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ARCHAEOLOGY AND SETTLEMENT HISTORY IN THE KERKA VALLEY, SOUTH-WEST HUNGARY

Edited by

ESZTER BÁNFFY

ABBREVIATIONS

ActaArchHung	Acta Archaeologica Hungarica Academiae Scientiarum Hungaricae (Budapest)
Acta Musei Papensis	Pápai Múzeumi Értesítő (Pápa)
Agria	Agria. Az Egri Múzeum Évkönyve (Eger), former: Az Egri Múzeum Évkönyve
AgrSz	Agrártörténeti Szemle (Budapest)
AKorr	Archäologisches Korrespondenzblatt (Mainz)
AntHung	Antiquitas Hungarica (Budapest)
APA	Acta Praehistorica et Archaeologica (Berlin)
Arrabona	Arrabona (A Győri Xantus János Múzeum Évkönyve) (Győr)
AR	Archeologické Rozhledy (Praha)
ArchA	Archaeologia Austriaca (Wien)
ArchÉrt	Archaeologiai Értesítő (Budapest)
ArchHung	Archaeologia Hungarica (Budapest)
ArchKözl	Archaeologiai Közlemények (Budapest)
ArsHung	Ars Hungarica. A Magyar Tudományos Akadémia Művészettörténeti Kutató Csoportjának Közleményei (Budapest)
AV	Arheološki Vestnik (Ljubljana)
Balcanica	Balcanica. Annuaire du Comité Interacadémique de Balkanologie du Conseil des Académies des Sciences et des Arts de la R. S. F. Y. et de l'Institut des Etudes Balkaniques (Beograd)
BÁMÉ	A Béri Balogh Ádám Múzeum Évkönyve (Szekszárd)
Banatica	Banatica (Reşiţa)
BJ	Bonner Jahrbücher der Rheinischen Landesmuseums in Bonn und des Vereins von Altertumsfreunden in Rheinlande (Köln)
BRGK	Bericht der Römisch-Germanischen Kommission (Berlin)
CommArchHung	Communicationes Archaeologicae Hungariae (Budapest)
DissPann	Dissertationes Pannonicae (Budapest)
DMÉ	A Debreceni Déri Múzeum Évkönyve (Debrecen)
DocPraehist	Documenta Praehistorica (previously: Poročilo…) (Ljubljana)
ERAUL	Études et Recherches Archéologiques de l'Université de Liège (Liège)
Ethnographia	Ethnographia (Budapest)
ÉTtK	Értekezések a történeti tudományok köréből (Budapest)
FMS	Frühmittelalterliche Studien. Jahrbuch des Instituts für Frühmittelalterforschung der Universität Münster (Berlin)
FolArch	Folia Archaeologica (Budapest)
FontArchHung	Fontes Archaeologici Hungariae (Budapest)
FUFG	Forschungsberichte zur Ur- und Frühgeschichte (Wien)
FrÉ	Földrajzi Értesítő (Budapest)
Germania	Germania. Anzeiger der Röm.-Germ. Kommission des Deutschen Archäologischen Instituts (Mainz)
HSl	Historica Slovaca (Bratislava)
HOMÉ	A Herman Ottó Múzeum Évkönyve (Miskolc)
IKMK	A Szent István Király Múzeum Közleményei (Székesfehérvár)
IPH	Inventaria Praehistorica Hungariae (Budapest)
JAMÉ	A nyíregyházi Jósa András Múzeum Évkönyve (Nyíregyháza)
JAS	Journal of Archaeological Science (London)
JIES	The Journal of Indo-European Studies (Hattiesburgh, Miss.)
JFA	Journal of Field Archaeology (London)

JOÖMV	Jahrbuch des Oberösterreichischen Musealvereines (Linz)
JPMÉ	A Janus Pannonius Múzeum Évkönyve (Pécs)
JRS	The Journal of Roman Studies (London)
JRGZM	Jahrbuch des Römisch-Germanischen Zentralmuseums (Mainz)
JSGU	Jahrbuch der Schweizerischen Gesellschaft für Ur- und Frühgeschichte (Basel)
Materijali	Materijali Saveza Arheoloških Društava Jugoslavije (Beograd)
MAGW	Mitteilungen der Anthropologischen Gesellschaft (Wien)
MBV	Münchner Beiträge zur Vor- und Frühgeschichte (München)
MFMÉ	A Móra Ferenc Múzeum Évkönyve (Szeged)
MFMÉ StudArch	A Móra Ferenc Múzeum Évkönyve – Studia Archaeologica (Szeged)
MGSL	Mitteilungen des Gesellschaft für Salzburger Landeskunde (Salzburg)
MGH	Monumenta Germaniae Historica (Hannover – Berlin)
MhBV	Materialhefte zur Bayerische Vorgeschichte (Kallmünz, München)
MIÖG	Mitteilungen des Instituts für Österreichische Geschichtsforschung (Innsbruck, Graz)
MittArchInst	Mitteilungen des Archäologischen Instituts der Ungarischen Akademie der Wissenschaften (Budapest)
MMMÉ	A Magyar Mezőgazdasági Múzeum Évkönyve (Budapest)
MNy	Magyar Nyelv (Budapest)
MÖAG	Mitteilungen der Österreichischen Arbeitsgemeinschaft für Ur- und Frühgeschichte (Wien)
MPK	Mitteilungen der Prähistorischen Kommission der Österreichischen Akademie der Wissenschaften (Wien)
MRT	Magyarország Régészeti Topográfiája (Budapest)
NK	Numizmatikai Közlöny (Budapest)
NytudÉrt	Nyelvtudományi értekezések (Budapest)
Offa	Offa. Berichte und Mitteilungen des Museums Vorgeschichtlicher Altertümer in Kiel (Neumünster)
PA	Památky Archeologické (Praha)
PHWien	Praehistorica. Beiträge zur Ur- und Frühgeschichte des Menschen (Wien)
Poročilo	see: DocPraehist
PrzA	Przegląd Archeologiczny (Poznań – Wrocław)
PZ	Prähistorische Zeitschrift (Berlin – New York)
QWV	Quellenschriften zur Westdeutschen Vor- und Frühgeschichte (Leipzig)
Radiocarbon	Radiocarbon. Publ. by the American Journal of Science (New Haven)
RégFüz	Régészeti füzetek (Budapest)
Savaria	Savaria (Szombathely)
SlA	Slovenská Archeológia (Bratislava)
SMK	A Somogy megyei Múzeumok Közleményei (Kaposvár)
SP	Studia Praehistorica (Sofija)
SPFFBU	Sborník Prací Filosofické Fakulty Brněnské University. Řada Archeologicko-klasická (Brno)
SSz	Soproni Szemle (Sopron)
ŠZ	Študijné Zvesti Archeologického Ústavu Slovenskej Akademie Vied (Nitra)
Századok	Századok (Budapest)
SzMMÉ	A Szolnok Megyei Múzeumok Évkönyve (Szolnok)

TapolcaVMK	Tapolcai Városi Múzeum Közleményei (Tapolca)
Tisicum	A Szolnok megyei Múzeum Évkönyve (Szolnok), former: SZMMÉ
UPA	Universitätsforschungen zur prähistorischen Archäologie (Bonn)
VAH	Varia Archaeologica Hungarica (Budapest)
VAMZ	Vjesnik Arheološkog Muzeja u Zagrebu (Zagreb)
VMMK	A Veszprém Megyei Múzeumok Közleményei (Veszprém)
VREJ	A Vasmegyei Régészeti Egylet Jelentése (Szombathely)
VSz	Vasi Szemle (Szombathely)
WMBHL	Wissenschaftliche Mitteilungen des Bosnisch-Herzegowinischen Landesmuseums (Sarajevo)
WMMÉ	A Wosinsky Mór Múzeum Évkönyve (Szekszárd)
ZalaiMúz	Zalai Múzeum (Zalaegerszeg)
ZGy	Zalai Gyűjtemény (Zalaegerszeg)
ZNM	Zbornik Narodnog Muzeja (Beograd)

Csesztreg 1996	*L. Vándor (ed.):* Fejezetek Csesztreg történetéből. Zalai kismonográfiák 2. Zalaegerszeg 1996.
Évezredek 1996	*L. Költő – L. Vándor (eds):* Évezredek üzenete a láp világából (Régészeti kutatások a Kis-Balaton területén 1979–1992) [Message from the moorland. Archaeological investigations in the Little Balaton region]. Kaposvár – Zalaegerszeg 1996.
Hahót Basin 1995	*B. M. Szőke (ed.):* Archaeology and settlement history in the Hahót Basin, South-West Hungary. From the Neolithic to the Roman Age. Antaeus 22 (1995) [1996].
Hahót Basin 1996	*B. M. Szőke (hrsg.):* Archäologie und Siedlungsgeschichte im Hahóter Becken, Südwest-Ungarn. Von der Völkerwanderungszeit bis zum Mittelalter. Antaeus 23 (1996).
Nagykanizsa 1994	*J. Béli – M. Rózsa – A. Rózsa-Lendvai (eds):* Nagykanizsa. Városi monográfia I. Nagykanizsa 1994.
Prehistoric studies 2002	*E. Bánffy (ed.):* Prehistoric studies. In memoriam Ida Bognár-Kutzián. Antaeus 25 (2002).
Völker an der Mur 1996	*J. Balažic – L. Vándor (eds):* Ljudje ob Muri – Népek a Mura mentén – Völker an der Mur – Ljudi uz Muru 1. Murska Sobota – Zalaegerszeg 1996.
Völker an der Mur 1998	*K. H. Simon (ed.):* Népek a Mura Mentén – Völker an der Mur–Ljudi uz Muru – Ljudje ob Muri 2. Zalaegerszeg 1998.

