006 111, n. 352, cf. *Kovács* 2010 fig. on p. 65. See also *Kocsis* 2021 194–199.

¹¹² For example, Tolna-Mözs: *Vizi* 2010 375. For Hungarian material of earlier date reused in a stove built by the Ottomans at Visegrád, see *Sabján* 2001 299.

The stoves from Feature 26 and Feature 35 date from the second half of the 16th century; their complements of tiles are characterised by a preponderance of brimless, beaker-shaped examples and the use of apexed inverted beaker-tiles on their domes.¹¹³ To the stove recovered from Feature 35 belonged ledge elements together with other decoration. Smearred with chaff-bearing clay, the stove unearthed in Feature 33 is likewise from this period (the second half of the 16th century).

In their basic shape and constituent parts, the stoves datable to the first half and middle of the 17th century (KÜ/90.I, ÁI/91, Feature 16) resemble those from the 16th century, although as regards shape and physical composition the tiles in these stoves differ somewhat from the 16th-century ones. They are characterised by a significant proportion of cup-shaped stove tiles, use of different types of stove tiles together, use of tiles with quatrefoil openings, and also tiles featuring little plates or dishes (such tiles were presumably decorative).¹¹⁴ The dome of the stove from Feature 16 was in the shape of a truncated pyramid.

Stoves were the defining objects of the rooms; their decoration emphasised this, and, moreover, may have indicated a striving for a kind of modest display.

Stoves and ovens with concave tiles were not in use in Anatolia in the 16th–17th centuries. Perhaps at this time they were not yet general in the Balkans,¹¹⁵ although the archaeological data (stove tiles for the most part) attest to instances of them in these centuries. The characteristics of stoves in Ottoman Hungary built with beaker-shaped and cup-shaped tiles, and of the tiles themselves, differ from the characteristics of their – 14th/15th–20th-century – counterparts in Central Europe.¹¹⁶

While medieval antecedents of glazed Ottoman concave stove tiles, and of the stoves in Ottoman Hungary built with them, are unknown, the roots of the unglazed beaker-shaped and cup-shaped stove-tile types – and, in a way, of the stoves that featured them – can be found in late medieval stove-related archaeological material from across the whole of the Great Plain (here meaning the area between the Danube and Tisza rivers, the area east of the Tisza, and the Délvidék ('Southern Great Plain'), as well as parts of eastern Transdanubia).¹¹⁷ At the same time, the Barcs stoves possess formal marks that point towards the Balkans (Serbia, Bosnia, Bulgaria, and so on). Parallels of the crudely-worked, decorated, apexed inverted-beaker stove tiles from beyond Barcs's immediate vicinity (cf. Babócsa) are, at present, barely known. It is noticeable that in the entirety of the material from Barcs the dominance of regional and Balkan characteristics

¹¹³ Based on the number of crown-pieces and apex parts of stove tiles recovered, the castle featured several stoves whose domes were decorated with inverted beaker-tiles.

¹¹⁴ *Sabján* 2001 293, 309.

¹¹⁵ G. Goodwin: *A History of Ottoman Architecture*. London 1971/2003 429–453 ('The Ottoman house'), quoted by *Sabján – Végh* 2003 296, 299. For the lack of them, see Hans Dernschwam's diary of travels he made in Ottoman lands (1553–1555). In this there is mention of 'hearths' and 'brick hearths', on which food was cooked, but only in regard to public buildings (caravanserais). *Dernschwam* 1984 135–451. Nor does Evliya Çelebi, during his travels in the Balkans in 1664, make mention of stoves, although, perhaps, he failed to notice them. At the same time, in his description of the town of Ruda in Herzegovina, he does mention buildings 'supplied with baths featuring stoves [*hamamjik*]'. *Evliya 1660–1664* (1985²) 454–455.

¹¹⁶ Early occurrences of tiled stoves are known from Central Europe (Switzerland, Germany), from the 9th–12th centuries. *Roth Heege* 2012 35–37 (E. Roth Heege); *Roth Heege* 2018 33–36, with additional literature. Beaker/cup-tiled stoves in Central European settings were present in pictorial depictions in the 13th–14th centuries. *Franz* 1981 17, figs 4–5, cf. *Roth Heege* 2012 152–153, Abb. 245–248 (M. Henkel). For medieval stove remains in Central Europe and reconstructions of them, see, e.g., *Roth Heege* 2012 137–150 (E. Roth Heege); for beaker/cup-tiled stoves in modern-age traditional architecture, see, e.g., *Franz* 1981 Abb. 22–26; for stove tiles, see *Roth Heege* 2012 passim.