GM	Göcsej Museum (Göcseji Múzeum), Zalaegerszeg
HNM	Hungarian National Museum (Magyar Nemzeti Múzeum), Budapest
MOL DL	Magyar Országos Levéltár, Diplomatikai Levéltár, Budapest (Hungarian National Archives, Diplomatic Archives)
MTA RI	Magyar Tudományos Akadémia Régészeti Intézete, Budapest (Archaeological Institut of the Hungarian Academy of Sciences)

Eszter Bánffy

ANTAEUS 28 (2005) 13–42

THE NATURAL ENVIRONMENT OF THE KERKA VALLEY AND PREVIOUS RESEARCH IN THE MICRO-REGION. AN INTRODUCTION

The geographic setting

In terms of its geographic setting, the Kerka Valley lies on the western Hungarian periphery, at the meeting point of two significant regions: the Alpine foothills, the forested southern part of the Őrség region (the Vas ridge) and the northern part of the Lenti Basin, the fringes of the so-called Hetés Plain. These two regions essentially determine the nature of this area. The westernmost extension of the north–south range of the Zala Hills (Pórszombat, Szilvágy, the Kissziget area and the valley of the Cupi Stream) and the forested, often strongly dissected mountain remnants with furrows and ridges of the gently rolling Alpine foothills (western part of Szentgyörgyvölgy, part of Márokföld, Felsőszenterzsébet and Alsószenterzsébet) represent one these landscapes. The geologic imprint of the Palaeo-Danube and its tributaries can also be noted in the north–south valleys: this palaeo-river flowed towards the Drava subsidence basin.[1] The Palaeo-Rába and the various branches and tributaries of the Kerka deposited their bedload after reaching this plainland from the eastern Alps. These mainly take the form of pebbly sediments, which can be identified with the low pebble terraces along the Szentgyörgy Stream, and especially between Kerkaújfalu and Csesztreg, as well as to the south, on the small "islet" between two branches of the Kerka in the Zalabaksa and Kerkabarabás area. The central part of the investigated area lay in this plainland: Ramocsa, Kerkafalva, Kerkaújfalu, part of Márokföld, Nemesnép, Csesztreg, Zalabaksa, Baglad and Resznek. The same holds true for the villages north of Lenti (Zalaszombatfa, Belsősárd, Külsősárd and Lentikápolna) in terms of landscape geography, although these were not part of the surveyed area.

The highest point of this region does not exceed 230–190 m a.s.l. in the hilly region and 180–190 m a.s.l. in the plainland. Of the pebbly-clayey monadrocks, the Szentgyörgyvölgy rock is the highest, rising 257 m a.s.l.[2]

Soils

It follows from the above brief overview of the geography of the region that three main soil types can be distinguished in the investigated micro-region.

The forested hills and the smaller clearings, meadows are covered with a medium quality, acidic, often clayey forest soil. The clayey and loessy soils often contain iron concretions. Humus formation is rare and thus these soils can be characterised as being of a rather poor quality.

In the plainland, the alluvial sediments, which were deposited by the Palaeo-Rába and Palaeo-Mura, determined the evolution of soils during the Upper Pliocene. Later, during the Middle Pliocene, when the two rivers retreated to their current bed, this region was criss-crossed by the rapid streams and smaller rivers – such as the Kerka – flowing from the Alpine foothills and from the Őrség in the north; these rivers and streams deposited a new, pebbly sediment. Humus formation was most intensive in this area, resulting in the appearance of medium quality soils. These plainland areas are usually cultivated and, more rarely, used as grazing land.

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[1] *F. Cseke:* Nagykanizsa és környékének természeti viszonyai (Natural conditions of Nagykanizsa and its environs), in: *Nagykanizsa 1994* 11–42, esp. 15.

[2] *Marosi – Somogyi 1990.*

The third soil type can be found in the bends of the oft-meandering rivers and streams. The entire region inclines towards the Drava Valley, towards which these streams and rivers flow. This inclination decreases from the periphery of the hilly northern and western periphery, the River Kerka's flow velocity decreases and, bypassing its alluvium, the meandering river breaks into several branches. These oxbows along the Kerka and the various streams enclose deeper lying waterlogged, stagnant, marshy areas, which were regularly inundated by the spring floods, which repeatedly deposited their loam. These areas are characterised by a peat soil and a special micro-climate.

Hydrology

As shown by its name, the investigated area can be identified with the valleys of the Kerka and its tributaries and the hilly regions enclosing them. The Szentgyörgy Stream in the west and the Cupi Stream flowing north to south in the east must here be mentioned. Uniting with a few smaller creeks, the Szentgyörgy Stream flows into the Mura between Dolga Vas (Hosszúfalu) and Lendava (Alsólendva) in Slovenia. The Cupi Stream flows into the Kerka in the Kerkabarabás area, while the Kerka flows into the Mura in the Kerkaszentkirály–Muraszemenye area, near the Croatian border.

These north to south flowing rivers and streams are characterised by a minimal discharge; in summer there is hardly any water in the riverbeds in the northern part of the Lenti Basin. This changes dramatically in the rainy season and during spring, when the snow melts: the Kerka often overflows in the Alsószenterzsébet, Csesztreg, Zalabaksa area, causing serious floods. There is no possibility for the drainage of the increased water. The local council of Csesztreg is planning the construction of a reservoir in the plain north of the village, in an area called Sarjas kertek, to be partly financed by the PHARE programme. The plans also include the creation of an archaeological park in the northern part of an artificial island created in this artificial lake and thus this construction project is also important in terms of our own work in this area.

Climate

The investigated area is one of the wetter regions of Hungary, with an annual rainfall of around 1000 mm. 65 per cent of this annual precipitation falls in the growing season and the rainfall is around 100 mm even in July, the driest month.[3] The climate is more or less sub-Alpine, oceanic: there is less difference between the summer and winter temperatures than in the more easterly part of County Zala or in Transdanubia in general. This is especially true of the hilltops and the forested areas, but even the plainland receives a fair amount of precipitation. The highest daily precipitation was recorded in Csesztreg: 97 mm. The snow-covered, frosty period is also quite long, lasting from mid-October to late April.[4]

The number of sunny hours is relatively low for Hungary: 1800 hours.[5] In the section analysing the results of the field survey it will be shown that there is no reason to assume that this relative humidity had changed during prehistory or the historical periods. Although dryer and wetter, cooler and warmer periods obviously alternated with each other and this undoubtedly influenced the climate of this region, it would nonetheless appear that the region was characterised by a predominantly temperate sub-Alpine climate.

Vegetation

The original natural vegetation of County Zala was closed forests: beech and oak forests, pinewoods mixed with deciduous species, gallery woods and willows in the valleys.[6] The shrub stratum of these mixed pinewoods was similar to that of beech woods. Phytogeographically this region represents a transition between the Zala (Saladiense) subtype of the Hungarian southern

[3] *Rakonczay 1996* 250.
[4] *Marosi – Somogyi 1990* 446.
[5] *Rakonczay 1996* 250.
[6] *R. Müller:* A honfoglalásig [Till the Hungarian Conquest period], in: L. Vándor (ed.): Képek 1100 esztendő Zala megyei történéseiből. Zalaegerszeg 1996, 7.

Transdanubian flora province (Praeillyricum) and the Alpine foreland (Praenoricum) flora region.[7] Peat-bogs are quite frequent owing to the hydrogeography of the region. The northern fringes of the micro-region between the outskirts of Szentgyörgyvölgy and Magyarföld was at one time a closed military territory, which was not used either for agriculture or for forest clearing, the result being that the original beech and oak woods survived undisturbed: this area is currently a nature reserve. Thriving on peat land, Scots pine also appeared in these woods. In the areas exploited as grazing lands, pedunculate oak woods were gradually replaced by durmast oak forests, better adapted to dryer conditions and often mixed with hornbeam and alder near streams. Meadow and forest-meadow associations are also quite characteristic; these often alternate with one-time agricultural land, which is currently uncultivated owing to the economic crisis in the wake of the disintegration of the agricultural co-operatives. These fields were, sadly, rapidly overgrown by weeds. Bog-moss and other rare, protected species thrive in the waterlogged, marshy stream and river valleys.

History of research

The choice of the micro-region

The investigation of the Kerka Valley micro-region between 1995 and 1998 was made possible by a grant from the Hungarian Scientific Research Fund (OTKA). Our original objective was the investigation of settlement patterns in the so-called Hetés region, the northern part of the Lenti Basin. However, we only received about one-fifth of the necessary funds and we therefore had to modify our initial project – either by investigating a smaller area or by omitting certain periods from the investigation. Another option was to restrict the investigation to an overall field survey, without excavations or smaller soundings. The least painful option seemed the investigation of a smaller area, the omission of the southern part of the originally targeted territory, in other words, the survey of the area between the county border and the Resznek–Baglad area, instead of up to Lenti. This area forms a more or less closed geographic unit: in the east, north and north-east it is bordered by the Zala Hills, the southern part of the Őrség and the southern foothills of the Alps; only in the south may the determination of the boundary of the investigated area seem a little arbitrary.

It can be seen at first glance that one site in the Kissziget area falls outside the targeted area, lying a little to its south-east. We have included this site in our investigation for two reasons: Kissziget-Temetődomb is one of the few sites, which were known to László Vándor, director of the county museum and thus we had begun the survey of the site before it became clear that the OTKA grant had been reduced. The other reason was that the Upper Kerka Valley was extremely poor in Bronze Age sites and finds; Kissziget was the single site, which offered some information on the Early Bronze Age, and it was also the single most important site for studying the Middle/Late Bronze Age transition. The chapter on Bronze Age settlement patterns in the region could hardly have been written without the inclusion of this site.

The boundaries of the investigated area were the following: the northern side of the Ramocsa–Kerkaújfalu road in the north, the valley of the Cupi Stream flowing east of Road 86 in the east, the line formed by the villages of Resznek, Baglad and Kerkabarabás lying some 6 km north of Lenti in the south and the Hungarian–Slovenian border and the boundary between Zala and Vas counties in the west.

Even the systematic survey of this smaller area would have been impossible without the help of our colleagues, university students and other institutions. Their unflagging interest, their friendship and their eagerness to increase their knowledge remains memorable. Neither could we have conducted and completed the survey without the help of the following colleagues:

Dr. Mária Bondár, CandSc (Archaeological Institute of the Hungarian Academy of Sciences, Budapest)

Tibor Frankovics (Göcsej Museum, Zalaegerszeg)

[7] *Rakonczay 1996* 28, flora map; *Zs. Debreczy:* Növényvilág a Balaton körül [The flora around the Balaton], in: I. Illés (ed.): Tavunk a Balaton. Budapest 1981, 75–119.

Dr. Judit Kvassay (Göcsej Museum, Zalaegerszeg)
Dr. Ferenc Redő, CandSc (Archaeological Institute of the Hungarian Academy of Sciences, Budapest)
Dr. László Vándor, CandSc (Göcsej Museum, Zalaegerszeg)
Prof. Dr. Andreas Lippert (Institut für Ur- und Frühgeschichte, Universität Wien),
Andreas Bernhard, student (Institut für Ur- und Frühgeschichte, Universität Wien),
László Forró, student (Eötvös University, Budapest),
Bálint Havasi, student (József Attila University, Szeged),
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Krisztina Somogyi, student (Eötvös University, Budapest),
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Österreichisches Kulturinstitut, Budapest,
TV2, Budapest.

We must finally mention József Bagó, mayor of Csesztreg, Ottó Horváth, mayor of Zalabaksa and Vilmos Felső, mayor of Szentgyörgyvölgy, as well as László Urbán, Bea Simon, Szilárd Simon and István Pintér (†), all inhabitants of Szentgyörgyvölgy, who were most generous with their time and assistance, and who usually found a solution for the most impossible situations.

Similar previous research

The Kerka Valley Micro-Region Research Project is the third such project in Transdanubia. The earlier ones are fairly well known: this work was begun in Transdanubia in 1979, when the archaeologists of the Somogy and Zala county museums, together with their colleagues from the Archaeological Institute of the Hungarian Academy of Sciences, joined forces in order to salvage as many archaeological relics of the Little Balaton as possible before the ecological reconstruction of the Little Balaton was begun. The flood protection and control system planned for the Lower Zala Valley and the marshland of the one-time Little Balaton meant that a part of this territory would be submerged, other parts would become inaccessible islands, while other areas would be destroyed during the construction of the reservoirs. As a result of the systematic field surveys and excavations conducted in the area, some two hundred archaeological sites were identified and registered on the territory of the two planned reservoirs; many of these sites were excavated during several campaigns over the years, while other sites were only investigated with smaller soundings.[8] For the first time, the settlement history of a closed geographic region could be reconstructed from the Neolithic to the Turkish occupation period.

The results of this research, which began as a rescue excavation, but eventually grew into what would today be called a systematic micro-region research project, were first published in an exhibition catalogue,[9] which was followed by a volume in Hungarian.[10] Keszthely-Fenékpuszta and Zalavár, two well-known sites, both lie in this area.[11] The evaluation of the

[8] The region was surveyed by László Horváth, Róbert Müller and László Vándor (Directorate of County Zala Museums). Participants of the excavations included Zsuzsa M. Virág (Balaton Museum, Keszthely); Eszter Bánffy, Mária Bondár, Judit Kvassay and Béla Miklós Szőke (Archaeological Institute of the Hungarian Academy of Sciences, Budapest).

[9] *R. Müller (ed.):* Sieben Jahrtausende am Balaton. Mannheim 1989.

[10] *Évezredek 1996.*

[11] The Keszthely-Fenékpuszta site was recently investigated by a team of American archaeobotanists. Following the death of Ágnes Cs. Sós, the investigation of the site was continued by Béla Miklós Szőke, who analysed and evaluated the documentation of earlier campaigns, and also continued the excavation of the site. The findings of these excavations have modified the previous interpretation of the site on several points.

finds from another major site, Balatonmagyaród-Hídvégpuszta-Déli rév, covering almost all periods from the Neolithic to the late Middle Ages, is in progress.[12]

The overall picture, which could be drawn as a result of the research conducted in the Little Balaton area on settlement patterns, the changes in the settlement network and the interaction with the environment, formed a sound basis for a similar research project on the history of a wider region in County Zala and western Hungary.

Between 1986 and 1994 we mapped an area lying to its west, the Hahót Valley, recording all traces of human settlement and life in the past seven millennia. The investigation of the Hahót Valley involved the survey of a roughly 120 km^2 large area. The research team, led by Béla Miklós Szőke, surveyed the valley of the Principális Canal north of Nagykanizsa and the hilly region to its west and east, based on the earlier, preliminary survey by László Horváth.[13] The settlements were rather sparse: less than one-half as many sites could be identified in the almost twice larger area compared to the Little Balaton region. Even so, many of the sites in the Hahót Valley are neither smaller, nor less significant than their counterparts in the Little Balaton region and their identification and investigation has contributed towards solving a number of problems in the settlement history of the wider region. The excavation of the Zalaszentbalázs and Hahót-Szartóri sites, for example, has added to our knowledge of the cultural and social transformation in the Early Copper Age and the Early/Middle Copper Age transition. The investigation of the Late Copper Age Baden culture site at Hahót-Szartori and the Early Bronze Age settlement at Börzönce has also enriched our knowledge of the prehistory of this area.[14] Surviving the Marcomannic raids that ravaged this area, the Roman villa at Alsórajk-Kastélydomb provided equally important data.[15] The lack of sites from a certain period also offered useful information: our survey revealed that the Hahót Valley had become an uninhabited area by the mid-5th century, functioning as a marchland in the Migration period, in the Avar period and also in the Hungarian Conquest period. The area was settled quite intensely during the Árpádian Age; the royal estates in this region were eventually donated to various aristocratic families of the Hahold (Hahót)–Buzád kindred. This basic pattern of settlement history can also be noted in the third micro-region, the Kerka Valley.

The findings of the field surveys and the excavations conducted on Neolithic, Copper Age, Early Bronze Age, Roman, Árpádian Age and late medieval sites by archaeologists from the Archaeological Institute and the Göcsej Museum of Zalaegerszeg have been published in two thick volumes.[16]

The third research project ventured into an essentially uncharted territory. The northern part of the Lenti Basin, the Kerka Valley, is the westernmost plainland from Lake Balaton. Our primary goal was to link the findings of the Little Balaton, Hahót and Kerka projects and thereby create a macro-region from Lake Balaton to the western border of Hungary, allowing the comparison of settlement patterns and settlement histories from a fairly large area. Weaving together the findings of these three micro-region projects, we tried to draw conclusions that would be valid for the entire area, combined with explanations for possible

[12] The excavation was conducted by László Horváth. The Neolithic finds will be evaluated by Eszter Bánffy, the Early and Middle Bronze Age finds by Mária Bondár. The late Lengyel finds from the 1981 and 1984–85 campaigns have already been photographed and drawn. The excavation diary for the 1984–85 seasons has been analysed. Two preliminary studies have been published on the finds and the enclosure: *E. Bánffy:* Funde der späten Lengyel- und frühen Balaton–Lasinja-Kultur aus dem Kleinbalaton-Gebiet. Probleme des Übergangs, in: Die Rolle des Schwarzen Meeres in der Urgeschichte Mittel- und Südosteuropas. Tolbuchin (Bulgaria), 20–26. May 1988. SP 11–12 (1992) 11–12, 308–312; *E. Bánffy:* Kora rézkori körárok Balatonmagyaród-Hídvégpusztáról [Early chalcolithic circular ditch at Balatonmagyaród-Hídvégpuszta], in: *Évezredek 1996* 21–22.

[13] This project was enabled by an OTKA grant. The project was directed by Béla Miklós Szőke, with László Vándor, Judit Kvassay (Göcsej Museum, County Zala), Eszter Bánffy, Mária Bondár and Ferenc Redő (Archaeological Institute of the Hungarian Academy of Sciences, Budapest).

[14] Zalaszentbalázs-Pusztatető was excavated by Eszter Bánffy; Zalaszentbalázs-Szőlőhegyi mező by Mária Bondár and Eszter Bánffy; Hahót-Szartóri, sites I and II by Eszter Bánffy; Börzönce by Mária Bondár.

[15] Alsórajk-Kastélydomb was investigated by Ferenc Redő and Béla Miklós Szőke.

[16] Archaeology and settlement history in the Hahót Basin. Cf. *Hahót Basin 1995* and *1996.*

local variations. The interpretation of prehistoric and early historic cultural processes in the area could obviously only be based on a knowledge of the similarities and differences. The findings are presented according to archaeological periods and are based on the overall information on the settlement patterns in the three micro-regions.

The fact that a topographical survey of the area on the other side of the border with Slovenia, the Prekmurje region north of the River Mura, is also available, together with a gazetteer of sites,[17] makes this comparison all the more noteworthy since it offers a rather good overview of an extensive area.

A more or less similar project has also been launched north-west of the Kerka Valley in south-east Styria, in the Rába Valley, which is principally focused on botanical analyses. As a result, we now have at our disposal a series of data on the vegetation history of a larger area, extending from Lake Balaton to the upper reaches of the Mura and Rába rivers along a roughly 200 km long area in Transdanubia. The specialists of the prehistoric, Roman and medieval periods participating in this project came from the Göcsej Museum in Zalaegerszeg and the Archaeological Institute of the Hungarian Academy of Sciences, and the project itself was based on a co-operation with the Department of Prehistory of Vienna University and the researchers and museologists working in the Graz and Murska Sobota (Muraszombat) museums. This co-operation was justified by the geographic proximity and the similarity in research objectives. This research project was focused on pollen analyses in order to determine the one-time cultivated species in the Kerka Valley, the area along the Austrian and Slovenian section of the border. The participants included geologists from all three countries and the project itself was financed by an Austrian fund.[18]

Previous research in the Kerka Valley

A comparison of the archaeological and historical research in Transdanubia and the Great Hungarian Plain reveals that our knowledge of the prehistory and early history of Transdanubia lags far behind that of the Great Hungarian Plain. Within Transdanubia, we have a much better picture of eastern, than of western Transdanubia. This difference is also true for County Zala, again at the expense of the county's western fringes. This in itself indicates how little we had to go by when we began the research project.

Some one hundred and thirty years ago, a local teacher and amateur historian working in Szentgyörgyvölgy, Imre Gózon, sent "painted sherds and stone axes" found in the hilly region by the country's border to the Hungarian National Museum, where they can still be found in the prehistoric collection.

We obviously tried to identify the findspot where these artefacts had been found; this was none too easy since Imre Gózon rarely specified the exact findspot. For three years we tried in vain to locate the site he called Cilinkó, although we surveyed the potential area at least fifteen times under different weather conditions. Cilinkó is currently one of the settlement nuclei of Szentgyörgyvölgy. Its area is largely fallow and used as grazing land by the local dairy farm. We investigated both banks of the small stream flowing into the Szentgyörgy Stream, but the rather steep banks did not contain any archaeological features or finds. Although we identified a Neolithic site slightly east of the road leading to Cilinkó (Szentgyörgyvölgy-Haraszti dűlő, a settlement of the Transdanubian *Linearbandkeramik* [LBK] culture), this can hardly be identical with Imre Gózon's site since we did not find any painted pottery fragments. Late medieval sherds were found scattered in the area between Cilinkó and Kógyár. We managed to locate Széll-dűlő, an area within Márokföld, with the help of the locals since we were unable to identify the place from the available descriptions. Although we surveyed this area several times, we did not find a single site, even though the freshly ploughed land provided

[17] *I. Šavel:* Arheološka topografija Slovenije. Topografsko področje XX (Prekmurje). Ljubljana 1991.