¹¹⁷ *Sabján* 2001 291.

is a good deal more pronounced than it is in the material from other, related, sites (in Hungary). When, for example, stove parts unearthed on the site of the Ottoman palisaded castle at Újpalánk (Yeni Palanka) are compared with those unearthed at Barcs, differences are more apparent than similarities.¹¹⁸

Summary

The significance of the processing of the tiled stoves at Barcs lies not merely in the circumstance that it offers reference points for 16th–17th Ottoman stoves in Hungary, but also that it can assist the evaluation of Balkan archaeological finds of similar age and kind. It can also help in the establishing of regional characteristics.

In investigating the links of the relics uncovered, the nature and age of the site need to be kept in mind: this was a palisaded castle created by the Ottomans during the period of their rule in Hungary, one with a significant proportion of soldiers of Balkan heritage, in an area whose population was of mixed, Hungarian and Balkan, heritage. The castle was in existence between 1567 and 1664; its connections were determined by its geographical location and by historical processes characteristic of the era.

It is known from the written sources that during the Ottoman period in Hungary materials required for construction work at Ottoman castles were in many cases brought in from distant parts.¹¹⁹ The Ottomans needed not just building materials, however. Lacking a workforce of their own, they availed themselves of the labour power of local artisans,¹²⁰ often ordering them in from faraway areas even. For example, in 1568 the Sultanic Council (*Divan*) in Istanbul ordered Christian peasants from the sanjaks of Pojega (Požega), Peçuy (Pécs), Mohaç (Mohács), Kopan (Koppány), Sekçöy ([Duna-]Szekcső) and Şimontorna (Simontornya) to make repairs at Szigetvár.¹²¹ In another command, masters in the trades of lime burning and tile making were ordered to Szigetvár from Belgrade and other locations.¹²² In 1570, too, an order reached the beys to support the construction operations in these places.¹²³ According to a decree issued in 1572, stonemasons and carpenters in sufficient numbers were ordered in from the sanjaks of İzvornik (Zvornik), Aladjahisar (Kruševac), Semendire (Smederevo), Sirem (Syrmia), Pojega (Požega), Bosnia, and Herzegovina to conduct renovation work at the fortresses of Esztergom, Székesfehérvár, and Szigetvár.¹²⁴ It is known from the sources that many artisans in southern Transdanubia and the Southern Great Plain area (today in Serbia and Croatia) were mobilised for work at Szigetvár.¹²⁵ The operations may have included other castle buildings in the area, e.g. at Barcs.

¹¹⁸ Evidence of the proximity of Hungarian market towns (Ete but chiefly Tolna) is to be seen on the stove-related material from Újpalánk. High-level pottery and stove-making work was carried on in both settlements, *Vizi 2012; Gaál 2015*.

¹¹⁹ For example, ‘many thousand wagonloads of stone and lime were brought from the areas around far-away Peçui [Pécs]’ (‘Kalk und Stein von vielen tausend Wagen aus der Umgebung der sehr weit entfernt liegenden Stadt Peçui [Pécs] gebracht wurde’) for repairs to Kanizsa Castle in the 1630s. *Fodor 1981 67*.

¹²⁰ *Fodor 1981 72*.

¹²¹ *Fodor 2020 No. 1. (38–40)*.

¹²² *Fodor 2020 No. 3. (41–42)*.

¹²³ *Fodor 2020 No. 5 (44)*.

¹²⁴ *Fodor 1981 83, vö. Fodor 2020 No. 10 (50–51)*.

¹²⁵ İzvornik (today Zvornik, Bosnia-Herzegovina), Aladjahisar (today Kruševac, Serbia), Semendire (today Smederevo, Serbia), Sirem (today Srem/Srijem, Croatia and Serbia), and Pojega (today Požega, Croatia). During the period in question, the Sanjak of Aladjahisar belonged to the Temeşvar Eyalet; the others all belonged to the Budin Eyalet. *Fodor 2020 50*.

Full implementation of the initial measures may have resulted in significant movements of artisans (including masters) and, consequently, movements of goods.

In the main, the stove tiles from Barcs are in all likelihood products from within the region: they may have been made nearby in pottery workshops in settlements along the River Drava (Babócsa, Segesd, and possibly Verőce [today Virovitica in Croatia]), although it cannot be excluded that wares were delivered from more distant territories in smaller or larger batches. Those who made the stoves may equally have come from settlements in the Drava district. Even so, the stoves' mingled stylistic marks permit the hypothesis that they are works by masters from further afield also.

The characteristics of the Barcs stoves were shaped by Great Plain traditions and Balkan traditions jointly, namely by traditions in the Délvidék ('Southern Great Plain'), Slavonia, the Bácska/Bačka, and the Szerémség/Syrmia regions (today Croatia, Serbia)¹²⁶ where the inhabitants, who were under Ottoman rule, were of mixed heritage. Historically, this line of argument is strengthened by the circumstance that in 1568–1569 garrison soldiers were ordered to the castle of Barcs (and to Szigetvár) from south of the River Drava (from the strongholds of Brezovica, Moslavina, and Sopje; today all three are in Slavonia),¹²⁷ and that artisans, including masters, arrived from these areas to join the building operations at Szigetvár and probably in its vicinity.

REFERENCES

- Ádám 2018* M. Ádám: A szolnoki vár szórvány kályhaszemanyagának vizsgálata (The study of a sporadic stove tile from the castle of Szolnok). *Tisicum* 26 (2018) 229–241.
- Archaeology of the Ottoman Period 2003* I. Gerelyes – Gy. Kovács (eds): *Archaeology of the Ottoman Period in Hungary*. *Opuscula Hungarica* 3. Budapest 2003.
- Bakardschiew 1956* G. Bakardschiew: *Bulgarische Keramik*. Sofia 1956.
- Bátky – Györffy – Viski n. d.* Zs. Bátky – I. Györffy – K. Viski: *A magyarság tárgyi néprajza. A magyarság néprajza I* [The material culture of the Hungarian people. The ethnology of the Hungarians I]. Budapest n. d. [1933–1937]. Reprint 1991.
- Behringer 2007* W. Behringer: *Kulturgeschichte des Klimas. Von der Eiszeit bis zur globalen Erwärmung*. München 2007. Hungarian edition: *A klíma kultúrtörténete. A jégkorszaktól a globális felmelegedésig* (translated by J. Tarnói). Budapest 2017.
- Benkő 1980* E. Benkő: A középkori Nyársapát. Bálint Alajos ásatásai a nyársapáti Templomparton (Das mittelalterliche Dorf Nyársapát). *StComit* 9 (1980) 315–424.
- Bikić 2003* V. Bikić: *Gradska keramika Beograda (16–17. vek) / Belgrade Ceramics in the 16th–17th Century*. Beograd 2003.

¹²⁶ In the one-time sanjaks of Pojega and Sirem.

¹²⁷ *Hegyí 2007* II. 1293.