[18] For an overview of the findings, cf. *I. Draxler – A. Lippert et al.:* Pollenanalytische Daten und eine archäologische Bestandaufnahme zur frühen Siedlungsgeschichte im Gebiet zwischen Raab und Mur (Österreich, Slowenien, Ungarn). Abhandlungen der geologischen Bundesanstalt 56:1 (1999) 337–396 (383–394).

ideal conditions for archaeological surveying. We could only identify the prehistoric and medieval site on top of the hill with the Catholic church from the descriptions provided by Imre Gózon.

Our knowledge of this region hardly increased later and in the decades following World War II the area could not even be approached, let alone systematically surveyed, this being the main reason why only stray finds, most of which could not even be dated precisely, were known from this area. In 1960, József Korek, then working in the Hungarian National Museum, published a brief overview of the prehistoric sites in County Zala, based on these stray finds.[19] Korek mentions a few stone implements and a couple of polished stone axes from the Lenti district. Chipped and polished stone implements were found at Márokföld, Resznek, Szentgyörgyvölgy, Szilvágy, Pórszombat and Zalabaksa in our research territory.[20] These stray finds could not always be associated with a specific site identified during the surveys.

Róbert Müller[21] and, more recently, Katalin H. Simon, a prehistorian working in the Göcsej Museum, have published the finds from the activity area of the Göcsej museum, together with a gazetteer of the known Neolithic and Copper Age sites.[22] Beside the stone artefacts mentioned by József Korek, the collection of the Göcsej Museum contained Neolithic sherds from Kissziget-Temető and Lenti-Alsórét, the latter site and Pórszombat-Medes also yielding Copper Age finds. Although Katalin H. Simon and László András Horváth also surveyed this area, it was not included in the Kerka Valley Project for the reasons mentioned in the above.

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[19] *Korek 1960* 67–82.

[20] *Korek 1960* 72.

[21] *R. Müller:* Régészeti terepbejárások a göcseji „szegek" vidékén és településtörténeti tanulságaik (Archäologische Bodenforschungen im Göcsejer „Szegek"-Gegend und ihre siedlungsgeschichtliche Lehren). A Göcseji Múzeum Kiadványai 30. Zalaegerszeg 1971.

[22] *K. H. Simon:* Der Stand und die Aufgaben der Neolithikum- und Kupferzeitforschung im Komitat Zala. ZalaiMúz 2 (1990) 47–59.

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Eszter Bánffy – Mária Bondár – Zsuzsa Miklós

INVESTIGATIONS IN THE KERKA VALLEY: FIELD SURVEYS, AERIAL PHOTOGRAPHY, ARCHIVAL DATA

The still visible remains of human impact on the landscape (Eszter Bánffy)

A cursory glance at a given landscape shows a few villages, houses and church spires, with the gardens, ploughlands, grazing fields and meadows scattered between them. The parish church at Csesztreg (originally called Felsőcsesztreg), for example, dominates the view of the settlement from the north ever since the Middle Ages. At the same time, a closer inspection of many features that appear to be an organic part of the landscape reveals that they preserve traces of one-time human activity.

One of the most conspicuous features of the Kerka Valley is the unique architecture of the nobility's settlements in this borderland region.[1] A number of porticoed manor houses can still be seen in Szentgyörgyvölgy and Nemesnép, some rather dilapidated, some lovingly renovated by their new, usually Austrian owners. Beside the belfries, such as the one at Nemesnép, the old hamlet settlement pattern is the most distinctive feature of this region; its traces still survive in some places, either appearing as discrete settlement nuclei, as toponyms containing the word *szer* or in the identification and excavation of these hamlets that were abandoned sometime in the Middle Ages. Examples of still existing hamlets can be quoted from Szentgyörgyvölgy: Alsófarkasi, Asszonyfa, Kógyár (formerly known as Kolgyár) and Cilinkó. Destroyed and abandoned hamlets include Csekeszer near Alsófarkas and a settlement nucleus, whose name can no longer be identified, by the hill on which the Catholic church stands. Both of the latter were identified during the field surveys. Although Csekeszer is practically uninhabited, its name has been preserved by the locals. This, then, is a unique feature of the Kerka Valley landscape that has survived unchanged since the Middle Ages.

Countless other relics of medieval man's impact on the landscape have survived in the investigated area. We discovered the traces of ridge and furrow ploughing in several woods. Owing to the rather wet climate, it was customary in the western borderland region to repeatedly plough 2–5 m wide zones, and the ridges thus created enabled rain and melting snow to flow down into a wide furrow. The fact that many areas that in the Middle Ages had been ploughed in this manner have since been reclaimed by forests indicates that the acidic, poor quality soil was not always worth cultivating. Still, the surviving traces of ridge and furrow ploughing in forests contribute to our reconstruction of the one-time medieval landscape. Such longish ridges were identified north of Szentgyörgyföld-Cilinkó towards Magyarföld, in the forest on the territory of the Szentgyörgyvölgy Nature Reserve, and east of Zalabaksa, near the medieval village of Szentandrás. It seems likely that we can detect the activity of the inhabitants of Szentandrás in the forests of the Medes clearance.

Medieval Szentandrás, one of the villages deserted during the Ottoman period, has remained deserted ever since,[2] this being the reason that its territory was never disturbed by subsequent building activity. Its fishpond can still be made out among the surviving embankments. The rectangular patches with sherds scattered over them indicate that the houses had been aligned perpendicular to the embankment. The location of the one-time church, indicated by a debris of bricks, has been identified on the highest point of the village, on a small hill. It seems likely that the graves of the villagers still lie undisturbed around the church.

[1] *A. Filep:* Őrség, in: O. Ortutay (gen. ed.): Magyar Néprajzi Lexikon IV. Budapest 1981, 135–137.

[2] *Vándor 1996* 44.

A few years ago, the burials of the cemetery around the medieval church of Csesztreg came to light during the construction of a canal. According to László Vándor, "the one-time medieval terrain and the line of the ditch encircling the cemetery can still be made out north of the church. Its width suggests that after Kanizsa had been occupied by the Turkish forces in the early 17th century, the short-lived Csesztreg fortress had been created by fortifying the church",[3] providing yet another example for the impact of human activity on the landscape during the Middle Ages and the Turkish occupation period.

Moving backwards in time, it becomes clear that the landscape was shaped not only by medieval man. The centuries of the Migration period left few traces, most likely because at this time the area was practically uninhabited and functioned as a marchland separating the various peoples from each other. The preceding Roman period left two rather distinctive marks. The first, the remains of Roman roads, is less conspicuous. The cambered surface of the road is sometimes visible under good terrain and light conditions. Ferenc Redő was able to trace a section of the Amber Road passing through the Kerka Valley, as well as another road branching off to the west.[4]

The other characteristic feature cannot be missed and can be noted in several places. In the 2nd–3rd centuries AD, the Romanised population usually erected a small mound, a tumulus over the cremation burials. This burial practice became quite common in a fairly wide zone along the Amber Road throughout Transdanubia. In the Kerka Valley, the cemeteries containing these burial mounds were usually preserved in forested areas, where they were protected from natural erosion and destruction by agricultural cultivation. Some of these burial mounds, such as the ones near Kerkabarabás and Zalabaksa, have been known since the 19th century, and several tumuli have also been reported from Nemesnép.[5] A burial ground containing some sixty tumuli lies in the forest south of Szilvágy; most of these burials are undisturbed, implying that very few have been plundered and that the graves, as well as the grave goods, have remained untouched by grave robbers. Ferenc Redő investigated one of these early Roman period burial mounds near Nemesnép and found that the burial had been robbed in antiquity, probably sometime after the burial.[6]

One might think that prehistoric man did not have a lasting impact on the landscape, given the geographic conditions in Transdanubia. True enough, there are no Neolithic settlement mounds (tells) or Copper Age tumulus burials (kurgans) in Transdanubia. At the same time, we know that the forest clearance begun in the Early Neolithic had a lasting effect. In order to gain new arable land, early agriculturalists had to clear the forested hills in Transdanubia. It is uncertain how intensive this early agriculture was. Still, it is noteworthy that a few distinctive prehistoric radiolarite chipped stone blades were found in almost all of the cultivated fields that were included in the field surveys. Obviously, these scattered stone implements did not mark a settlement, but rather indicated that these fields had also been cultivated during prehistoric times; these implements had probably been lost during harvesting or other agricultural work, or had perhaps been deposited there, when manure from a nearby settlement was spread over the soil.

The transformation of the landscape began when man had taken one of the greatest steps in the history of mankind: instead of simply collecting what he needed, he began to acquire his food by transforming the natural environment, in other words, at the time when hunter-gatherers became food-producing peasants. This process can also be traced in the Kerka Valley: not only did ploughlands encroach on forested tracts, but the foundation of

[3] *Vándor 1996* 50; *L. Vándor:* Kanizsa története a honfoglaláskortól a város török alóli felszabadulásáig (The history of Kanizsa from the Hungarian Conquest period till the end of the Turkish rule), in: *Nagykanizsa 1994* 360. Cf. also his study in this volume.

[4] Cf. also his study in this volume.

[5] Although the tumulus graves of County Zala have been surveyed by László Tábori, the results have not been published for fear that the burials would be looted. Tábori's map has been published in two studies, although without an indication of the exact findspots: *L. Horváth:* A magyarszerdahelyi kelta és római temető [The Celtic and Roman cemetery at Magyarszerdahely]. ZGy 14 (1979) fig. 19; *L. Horváth:* Római halomsírok Zalában (Römische tumuli im Komitat Zala), in: *Völker an der Mur 1998* 31–40, map.

[6] See his study in the present volume.

small hamlets and villages, established on hilltops, was also preceded by forest clearance and thus triggered or contributed to the later erosion of these hills.

Systemathic field surveys (Eszter Bánffy)

The systematic field surveys conducted over the area were perhaps the most important part of the research project. Much has been written about the terminology, the theory and the types of surveys, as well as about the advantages and disadvantages of various surveying methods. The number of actual surveys has also increased. We may say that with the spread of processual archaeology, which advocated an analytical approach to archaeology and the inclusion of the natural sciences in fieldwork from the late 1960s, adequately funded, large-scale field survey projects equipped with the most up-to-date surveying instruments were launched one after the other.[7] There is also a vast literature on sampling techniques.[8] The most detailed study on the theory and practice of archaeological surveying was written by Dénes B. Jankovich.[9] In the following I shall briefly describe the disadvantageous and advantageous factors that influenced our survey work.

Two circumstances contributed to the difficulties of the survey. One was the extensive tracts of woodland in the surveyed area since even with the rather scanty shrub level in the area, we could only hope to identify and record traces that left a visible mark on the environment.