- Christov – Stojkov – Mijatev 1957* Ch. Christov – G. Stojkov – K. Mijatev: Das Rila-Kloster. Die Geschichte, das Bauwerk, Wandmalerei und Holzschnitzerei. Aus dem Erbgut der bulgarischen Baukunst 6. Sofia 1957.
- Dernschwam 1984* H. Dernschwam: Erdély, Besztercebánya, Törökországi útinapló [Diary of travels in Transylvania, Neusohl (Besztercebánya, Banská Bystrice), and Turkey]. Budapest 1984.
- Djordjević – Zlatković 2011* B. Djordjević – D. Zlatković: Traditional technology and its variations applied in making bread-baking pans in the Stara Planina Mountain (Serbia), in: B. Borić-Brešković – B. Đorđević (eds): Traditional Pottery Making from the Ethnoarchaeological Point of View: Scientific Research and Safeguarding of Intangible Heritage. Proceedings of the First International Conference, Traditional Pottery Making from the Ethnoarchaeological Point of View. Belgrade 2011, 32–40.
- Esterházy 1664 (1989)* G. Hausner – T. Klaniczay – I. S. Kovács (eds): Esterházy Pál, Mars Hungaricus. Compiled and translated by E. Iványi. Zrínyi-könyvtár III. Budapest 1989.
- Éder 2014* K. Éder: Hódoltságkori gödör a Víziváros területéről. (Egy szemeskályha maradványai és kísérőleletei) (A pit from the Ottoman era in Budapest, Víziváros). BudRég 47 (2014) 283–311.
- Evlia 1660–1664 (1985²)* Evlia Cselebi török világutazó magyarországi utazásai 1660–1664 [Evlia Čelebi's travels in Hungary 1660–1664]. Translated by I. Karácson, foreword P. Fodor. Budapest 1985².
- Faroghi 2000* S. Faroghi: Subjects of the Sultan. Culture and Daily Life in the Ottoman Empire. London – New York 2000.
- Fehér 1959* G. Fehér jun.: A pécsi Janus Pannonius Múzeum hódoltságkori török emlékei (Denkmäler aus der Zeit der Türkischen Unterwerfung im Janus Pannonius Museum in Pécs). JPMÉ (1959) [1960] 103–149.
- Feld et al. 1988* I. Feld – J. Kisfaludi – I. Vörös – T. Koppány – I. Gerelyes – Zs. Miklós: Jelentés az ozorai várkastélyban és környékén 1981–85-ben végzett régészeti kutatásokról [Report on the archaeological researches conducted in Ozora Castle and its vicinity in 1981–85]. BÁMÉ 14 (1988) 261–337.
- Filipović 1951* M. Filipović: Ženska keramika kod balkanskih naroda (Primitive ceramics made by women among the Balkan peoples). Beograd 1951.
- Fehér – Parádi 1960* G. Fehér ifj. – N. Parádi: Esztergom-szenttamáshegyi 1956. évi törökkori kutatások (Fouilles pratiquées près Esztergom à Szenttamáshegy). Esztergom Évlapjai 1960, 35–44.
- Fodor 1981* P. Fodor: Bauarbeiten der Türken an den Burgen in Ungarn im 16.–17. Jahrhundert. ActaOrHung 35/1 (1981) 55–88.
- Fodor 2020* P. Fodor: Turbék. Szulejmán Szultán szigetvári Türbevárosa a 16–17. századi oszmán-török forrásokban [Turbék. Sultan Süleyman's türbe settlement in the 16th–17th-century Ottoman sources]. Szigetvár-könyvek 1. Budapest 2020.

- Fodor – Kozák 1970–1971* L. Fodor – K. Kozák: Leletegyüttesek a románkori székesegyház környékéről. Adatok az egri vár XVII–XVIII. századi kerámiájának történetéhez I (Ensembles de trouvailles des alentours de la cathédrale de l'époque Romane. Données relatives à l'histoire de la céramique des XVIIe et XVIIIe siècles du château-fort d'Eger I). EMÉ 8–9 (1970–1971) [1972] 147–199.
- Franz 1981* R. Franz: Der Kachelofen. Entstehung und kunstgeschichtliche Entwicklung vom Mittelalter bis zum Ausgang des Klassizismus. Graz 1981.
- Gál – Bartosiewicz 2016* E. Gál – L. Bartosiewicz: Animal remains from the Ottoman-Turkish palisaded fort at Barcs, Southwest Hungary, in: *per sylvam 2016* 181–252.
- Gaál 2015* A. Gaál: Tűzhelyek és kályhák maradványai a Szekszárd-palánki (Jeni Palánk) török várban és településen (Reststücke von Herdstellen und Ofen in der Plankenburg Szekszárd–Palánk (Jeni Palánk) und in der Ortschaft). WMMÉ 37 (2015) 145–215.
- Gaşpar 2019* A. Gaşpar: Ceramica din perioada otomană târzie descoperită recent la Cetatea Turnu. Analiză preliminară (Late Ottoman pottery recently found at Turnu Fortress. Preliminary analysis). Buletinul Muzeului Judeţean Teleorman. Seria Arheologie 11 (2019) 133–152.
- Gerelyes 1987* I. Gerelyes: Török kerámia a visegrádi Alsóvárból (Turkish ceramics from Alsóvár in Visegrád). CommArchHung (1987) 167–179.
- Gerelyes 1991* I. Gerelyes: Török leletegyüttesek a budavári palotából, 1972–1981 (Türkische Fundkomplexe aus dem Burgpalast von Buda, 1972–1981). TBM 23 (1991) 21–74.
- Gerelyes – Feld 1986* I. Gerelyes – I. Feld: Hódoltság kori leletegyüttesek az ozorai várkastélyból (Fundkomplexe der Burgeschlosses von Ozora aus der Zeit der Türkenherrschaft). CommArchHung (1986) 161–182.
- Gerencserek 2002* P. Havassy (ed.): Gerencserek, kályhások, tűzvigyázók. Feudáliskori kályhacsempék az Alföldről és peremvidékéről / Hafner, Ofensetzer und Feuerwächter. Mittelalterliche und frühneuzeitliche Ofenkacheln der Ungarischen Tiefebene und ihrer Randgebiete. Gyulai Katalógusok 11. Gyula 2002.
- Hatházi – Kovács 1996* G. Hatházi – Gy. Kovács: A váli gótikus templomtorony. Adatok Vál 14–17. századi történetéhez (The Gothic Church Tower in Vál. Data to the 14th–17th century History of Vál). A Szent István Király Múzeum Közleményei B/45. Székesfehérvár 1996.
- Hatházi – Kovács 2019* G. Hatházi – Gy. Kovács: A csókakői vár régészeti kutatása, 2014–2017 (Archaeological research in the castle at Csókakő, 2014–2017), in: Á. H. Szilasi (ed.): Örökségünk védelme és jövője 5. Váraink – múlt, jelen, jövő. Studia Agriensia 38. Eger 2019, 28–49.
- Hancz 2020a* E. Hancz: Halveti derviskolostor Nagy Szulejmán szultán türbepalánkjában [A Khalwati dervish convent in the palisaded fortification around the türbe of Sultan Süleyman the Magnificent], in: *Turbék 2020* 221–243.

- Hancz 2020b* E. Hancz: Szulejmán szultán turbéki türbepalánkjának kerámiaanyaga [Ceramic finds from the palisaded fortification around the türbe of Sultan Süleyman the Magnificent at Turbék], in: *Turbék 2020* 263–329.
- Hegyi 2007* K. Hegyi: A török hódoltság várai és várkatonasága I–III [The castles of Ottoman Hungary and their garrisons]. História Könyvtár, Kronológiák, Adattárak 9. Budapest 2007.
- Holl 2002* I. Holl: Középkori kályhacsempék: egy 120 éves kutatási terület [Medieval stove tiles: a field of research now 120 years old], in: *Gerencserek 2002* 7–30.
- Kanyar 1989* J. Kanyar: Részletek Pethő Gergely Rövid magyar krónikájából (1572–1600) [Extracts from Gergely Pethő's A Short Chronicle of the Hungarians (1572–1600)], in: J. Kanyar (ed.): Harminc nemzedék vallomása Somogyról. Történelmi olvasókönyv. Kaposvár 1989, 89–92.
- Kerecsényi 1993* E. Kerecsényi: Kanizsa és környéke helyzete 1594–97 között Haym Kristóf várkapitány és a bécsi udvar levelezése tükrében [The situation facing Kanizsa and its vicinity in the years 1594–97 as reflected in the correspondence between Kristóf Haym, commander of Kanizsa Castle, and the Court in Vienna], in: L. Szita (ed.): Tanulmányok a török hódoltság és a felszabadító háborúk történetéből. A szigetvári történész konferencia előadásai a város és a vár felszabadításának 300. évfordulóján (1989). Pécs 1993, 251–274.
- Kocsis 2021* E. Kocsis: Középkori és törökkori kályhák Visegrádról [Medieval and Ottoman-period stoves at Visegrád], in: G. Buzás (ed.): „Visegrád, Visegrád! Hol hajdani fényed?”. Tanulmányok Szőke Mátyás 80. születésnapjára. Visegrád 2021, 179–199.
- Kocsis – Sabján – Tóth 2006* E. Kocsis – T. Sabján – B. Tóth: A visegrádi fellegvár középkori és törökkori szemeskályhái [Medieval and Ottoman-era tiled stoves from Visegrád Citadel], in: G. Buzás (ed.): A visegrádi fellegvár. Visegrád régészeti monográfiái 6. Visegrád 2006, 104–123.
- Kojić 1980* B. Kojić: Razvoj kuće i kulture stanovanja u selima Srbije (Evolution of the housing and dwelling culture in Serbian villages in the XIXth century). Glasnik Etnografskog Muzeja u Beogradu 44 (1980) 53–74.
- Kolláth 2010* Á. Kolláth: Kora újkori kerámia leletegyüttesek Székesfehérvár területéről [Early-modern-period ceramic assemblages from the territory of Székesfehérvár]. MA thesis at the Eötvös Loránd University, Budapest. Manuscript. Budapest 2010.
- Koşay 1957* H. Zübeyir Koşay: Türkiye Halkının Maddi Kültürüne Dair Araştırmalar. II. Kap – Kaçak. Türk Etnografya Dergisi 2 (1957) 5–28.
- Kovács 1984* Gy. Kovács: Török kerámia Szolnokon (Turkish pottery from Szolnok). Szolnok Megyei Múzeumi Adattár 30–31. Szolnok 1984.
- Kovács 1998* Gy. Kovács: A barcsi török palánkvár kerámialeletei (The ceramic finds from the Turkish palisade fort at Barcs). CommArchHung (1998) 155–180.