The other difficulty was more socio-economic, than environmental in nature. Before the political changes in Hungary, the arable land was usually managed by a local co-operative, and the two earlier investigated micro-regions were no exception. This meant that there were huge fields planted with the same crop. It also meant that in the case of archaeological fieldwork – a field survey, a sounding excavation or an excavation project lasting several years – one only had to reach an agreement with the director of the co-operative for obtaining permissions and usually one paid some symbolic compensation for damages.

This situation changed drastically in the early 1990s. Farming co-operatives disintegrated, their land was distributed or, better said, returned to their original owners. The earlier large fields were carved up into small plots. We had to come to an agreement with each and every owner of these plots individually, and we can call ourselves lucky that we were able to conduct our survey without any major conflicts on these lands. The greatest problem was that the earlier, usual order of field surveys had to be changed by necessity. It is a well known fact that surveys are best conducted in spring and autumn, when cultivated fields are no longer covered with snow or vegetation. When we began our micro-region project in 1995, we already had to face the problem that most of the fields were left fallow, in part owing to the worsening economic climate and the lack of agricultural machinery, as well as to the low profit from cultivation owing to the poor quality of the soil. As a result, our surveys in spring and autumn were not always successful. During our summer excavations, we often saw fields that had been ploughed, but had for some reason not been planted with any crops. We therefore also continued the field surveys in summer. In late summer afternoons, in the low light, we could also survey the meadows left fallow. Only a few plants survived in the weed infested fields that had formerly been ploughed. This is how we identified the Szentgyörgyvölgy-Haraszti erdő site, with its worn sherds and chipped stone implements and the remains of the medieval hamlet at Szentgyörgyvölgy-Katolikus templomdomb, as well as the remains of a small settlement of the Copper Age Balaton–Lasinja culture not far from the latter. We returned to these sites several times in order to gain as much information as possible.

The third difficulty that we faced during the field surveys was the presence of floodplains and floodplain soils. It is rather pointless to survey these low-lying, waterlogged areas since the deposits thicken from year to year after each flood, not to mention the fact that these areas could only have been settled in periods of dryer climate – however, there is no evidence for a substantially drier climate. These areas are almost without exception uncultivated and left fallow.

[7] *Renfrew – Bahn 1996* Chapter 3.

[8] *G. Andrews – R. Thomas:* Management of archaeological projects. English Heritage. London 1991.

[9] *Jankovich 1993.*

It follows from the above that we could use these conditions to our best advantage if we primarily surveyed the low river terraces, hill ridges and the dry sections of the plainland, including the areas along the one-time watercourses. We were fully aware of the disadvantages of this procedure: most Anglo-Saxon archaeologists, who prefer to use block or gridded random sampling techniques, reject the practice of extensive sampling.[10] We nonetheless chose this sampling technique for two reasons. Firstly, if we had only surveyed a certain percentage of each landscape type, the number of known sites would only have been a fraction of what we actually identified. Secondly, it is worth quoting Colin Renfrew's opinion: "Surveys can be made more extensive by combining results from a series of individual projects in neighbouring regions to produce very large-scale views of change in landscape, land-use and settlement through time – though ... the accuracy and quality of different survey projects may vary widely. ... Alternatively survey can be made more intensive by aiming at total coverage of a single large site or site-cluster – what one might call micro-regional survey."[11]

Between 1995–98, the surveys in the Kerka Valley were conducted not only in spring and autumn, but also in summer. We surveyed individual sites several times and conducted a total of six excavations. On some sites, such as the Neolithic settlement at Szentgyörgyvölgy-Pityerdomb, we conducted an intensive survey, collecting each and every surface find and mapping these finds according to their find spot. We also paid special attention to so-called 'off-site' surveys for identifying traces indicating field use and crop cultivation; we could identify and register these from both the Neolithic and the late Middle Ages. As regards one-time road networks, we gathered new information for the Neolithic, the Roman period and the Middle Ages. We also made a number of aerial photos; in other words, the survey can truly be described as a systematic field survey.[12] We compared the results of the field surveys with the evidence from excavations, earlier archival data and, not least, with the results of similar surveys conducted in two micro-regions of Transdanubia, the Slovenian project in the Mura region and the Austrian project in the Rába region. It is our firm belief that the results wholly corroborate Colin Renfrew's opinion quoted in the above and, also, that they provide a reliable picture of the settlement history of this Transdanubian region over the past 7500 years.

Aerial photography (Zsuzsa Miklós)

On July 3, 1998 I conducted an aerial reconnaissance and took a number of aerial photos in the Kerka Valley.[13] Eszter Bánffy selected the sites to be photographed and marked them on a 1 : 10,000 map, on the basis of which I determined the GPS co-ordinates in order to identify the sites as accurately as possible. Unfortunately, a part of this area was uncharted territory in terms of GPS and we therefore had to rely on 30–40 year old maps for navigation. This greatly hindered our work and we also had to take care not to violate the airspace of neighbouring Slovenia when flying over villages – such as Szentgyörgyvölgy – that lay close to the border.

The cloudy, rainy weather was not particularly favourable for aerial photography. However, we could not afford to be choosy owing to the proximity of the border.[14]

The vegetation cover was ripe wheat – already harvested in some areas – and maize, alternating with forested areas and meadowland, in which archaeological features and remains can rarely be observed. Most of the agricultural land had been carved up into small plots and this was hardly promising for making archaeological observations.

I took the aerial photos from a Cessna-172 airplane, using a Mamiya-645, Practica LTL and Minolta X-700 cameras, and 21 din Agfa optima professional film. I took colour infra photos with the Minolta and I also made a video film. The relative flying altitude was 300–400 m.

[10] *A. Ammerman:* Plow-zone experiments in Calabria, Italy. JFA 12 (1985) 33–40; *J. Bintliff – A. Snodgrass:* The Cambridge/Bradford Boetian expedition: the first four years. JFA 12 (1985) 123–161.

[11] *Renfrew – Bahn 1996* 75.

[12] *Jankovich 1993.*

[13] Licence number 2/4/98.

[14] We had to obtain a special licence for flying over areas lying close to the border and the dates had to be co-ordinated with the border guards of both Hungary and Slovenia.

The identification and documentation of archaeological features in the course of aerial reconnaissance and from aerial photographs is possible from various 'signs'. In our case, these 'signs' were provided by the vegetation. We know that cereals, and especially wheat, are highly sensitive to changes in the soil. These changes are indicated by colour, differing from its immediate environment, or by the negative or positive growth anomalies. Wheat has a deep green colour in spring if it grows over filled-in ditches and pits, owing to the higher humus content of the soil and its growth is also stronger (positive anomaly). In contrast, the humus content is lower compared to the environment over ploughed-up ramparts, brick and stone walls (negative growth anomaly), and the vegetation is usually sparser or stunted.

Although maize and root crops are usually less sensitive to soil changes, their colour and growth can, in fortunate cases, also indicate the location of buried features.

The best time for aerial reconnaissance and aerial photography is late June and early July in areas planted with cereals. The low light in the early morning and late afternoon is also helpful for the optimum observations. Even so, success is not guaranteed even under optimal circumstances.

Although the days chosen for the reconnaissance were ideal, other circumstances were less fortunate in the Kerka Valley. The cloudy, rainy weather was not favourable for making aerial photos in spite of the fact that we chose a time, when wheat was beginning to ripen, but we could not choose other dates owing to the proximity of the border. We observed very few discoloured patches indicating the possible presence of archaeological features. Only after analysing the photos with a computer could we detect a few discolorations and growth differences in the vegetation that possibly reflected archaeological features, even though this could only be ascertained by excavating the site. Interestingly enough, we also recoded a few such discoloured patches in areas where no archaeological sites had been identified during the field surveys.

The age of the features appearing on these aerial photos cannot be determined unambiguously. One should not rely solely on aerial photos and observations made from the air even in the case of very typical features. It is always necessary to conduct a traditional field survey and, if necessary, an excavation.

Possible archaeological features were observed at the following sites:

Alsószenterzsébet-Faluhely

The growth differences in the ripe wheat suggested various rectangular, straight and irregular archaeological features west of the village, on the hill overlooking the southern side of the Kerka Stream[15] *(fig. 1)*.

Baglad

The outlines of two rectangular and a more irregular feature could be observed on the western outskirts of the village, on a slightly rising hill on the western bank of the Nagyvölgyi Stream. The rectangular features showed up as a dark stripe, while the irregular feature as a green patch.[16]

Two smaller, slightly irregular patches could also be observed on the edge of Site 38. In contrast, no features could be noted in the area to its north, similarly planted with wheat, on Site 37.[17] The growth anomalies in the maize covering the hill rising slightly above the floodplain in an area called Sötétes-dűlő on the western bank of the Sárberki Stream indicated archaeological features. These anomalies suggested filled-up pits[18] *(fig. 2)*, even though no surface finds were detected during the field survey conducted in this area. Archaeological features were also indicated by the growth anomalies in the ripe wheat in the same area[19] *(fig. 3)*.

[15] MTA RI Negative no. 179.472.
[16] MTA RI Negative no. 179.473.
[17] MTA RI Negative no. 179.474.
[18] MTA RI Negative no. 179.475.
[19] MTA RI Negative no. 179.476.



fig. 1. Alsószenterzsébet-Faluhely

Nemesnép-Első-tag
A roughly 300 m by 350 m large site with prehistoric and Roman Age finds was identified on an elevation rising above the floodplain and the waterlogged area east of the village on the bank of the Völgyi Stream (Site 35). A few irregular lines could be made out in the ripening wheat, although it is uncertain whether these indicate archaeological features.[20]

Szentgyörgyvölgy-Temető; Szentgyörgyvölgy-Pityerdomb
Dark green patches, perhaps indicating one-time pits, could be noted in the wheat on the top of the hill rising above the waterlogged area on the eastern outskirts of the village. This site is in fact the southern side of the Pityerdomb, the two are separated from each other by a road. The excavation surface is also visible[21] (*fig. 4,* with the excavated area marked by the arrow).

The photos described in the above indicate that archaeological features can be observed using aerial photography even under less than ideal circumstances. It seems likely that considerably more features would have showed up under more favourable circumstances. The general rule that an area should be investigated and photographed several times is also valid for the Kerka Valley since the observations made in different seasons and under different conditions can then be compared and the features in a certain area can be better evaluated.

Archival and documentary evidence on the Kerka Valley (Mária Bondár)

This section offers an overview of the archival and other documentary evidence concerning the villages in the Kerka Valley. Most of these are taken from the archaeological and historical studies discussing this region. As a result of the data and record collection conducted over the past four decades by researchers working in the Archives of the Archaeological Institute of the Hungarian Academy of Sciences, there is an abundance of data concerning this region. The data pertaining to County Zala were collected in the 1980s in the course of this extensive project (covering the entire Carpathian Basin), as part of the work necessary for the publication of the County Zala volume of the Archaeological Topography of Hungary.

[20] MTA RI Negative no. 179.480.

[21] MTA RI Negative no. 179.485.



fig. 2. Baglad

The reference cards contain not only the data concerning a particular site culled from various archaeological and historical journals and monographs, but also data on the museums in which finds from sites in County Zala are housed, local history studies, the documentary evidence contained in charters and other records and the archaeological studies published in County Zala. This highly valuable archival material saved a lot of work for the present author, and I would here like to thank István Torma for his kind permission to make use of the records in the Archives.

The first archaeological find from this region, the fragment of an animal headed Celtic belt from Kissziget, was presented to the Hungarian National Museum in 1851.

The first archaeological report about this region dates from 1854: a description of the Roman Age tumulus burials of Kerkabarabás and Zalabaksa published in the yearbook of the Central Commission of National Monuments in Vienna.

Flóris Rómer visited County Zala in 1863. He surveyed the various historical monuments in the area and wrote an article about the church in Csesztreg for *Vasárnapi Újság.*

From 1866, Imre Gózon, a local teacher collected archaeological artefacts in the Szentgyörgyvölgy and Márokföld area, many of which he donated or sold to the Hungarian National Museum (1866, 1875, 1878, 1880). The parish priest of Szentgyörgyvölgy too was in the habit of surveying the area regularly and sending any finds he came across to the museum in Szombathely.

Stone artefacts and pottery fragments from Szentgyörgyvölgy were displayed at the exhibition in the Hungarian National Museum on the occasion of the Eighth International Prehistoric Congress in 1876.

Several medieval churches, such as the ones at Csesztreg, Felsőszenterzsébet, Resznek, Szentgyörgyvölgy and Zalabaksa, are mentioned in various sources.

The systematic archaeological investigation of this area was begun as part of the Kerka Valley Micro-Region Project. Earlier finds from the area were collected unsystematically: these were the artefacts brought to light during earth-moving operations or collected by enthusiastic locals. Preliminary reports of the work done during the micro-region project have



fig. 3. Baglad

been published by the archaeologists participating in the work.[22] László Vándor contributed an overview of the region's settlement history and of the data contained in the medieval sources.[23] The greater part of the relevant data comes from the Middle Ages, and we may say that there is a wealth of documentary evidence from this period. Seeing that the settlement history of each major period is discussed in a separate chapter, only the data taken from various studies and museum archives will be listed here. The secure identification of the findspot of a find or a find assemblage presented to a museum collection prior to our investigation is indicated in the chapters covering each period and in the chapter on the findings of the field surveys. In this chapter, the various categories of evidence are discussed according to settlements.

Alsószenterzsébet

The settlement is first mentioned in a document from 1334 *(Poss. Scenth elsebeth).*[24] The *dica* tax register for 1549 lists 7.5 tenant holdings (porta), 1 deserted tenant peasant *(iobagio)* plot, 1 newly established tenant peasant plot, one landowner (László Bánffy) and an individual in the service of the landowner for *Also Zent ersebet.*[25] However, the same register lists 9 tenant holdings, 3 newly established tenant peasant plots, four landowners (István Bánffy, István Sáfár, Mihály Soldos and Péter Bors), two cotters and three craftsmen (without the specification of their craft) for *Also Zent ersebet* and *Marok ffelde.*[26]

[22] *E. Bánffy:* Csesztreg és környékének őskora [The prehistory of Csesztreg and its broader area], in: *Csesztreg 1996* 7–20; *E. Bánffy:* A Kerka-völgyi mikrorégiós kutatási program első eredményei (Die ersten Ergebnisse des mikroregionalen Forschungsprogrammes im Kerkatal), in: *Völker an der Mur 1998* 9–18; *M. Bondár:* Rézkori és kora bronzkori kutatási problémák a Délnyugat-Dunántúlon (Probleme der Kupfer- und Frühbronzezeitforschung im südwestlichen Transdanubien), in: *Völker an der Mur 1998* 19–30; *J. Kvassay:* 15–16. századi ház a középkori Mihon falu területén [A 15th–16th century house in the medieval village of Mihon], in: *Csesztreg 1996* 69–95; *B. M. Szőke:* A Muravidék kora középkori története (The Mura-region in the Early Middle Age), in: *Völker an der Mur 1996* 65–82; *B. M. Szőke:* A Kerka völgye a Krisztus utáni első évezredben (Csesztreg és környékének településtörténeti kérdései a római megszállástól a magyar államalapításig) [The Kerka Valley in the 1st millennium AD. Settlement history from the Roman Age to the Hungarian Conquest period in the Csesztreg area], in: *Csesztreg 1996* 21–32.

[23] *Csesztreg 1996.*

[24] *ZO* I 278; *Csánki 1897* 105.

[25] *Maksay 1990* 934.

[26] *Maksay 1990* 934.



fig. 4. Szentgyörgyvölgy-Temető and Szentgyörgyvölgy-Pityerdomb

Frigyes Pesty's gazetteer contains several field names;[27] however, none of these suggests a possible archaeological site.

The volume *Zala megye földrajzi nevei* contains the following passage: "Faluhel [Faluhely; "village site"]: the previous site of the settlement" (p. 307).

There are no archaeological finds pre-dating the Middle Ages at Alsószenterzsébet.

Baglad

The *dica* tax conscription from 1549 lists 8.5 tenant holdings, 2 deserted tenant peasant plots, 1 newly established tenant peasant plot, six landowners (Mrs Bernát Csete, a widow, György Csete, Sandrin Bakacs, János Csépán, Bertalan Csépán, Ferenc Nagy) and three cotters.[28]

The volume *Zala megye földrajzi nevei* contains the following archaeological, historical and art historical information (p. 329): *Miheli tóka:* a former smithy, but now a depression covered with marshland (Site 329/2); *Képi út* [Képi road]: a cross at its end (site 329/37); *Képi föd* [Képi land]: a cross in one of the corners (Site 329/49).

There are no archaeological finds pre-dating the Middle Ages from Baglad.

Csesztreg

There were several medieval villages on the territory and outskirts of present-day Csesztreg: *Újfalu, Csesztreg, Mihó* or *Mihon,*[29] and a *villa* called *Karka* is mentioned in a perambulation charter drawn up in 1334.[30] Újfalu is identical with present-day Kerkaújfalu, which was administratively annexed to Csesztreg in 1942. Judit Kvassay conducted an excavation on the site of medieval Mihon in 1993.[31]

Csesztreg is first mentioned in a charter dating from 1275.[32] *Alsócsesztreg* and *Felsőcsesztreg* [Upper and Lower Csesztreg] appear in a charter dated 1381;[33] the settlement appears as *poss. Cheztereg* in 1405,[34] and as *opp. Chezteregh* from 1469.[35] The stone church

[27] *Pesty 1864.*

[28] *Maksay 1990* 935.

[29] *Csánki 1897* 119; *Holub 1933* 115, 446, 910.

[30] *Holub 1933* 365.

[31] *J. Kvassay:* Csesztreg-Mihomi erdő [Csesztreg-Mihomi wood]. Az 1993. év régészeti kutatásai. RégFüz Ser I. 47 (Budapest 1996), 74–75; for a detailed report, cf. pp. 321–346 in this volume.

[32] *Holub 1933* 155.

[33] MOL DL 6802.

[34] MOL DL 9099.

[35] MOL DL 16853, 37006.

dedicated to St. Móric is mentioned in the 1334–1335 tax register.[36] Csesztreg was part of the Bánffy estate and belonged to Lendva Castle.

The *dica* tax register from 1549 mentions 20 tenant holdings, one landowner (László Bánffy), six cotters and three individuals in the service of the landowner.[37]

The volume *Zala megye földrajzi nevei* contains the following data (p. 307): *Ujfalu* (present-day Kerkaújfalu), *Falurész* (Site 307/1), *Fővég* [Upper end]: village part (Site 307/9), Avég [Lower end]: village part (Site 307/21) and Mihomi erdü [Mihom wood] (Site 307/50).

In a letter to Arnold Ipolyi describing his travels in County Zala, Rómer Flóris also refers to the church of Csesztreg, mentioned in 14th century charters: "The Csesztreg tower is Romanesque, with twin windows and arrow-loop openings. The bricks are quite old. In this region, the glittering gilt tin crosses have been replaced by more natural ones for kindling feelings of devotion. The depiction of St. Móric in the church is a rather fine painting. The births register of Csesztreg dates from 1665."[38] Imre Henszlman quotes Rómer in his description of the Csesztreg church in his study on the monuments of Hungary.[39] István Genthon provides a detailed description of the frescoes, including the depiction of St. Móric, painted by István Dorffmeister the Younger.[40] A good overview of the church's architectural history was written by József Németh,[41] while László Kostyál has analysed its frescoes.[42]

The 1909 report on the activities of the Hungarian National Museum mentions a hoard of 95 coins found here;[43] another hoard of 242 coins from Csesztreg is described in *Numizmatikai Közlöny,* published the same year.[44]

There are no archaeological finds pre-dating the Middle Ages from Csesztreg.

Felsőszenterzsébet

The settlement first appears in a charter from 1334 *(Poss. Scenth elsebeth),*[45] and the document also mentions its church. It is next known as part of a nobleman's name *(Felsewz enthersebeth).*[46]

The *dica* tax register from 1549 mentions 9 tenant holdings, 5 newly established tenant peasant plots, two landowners (Magdolna Székely, Miklós Salm), two cotters and one craftsman.[47]

Frigyes Pesty's gazetteer contains several field names,[48] but none of them suggest the presence of an archaeological site.

The volume *Zala megye földrajzi nevei* lists the following data (p. 305): *Asuvég* [Lower end]: village part (medieval?; Site 305/3), *Kasté-mezzü* [Kastélyhelyi-dűlő, "Castle field"], to where a king once banished his unruly daughter (Site 305/42). At the time of the survey, this area was a hilly ploughland.

Imre Gózon, the teacher in Szentgyörgyvölgy, sold a stone macehead and a fragmentary stone axe found at Felsőszenterzsébet to the Hungarian National Museum in 1880,[49] together

[36] *Csánki 1897* 19.

[37] *Maksay 1990* 942.

[38] *F. Rómer:* Archaeologiai levél Zalamegyéből [Archaeological letter from County Zala]. XI. Vasárnapi Újság 10 (1863) 450.