- Kovács 2003* Gy. Kovács: Jegyzetek a kanizsai vár 16–17. századi kerámialeleteihez (Remarks on the 16th–17th century ceramic finds from the Kanizsa fort). *ZalaiMúz* 12 (2003) 155–176.
- Kovács 2006* Gy. Kovács: Hódoltság kori leletgyűttes Baja belvárosából (An Ottoman period assemblage from Baja). *CommArchHung* (2006) 275–295.
- Kovács 2019* Gy. Kovács: Soldiers of the Sultan in Ottoman Hungary: the testimony of the archaeological finds, in: P. Fodor – N. E. Kovács – B. Péri (eds): *Şerefe. Studies in Honour of Prof. Géza Dávid on His Seventieth Birthday*. Budapest 2019, 211–230.
- Kovács – Rózsás 1996* Gy. Kovács – M. Rózsás: A barcsi török palánkvár (The Turkish Hoarding [Palisaded] Castle of Barcs). *SMK* 12 (1996) 163–182.
- Kovács – Rózsás 2010* Gy. Kovács – M. Rózsás: A barcsi török vár és környéke. Újabb kutatások (1999–2009) (The Ottoman-Turkish castle at Barcs and its surroundings. New research, 1999–2009), in: E. Benkő – Gy. Kovács (eds): *A középkor és a kora újkor régészete Magyarországon / Archaeology of the Middle Ages and the Early Modern Period in Hungary*. Budapest 2010, 621–642.
- Kovács et al. 2014* Gy. Kovács – L. Bartosiewicz – K. Éder – E. Gál – Zs. Miklós – M. Rózsás – A. J. Tóth – Cs. Zatykó: Medieval and Ottoman period (14th–17th c.) archaeology in the Drava river region, Hungary. Results of an interdisciplinary project. *ActaArchHung* 65 (2014) 155–168.
<https://doi.org/10.1556/AArch.65.2014.1.7>
- Kovács 2010* I. Kovács: A Hódoltság korának régészeti kutatása Visegrádon (Archaeological excavation of sixteenth- and seventeenth-century sites in Visegrád), in: I. Kovács (ed.): *Visegrád a török korban, 1526–1685 / Vyšehrad v době tureckej, 1526–1685 / Visegrád in the Turkish period, 1526–1685*. *Altum Castrum* 7. Visegrád 2010, 48–70.
- É. Kozák 1970* É. Kozák: Régészeti és műemléki kutatások a dunaföldvári Öregtoronynál [Archaeological and monument researches at Dunaföldvár's Old Tower]. *BÁMÉ* 1 (1970) 181–208.
- Kreiter – Pánczél 2016* A. Kreiter – P. Pánczél: Petrographic analysis of ceramics from the Ottoman-Turkish fort at Barcs (Hungary) and the neighboring settlements, in: *per sylvam* 2016 95–132.
- Magyar 1988* K. Magyar: A középkori Segesd város és megye története, régészeti kutatása. (Egy királynéi központ a X–XVIII. században) [The history and archaeology of Segesd town and Segesd county in the medieval period]. *Somogyi Almanach* 45–49. Kaposvár 1988.
- Magyar 1990* K. Magyar: Babócsa története a honfoglalástól a mohácsi vészig [The history of Babócsa from the Conquest to the Mohács defeat], in: K. Magyar (ed.): *Babócsa története. Tanulmányok a község történetéből*. Babócsa 1990, 15–219.
- Magyar 2002* K. Magyar: Babócsa-Nárciszos. Török hódoltság kori települések régészeti emlékei [Babócsa-Nárciszos. Relics from the Ottoman-era settlements], in: I. Gerelyes – Gy. Kovács (eds): *A hódoltság régészeti kutatása. Opuscula Hungarica* 3. Budapest 2002, 91–98.

- Magyar 2003* K. Magyar: Babócsa–Nárciszos: a settlement from the Ottoman Age, in: *Archaeology of the Ottoman Period 2003* 97–104.
- Marjanović-Vujović 1973* G. Marjanović-Vujović: Kuća iz druge polovine XVII veka otkopana u utvrćenom podgrađu beogradskog grada – Donjem gradu (La maison de la seconde moitié du XVIIe siècle, déterrée dans le faubourg fortifié de la ville de Belgrade, Donji Grad). *Godišnjak grada Beograda* 20 (1973) 201–228.
- Meringer 1900* R. Meringer: Das volkstümliche Haus in Bosnien und Herzegovina. *Wissenschaftliche Mitteilungen aus Bosnien und der Herzegovina* 7 (1900) 247–290.
- Miklós – Sabján 1992* Zs. Miklós – T. Sabján: Késő középkori szemeskályha Galgahévíz-Szent-andrásparton (Spätmittelalterlicher Kachelofen aus Galgahévíz-Szentandráspart). *Ház és Ember. A Szabadtéri Néprajzi Múzeum évkönyve* 8 (1992) 103–138.
- Muka 1979* A. Muka: L’habitation rurale dans la Malessie de Tirana (XIXe siècle – commencement du XXe). *Etnographie Albanaise* 9 (1979) 213–269.
- Muka 1984* A. Muka: L’architecture populaire des agglomérations du Shpat. *Etnographie Albanaise* 13 (1984) 189–247.
- Nadj 1961* S. Nadj: Tvrčava Bač. Rezultati arheoloških istraživanja 1958. i 1959. godine (Die mittelalterliche Burg Bač. Resultate der archäologischen Grabungen in den Jahren 1958 und 1959). *RVM* 10 (1961) 89–115.
- per sylvam 2016* Gy. Kovács – Cs. Zatykó (eds): “per sylvam et per lacus nimios”. The Medieval and Ottoman Period in Southern Transdanubia, Southwest Hungary: the Contribution of the Natural Sciences. Budapest 2016.
- Pusztai 2003* T. Pusztai: The pottery of the Turkish palisade at Bátaszék, in: *Archaeology of the Ottoman Period 2003* 301–310.
- Rác 2003* L. Rác: The climate history of Central Europe in the Modern Age’, in: J. Laszlovszky – P. Szabó (eds): *People and Nature in Historical Perspective*. CEU Medievalia 5. Budapest 2003, 229–245.
- Rác 2008* L. Rác: Magyarország környezettörténete az újkorig [An environmental history of Hungary up to the Modern Period]. *Természettörténelem* 1. Budapest 2008.
- Radić 2015* M. Radić: Osijek i šira okolica u osmanskom periodu. Katalog izložbe / Osijek and Surrounding Area in the Ottoman Period. Exhibition Catalog. Osijek 2015.
- Radić – Bojčić 2004* M. Radić – Z. Bojčić: Sredjovjekovni grad Ružica. Osijek 2004.
- Riza 1985* E. Riza: La maison de feu dans l’habitation citadine albanaise. *Etnographie Albanaise* 14 (1985) 79–104.
- Roth 1970* F. O. Roth: Wihitsch und Weitschawar. Zum Verantwortungsbewußtsein der adeligen Landstände Innerösterreichs in Gesinnung und Tat im türkischen ‘Friedensjahr’ 1578. II. Erbauung und Einrichtung des Kastells Bajcsavár (1578). *ZHVSt* 61 (1970) 151–214.