[39] *I. Henszlmann:* Magyarország ó-keresztény, román és átmeneti stylű mű-emlékeinek rövid ismertetése [A brief description of the Old Christian, Romanesque and transitional style monuments in Hungary]. Budapest 1867, 172.

[40] *Genthon 1959* 60, fig. 52.

[41] *J. Németh:* Zala megye műemlékei [The monuments of County Zala]. Zalaegerszeg 1979, 64.

[42] *L. Kostyál:* 'Stephan Dorffmeister pinxit 1803' (Ifjabb Dorffmeister István zalai tevékenységéről, különös tekintettel csesztregi freskóira) ['Stephan Dorffmeister pinxit 1803'. The activity of István Dorffmeister the Younger in County Zala, with emphasis on the frescoes in Csesztreg], in: *Csesztreg 1996* 96–114.

[43] Jelentés a MNM 1909. évi állapotáról. Régiségtár – Éremtár [Report on the 1909 activities of the Hungarian National Museum. Collection of Antiquites and the Numismatic Collection]. Budapest 1910, 59, 69.

[44] *P. Harsányi:* Éremleletek [Coin finds]. NK 8 (1909) 58.

[45] *ZO* I 278; *Valter 1985* 119.

[46] MOL DL 14539; *Csánki 1897* 105.

[47] *Maksay 1990* 972.

[48] *Pesty 1864.*

[49] HNM inv. no.1880.50.37–38.

with other prehistoric artefacts he had collected in several different places. The Hungarian National Museum paid 20 Forints for these artefacts.[50]

Kerkabarabás

Several medieval villages are known from the present-day territory of Kerkabarabás: *Hegenfölde,*[51] whose name is preserved by Hégen, a settlement neighbouring Zalabaksa,[52] and *Petenye,*[53] whose location is indicated by the field name Izsófölde.[54]

Barabás is first mentioned as *poss. Barlabas* in a charter from 1333.[55] The settlement was in the possession of the Rezneki family. It changed owners several times: in 1541, a priest called Márton, the custodian of St. Katalin's altar of the church in Szentandrás received a plot of land here.[56]

In the *dica* tax register from 1549, the settlement is listed as being in the possession of György Segéd, Gáspár Szecsődy, Miklós Páris and János Páris. Listed under the name *Barobas,* the village is lumped together with *Szentandrás, Peternye, Iszófölde* and *Baksafalva,*[57] and it is unclear how many plots and how many inhabitants the settlement had at the time.

Remains from the Roman Age were identified in the Kerkabarabás area. In 1854, Johann Gabriel Seidl reported six Roman Age tumuli in the woods, lying some 15 minutes' walk away from the postal road.[58] The same tumuli were later mentioned by Arnold Ipolyi[59] and by Flóris Rómer in his *Műrégészeti Kalauz.*[60] In his study on the gravel roads (called *öttevény* in Hungarian) mentioned in medieval and post-medieval charters and depicted on maps, which in his opinion can only date from the Roman Age in view of their construction technique using mud and gravel, Endre Tóth mentions Elfin, Zetefin and Nagyetevény in the Kerkabarabás area,[61] names which have been preserved in various field names.[62]

A hoard of 11 coins from the 17th century was found in the village.[63]

Kerkafalva

There were several medieval villages by Kerkafalva: *Németkutas* (Németfalu), *Péntekfalva* and *Szaza.*[64]

The *dica* tax register from 1549 lists *Nemet falu, Pentek falwa* and *Also Zatha* together with *Csöde, Kutas* and *Minhe* as being in the possession of László Bánffy and István Bánffy,[65] and it is therefore unclear how many tenant holdings and how many inhabitants there were to a particular village.

Frigyes Pesty's gazetteer mentions several field names,[66] but none of these suggests the presence of an archaeological site.

The volume *Zala megye földrajzi nevei* contains the following data: *Tusu rend:* village part (Site 295/1), *Németfalu:* village part (Site 295/5) and *Barátos*, the site of a former monastery (Site 295/19).

There are no archaeological finds pre-dating the Middle Ages from Kerkafalva.

Kerkaújfalu

see Csesztreg

[50] Letters in the File of the Archaeological Department of HNM inv. nos 78/1880 and 190/1880.
[51] *Csánki 1897* 59.
[52] *Csánki 1897* 93.
[53] *Csánki 1897* 64.
[54] *Csánki 1897* 33.
[55] *ZO* I 272.
[56] *Holub 1933* 61–62.
[57] *Maksay 1990* 972.
[58] *Seidl 1854* 128.
[59] *Ipolyi 1861* 281.
[60] *F. Rómer:* Műrégészeti Kalauz [Guide to Archaeology] I. Pest 1866, 12, 36.
[61] *E. Tóth:* Eötteven seu via antiqua Romanorum. MNy 73 (1977) 195.
[62] *Zala megye földrajzi nevei* 331.
[63] *P. Harsányi:* Éremleletek [Coin finds]. NK 13 (1914) 24.
[64] *Csánki 1897* 93; *Holub 1933* 446, 622.
[65] *Maksay 1990* 962.
[66] *Pesty 1864.*

Kerkakutas

The village is first mentioned in 1389;[67] in 1469, it is described as an *oppidum* with a tolling station.[68] The settlement was one of the estates donated to the Bánfi family of Lendva.[69] In 1524, there was a separate *villicatus* (economic district) at Kutas, with 1 whole plot, 14 half-plots and 7 cotters forming part of János Bánffy's estate.

In the *dica* tax register from 1549, *Kwtos* was lumped together with *Németfalu, Péntekfalva, Minhe, Csöde* and *Alsószatta,* all part of László Bánffy and István Bánffy's estate,[70] and it is therefore unclear how many tenant holdings and how many inhabitants there were to a particular village.

Frigyes Pesty's gazetteer mentions several field names,[71] but none of these suggests the presence of an archaeological site. Neither does the volume *Zala megye földrajzi nevei* contain any toponyms indicating a possible site.

There are no archaeological finds pre-dating the Middle Ages from Kerkakutas.

Kissziget

The village is first mentioned in 1426 *(Pred. zygeth),*[72] appearing as *Poss. Zygeth et altera Zygeth* in a charter from 1496. It was the possession of the town of Páka; Dezső Csánki suggested that *Zygeth* can be identified with present-day Kissziget.[73]

In 1426, Péter Lendvai Herczeg's daughter was granted *ius regium* for her estates.[74]

The *dica* tax register from 1549 mentions 30.5 tenant holdings, 3 deserted tenant peasant plots, 5 newly established tenant peasant plots, two landowners (Péter Erdődy, László Bánffy), 16 cotters and one craftsman at *Karachon zygete.*[75]

According to Frigyes Pesty's gazetteer, the settlement was one of the oldest in the area, existing already during the Ottoman period (however, he does not cite any sources confirming this claim).[76]

The volume *Zala megye földrajzi nevei* does not contain any toponyms suggesting the presence of an archaeological site.

Several archaeological finds are known from this area. The archaeological holdings of the Göcsej Museum include Neolithic sherds collected by László Molnár in 1976 at Kissziget-Temető.[77] A Celtic belt fragment found in the village was presented to the Hungarian National Museum in 1851. The fragment is 35 cm long and is made up of animal-headed links and rings.[78] The belt was displayed at the exhibition of the Hungarian National Museum.[79]

Márokföld

The village is first mentioned in 1344 as *Poss. Markfeulde;*[80] its church is mentioned even earlier, in 1333.[81] The *dica* tax register from 1549 lists 9 tenant holdings, 3 newly established tenant peasant plots, four landowners (István Bánffy, István Sáfár, Mihály Soldos and Péter Bors), two cotters and three craftsmen for *Also Zent ersebet* and *Marok ffelde,*[82] and it is unclear how many of them lived at Márokfölde.

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[67] MOL DL 7467.
[68] MOL DL 16853.
[69] *Csánki 1897* 75.
[70] *Maksay 1990* 962.
[71] *Pesty 1864.*
[72] MOL DL 11793, *ZO* II 451.
[73] *Csánki 1897* 111.
[74] *ZO* II 451; *Holub 1933* 825.
[75] *Maksay 1990* 984.
[76] *Pesty 1864.*
[77] GM 79.16.3–4; *Simon 1990* 49.
[78] HNM inv. no. 3/1851.3; *O. Tischler:* Zománcos ékszerek a vaskorból a Nemzeti Múzeumban [Enamelled jewellery articles of the Iron Age in the Hungarian National Museum]. ArchÉrt 10 (1890) 224, fig. 4; *I. Hunyady:* Kelták a Kárpát-medencében. Tábla- és szövegkötet [The Celts in the Carpathian Basin]. DissPann II. 18. Budapest 1942; I. Hunyady: Kelták a Kárpát-medencében. Leletanyag [The Celts in the Hungarian Basin. The artefacutal material]. RégFüz Ser II. Budapest 1957, 28.
[79] *F. Tompa:* Őskori gyűjtemény. Vezető a régészeti gyűjteményben [Prehistoric Collection. A guide to the archaeological exhibition]. Budapest 1938, 48.
[80] *Csánki 1897* 81.
[81] *Valter 1985* 177.
[82] *Maksay 1990* 934.

Frigyes Pesty's gazetteer mentions several field-names,[83] none of which suggests a possible archaeological site.

The volume *Zala megye földrajzi nevei* contains the following data (p. 315): *Középszer:* village part (Site 315/5) and *Avég:* village part (Site 315/6).

Evidence for prehistoric settlement is provided by the various artefacts collected by Imre Gózon, the local teacher, who sent the finds to the Hungarian National Museum, where they were inventoried in 1880. Some of these finds came to light in neighbouring Szentgyörgyvölgy. The finds inventoried under nos HNM 1880.50.1–22 came from Márokföld, most likely from Záporhegy [Zápor Hill]. József Korek does not specify their exact provenance,[84] and neither does Katalin H. Simon, quoting him.[85] Erzsébet Bácskay describes a few of these finds as having come to light at Szentgyörgyvölgy.[86] The rough pottery fragments made from red clay found on the slopes of the Rinyér Hill were inventoried under nos 1880.50.45–66 in the Hungarian National Museum. Nos 48, 50, 57, 61 and 62 were de-accessioned during the 1958 inventory of the museum's holdings.[87] The fragment of a pyramidal stone artefact was also found at Márokfölde.[88]

Nemesnép

The village first appears as part of a nobleman's name in 1407.[89] The village was settled by so-called one-plot lesser nobles, and its landowners are more often mentioned in the surviving documents than their holdings. Most of the landowners stood in the king's service.[90] A document from 1441 mentions Nemesnépfalva and Felsőnemesnépfalva.[91] Alsónemesnépfalva is mentioned in a charter from 1493.[92] In 1513, a total of 16 one-plot lesser nobles are mentioned in connection with the settlement.[93]

The settlement is not mentioned in the 1549 *dica* tax register.