- Roth Heege 2012* E. Roth Heege: Ofenkeramik und Kachelofen. Typologie, Terminologie und Rekonstruktion im deutschsprachigen Raum (CH, D, A, FL) mit einem Glossar in siebzehn Sprachen. Schweizer Beiträge zur Kulturgeschichte und Archäologie des Mittelalters 39. Basel 2012.
- Roth Heege 2018* E. Roth Heege: Az európai cserépkályhák korai története – Vázlat [Early history of European tiled stoves – An overview], in: V. Kiss – E. Spekner – A. Végh (eds): Szívmelengető középkor. Kályhák és kályhacsempék a középkori Magyarországon, 14–16. század. Exhibition Catalog. Budapest 2018, 33–39.
- Rövid magyar kronika 1753 (1993)* Rövid magyar kronika sok rend-béli fő históriás Könyvekből nagy szorgalmatossággal egybe szedettetett és irattatott Petthő Gergelytől [A short chronicle of the Hungarians compiled by Gergely Pethő]. Kassa 1753. Reprint: Budapest 1993.
- Römer 1966* B. Römer: A sütőharang a történelem előtti időktől napjainkig (Der Backdeckel von der Urzeit an bis zur Gegenwart). Ethnographia 77 (1966) 309–422.
- Rúzsás 1979* L. Rúzsás: Barcs a feudalizmus korában [Barcs in the era of feudalism], in: O. Bihari (ed.): Barcs múltja és jelene. Barcs 1979, 3–37.
- Sabján 1988* T. Sabján: A búbos kemence [Hooded stoves]. Népi kultúra 1. Budapest 1988.
- Sabján 2001* T. Sabján: Késő középkori népies kályháink nagytáji vonatkozásai (Late medieval vernacular ovens related to big regions), in: M. Cseri – J. Tárnoki (eds): Népi építészet a Kárpát-medencében a honfoglalástól a 18. századig. Szentendre – Szolnok 2001, 281–330.
- Sabján 2002* T. Sabján: Bögrés szemeskályhák az Alföldön [Cup-tiled stoves on the Great Plain], in: *Gerencséresek 2002* 58–72.
- Sabján 2008* T. Sabján: Kenyérsütő kemencék [Bread ovens]. Népi kultúra 9. Budapest 2008.
- Sabján – Végh 2003* T. Sabján – A. Végh: A Turkish house and stoves from the Water-Town (Víziváros) in Buda, in: *Archaeology of the Ottoman Period 2003* 281–300.
- Shaddoud 2018* I. Shaddoud: Fabrication et utilisation des tannūr au Bilād al-Chām, in: F. Yenişehirlioğlu (ed.): XIth Congress AIECM3 on Medieval and Modern Period Mediterranean Ceramics. Proceedings (19–24 October Antalya) Vol. 1. Ankara 2018, 125–133.
- Szabó 1938* K. Szabó: Az alföldi magyar nép művelődéstörténeti emlékei (Kecskemét th. város múzeumának ásatásai) / Kulturgeschichtliche Denkmäler der Ungarischen Tiefebene. Bibliotheca Humanitatis Historica 3. Budapest 1938.
- Szakály 1971* F. Szakály: A babócsai váruradalom 1561-es urbáriumja és a babócsai vár 1563-as leltára [An urbarium from 1561 for the manor of Babócsa Castle and an inventory from 1563 for Babócsa Castle]. Somogy megye múltjából. Levéltári Évkönyv 2 (1971) 51–84.

- Szalai 2017* E. Szalai: 15–17. századi kályhaelemek a gyulai várból (Stove tiles /15th–17th centuries/ from Gyula Castle), in: E. Benkő – Gy. Kovács – K. Orosz (eds): *Mesterségek és műhelyek a középkori és kora újkori Magyarországon. Tanulmányok Holl Imre emlékére / Crafts and Workshops in Hungary during the Middle Ages and the Early Modern Period. Studies in Memory of Imre Holl*. Budapest 2017, 473–484.
- Tettamanti 1994* S. Tettamanti: A váci vár (Die Burg von Vác). Váci Könyvek 7. Vác 1994, 101–174.
- Tomić 1970* P. Tomić: Crepulje i vršnici u Severoistočnoj Srbiji – sa osvrtom na ove sudove i u drugim krajevima Jugoslavije („Crepulja et vršnik” – récipients de terre pour la cuisson du pain dans le Nord-Est de la Serbie). *Glasnik Etnografskog Muzeja u Beogradu* 33 (1970) 43–54.
- Turbék 2020* N. Pap (ed.): *Turbék. Szulejmán szultán zarándokvárosa* [Turbék. A Sultan Süleyman pilgrimage settlement]. Szigetvári Könyvek 2. Budapest – Pécs 2020.
- Vadas – Rác 2013* A. Vadas – L. Rác: Climatic changes in the Carpathian Basin during the Middle Ages: The state of research. *Global Environment* 12 (2013) 199–227.
- Vakarelski 1977* H. Vakarelski: *Etnografija na Bîlgarija*. Sofija 1977.
- Vizi 2010* M. Vizi: A Tolna–Mözs Káposztás-dűlő területén feltárt középkori kályhaszem lelet (Mittelalterlicher Kachelaugenfund aus dem Gebiet der Káposztás-Flur in Tolna–Mözs). *WMMÉ* 32 (2010) 371–399.
- Vizi 2012* M. Vizi: Kályhásság egy egykori dél-dunántúli mezővárosban (Hafner [Kachelmeister] in einem ehemaligen südtransdanubischen Marktflecken). *WMMÉ* 30 (2012) 213–254.