Frigyes Pesty's gazetteer mentions several field names,[94] some of which – such as Simonszer-dűlő and Németszer – may preserve the memory of medieval landowners. The toponym *Keréktói rét* [Keréktó meadow] too goes back to the Middle Ages: a charter of ennoblement from 1573 mentions "Alsó [Lower] and Felső [Upper] Nemesnép alias Keréktó".

The volume *Zala megye földrajzi nevei* contains the following data (p. 321): *Németszer:* village part (Site 321/3), *Berek:* village part (Site 321/7); *Göde ször:* village part (Site 321/8); *Urica:* village part (Site 321/9); *Simonszer:* village part (Site 321/10), *Harnak ször:* village part (Site 321/12), *Göde-temetis* [by Göde's grave], where a ruffian called Göde was burnt at the stake some two hundred years ago (Site 321/28);[95] *Tatárdomb* [Mongolian Hill]: the alleged site of Mongolian campsites on a small, perhaps artificial hill (Site 321/78).

There are no archaeological finds pre-dating the Middle Ages from Nemesnép. The finds presented to the Numismatic Collection of the Hungarian National Museum in 1936 included a 17th–18th century hoard of 50 coins from Nemesnép.[96]

Ramocsa

The village is first mentioned as *Poss. Ramacha* in 1378.[97] In the 14th century, the settlement was in the possession of the sons of Miklós Lendvai of the Hahót kindred,[98] but it later passed into the ownership of other landowners. In 1513, Jakab Prosznyák owned 3 tenant holdings and István Hegyi had 8.5 tenant holdings.[99]

[83] *Pesty 1864.*
[84] *Korek 1960* 72.
[85] *Simon 1990* 49.
[86] *Bácskay 1976* 33–34.
[87] File 290/917 in the Archives of the Hungarian National Museum.
[88] HNM inv. no. 1880.50.36.
[89] MOL DL 9374.
[90] *Holub 1933* 535.
[91] *ZO* II 511.
[92] *Holub 1933* 535.
[93] *Csánki 1897* 85.
[94] *Pesty 1864.*
[95] Cf. *Degré 1963.*
[96] *L. H.:* Éremleletek. A Magyar Történeti Múzeum Éremtárában kerültek feldolgozás alá [New coin finds in the Numismatic Collection of the Hungarian National Museum]. NK 34–35 (1935–1936) 79.
[97] *Csánki 1897* 97.
[98] *Holub 1933* 600.
[99] MOL DL 32206.

The *dica* tax register from 1549 lists 8 tenant holdings, 4 landowners (Benedek Hegyi, István Hegyi, Farkas Bucsay and Mátyás Prosznyák) and 2 craftsmen for Ramocsa.[100]

Frigyes Pesty's gazetteer mentions several field names, but none of these suggests the presence of an archaeological site.

The volume *Zala megye földrajzi nevei* contains the following data (p. 293): "*Puszta-Ramocsa:* the site of the settlement during the Ottoman period. Site 22 on the map."

There are no archaeological finds pre-dating the Middle Ages from Ramocsa.

Resznek

The village is first mentioned in 1282 as *Poss. Reznuc.*[101] In 1426, it appears as *Castellum Reznek,*[102] and as *Castrum Reznek* in 1441.[103] The settlement was in the possession of the Egervári family.[104] Its church, dedicated to the Holy Cross, is mentioned in charters from 1360 and 1403.[105] There was a castle in the early 15th century, probably built by the sons of Balázs Egervári. The fortress was erected by Herbord in the 14th century; according to a document from 1326, Herbord lodged a complaint to King Charles I that Salamon Vörös had destroyed his fortress and the church. The date and the circumstance of the final destruction of the fortress remain unknown – it probably became ruined during the Ottoman period.[106] In accordance with a decree issued by the Vice-Regal Council in Buda in 1823, the officials of County Zala compiled a report containing a description of the county's hydrography, a map, together with a "guide-book" of the county's monuments, the latter containing a few scattered archaeological data. The section on Reznek mentions that "there was a castle here in olden times … whose site and ditches can still be seen in the meadow".[107] Genthon mentions the castle ruins and the medieval wall remains based on Gerecze's description.[108]

The *dica* tax register from 1549 lists *Reznek* together with *Jakabjánosfalva* and *Lőkfalva,* and it is therefore unclear how many tenant holdings and landowners there were to Resznek.[109]

The volume *Zala megye földrajzi nevei* contains the following data (p. 333): *Várheli dombok* [Castle Hills]: the location of ancient castles from Turkish times according to local tradition (Site 333/61).

There are few finds pre-dating the Middle Ages from Resznek. In 1880, the Hungarian National Museum purchased a stone axe from Imre Gózon, the local teacher.[110] The holdings of the Göcsej Museum too include a stone axe from the village.[111]

Szentgyörgyvölgy

The village is first mentioned in 1326 as *Poss. Scentgurgy.*[112] It was in the possession of lesser nobles and one-plot nobles. In 1513, there were 22 one-plot lesser nobles.[113] There is only indirect evidence for its church: a charter from 1437 mentions the chapter of the parish priest.[114] There were several medieval villages on the territory of present-day Szentgyörgyvölgy: *Farkasi, Kolgyár, Kertesiszentpéter* and *Lakos.*[115]

The *dica* tax register from 1549 lists 3.5 tenant holdings and the parish priest as the landowner for *Zentgerg welgen.*[116]

[100] *Maksay 1990* 968

[101] *G. Wenczel (ed.):* Árpádkori Új Okmánytár [Codex diplomaticus Arpadianus continuatus], Vol. IX (1272–1290). Pest 1871, 345.

[102] MOL DL 11798.

[103] *ZO* II 507.

[104] *Csánki 1897* 14.

[105] *Csánki 1897* 98; *Holub 1933* 677.

[106] *G. Kiss:* Várak, várkastélyok, várhelyek Magyarországon [Castles, manor houses and castle sites in Hungary]. Panoráma útikönyvek. Budapest 1984, 568.

[107] *G. Bencze:* Zala megye leírása a reformkorban. Két korabeli forrás alapján [Description of County Zala in the Age of Reform, based on two contemporary sources]. ZGy 23 (1986) 104.

[108] *P. Gerecze:* Magyarország műemlékei [The monuments of Hungary]. Budapest 1906, 1038; *Genthon 1959* 280.

[109] *Maksay 1990* 969.

[110] HNM inv. no. 1880. 50.40.

[111] ZGM inv. no. 54.7.18; *Korek 1960* 72; *Simon 1990* 49.

[112] *Csánki 1897* 106.

[113] *Csánki 1897* 106.

[114] *Holub 1933* 766.

[115] *Holub 1933* 220, 416, 393, 464.

[116] *Maksay 1990* 973.

Frigyes Pesty's gazetteer mentions several field names, based on the reports sent by the community, which recorded that a part of the settlement was called Szentgyörgyszeg.[117] A painted plaque on the wall of the parish church in this settlement part is inscribed with the following text: "Erected in 1202. Destroyed by Protestantism, restored in 1717." The foundation date of 1202 was accepted by Ilona Valter, according to whom the settlement was mentioned in 1202 and there is also evidence for a church dedicated to St. George from 1273.[118] St. George was a Byzantine saint and the presence of a church dedicated to this saint probably reflects the spread of Byzantine culture in Transdanubia.[119] The bell of the church, made by Florentin Strecksfus in 1700, was published by Pál Patay.[120] István Genthon notes that the Reformed church was erected on the site of an earlier one.[121]

We know from Frigyes Pesty's gazetteer that the various parts of the settlement have preserved the names of medieval families: *Domjánszeg, Tiborszer, Asszonfa, Cséblak, Kolgyár.* The report sent by the community also mentions a certain Töröktemetési-dűlő, where – according to local lore – the straggling soldiers of the retreating Turkish armies were beaten to death and buried.

The volume *Zala megye földrajzi nevei* contains the following data (pp. 313–314): *Küsü Cséplak:* village part (Site 313/1), *Cilinku* [Cilinkó]: village part (Site 313/2), *Fösü Farkasi* [Upper Farkasi]: village part (Site 313/3), *Fösü Kógyár* [Upper Kógyár]: village part (Site 313/4), *Asu Kógyár* [Lower Kógyár]: village part (Site 313/5), *Asu Farkasi* [Lower Farkasi]: village part (Site 313/6), *Domgyán szög, Tipor szög:* village part (Site 313/12), *Szentgyörgyvőgy:* village part (Site 313/13), *Asszonfa: Ószonfa:* village part (Site 313/14), *Török temetis* [Turkish burial]: three Turks were buried here, when the Turks fled the area (Site 313/125), *Török temető* [Turkish graveyard] (Site 313/129).

A number of pre-medieval archaeological finds and assemblages have come to light at Szentgyörgyvölgy – most of these date from prehistoric periods.

Imre Gózon, a local teacher was the first to regularly collect and send archaeological finds to the Hungarian National Museum. The first report on his activity comes from 1866, when the Archaeological Committee of the Hungarian Academy of Sciences noted that Imre Gózon offered a bowl and several old documents to the Hungarian National Museum. Unfortunately, the exact date of the bowl remains unknown.[122] In 1875, the National Museum acquired twelve prehistoric and medieval finds from this area.[123] The prehistoric finds included stone axes, stone blades and flat adzes, while the medieval ones were weapons: a 15th century iron mace, a ball and chain mace and a *Hackenbüsche* (hook or hackbutt gun).

Stone tools and coarse pottery fragments from Szentgyörgyvölgy were among the objects displayed at the exhibition organised on the occasion of the Eighth Prehistoric Congress held in Budapest.[124] In his study on the European context of the lithic finds from Hungary, Tivadar Ortvay also quoted the finds from Szentgyörgyvölgy.[125]

In March, 1878, the report of the Department of Antiquities of the Hungarian National Museum noted that Imre Gózon had donated four Roman bronze and silver coins, two Roman bricks and the fragments of two lead water-pipes to the department.[126]

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[117] *Pesty 1864.*

[118] *Valter 1985* 251.

[119] *K. Mesterházy:* Adatok a bizánci kereszténység elterjedéséhez az Árpád-kori Magyarországon [The spread of Byzantine Christianity in the Árpádian Age in Hungary]. DMÉ 1968 (1970) 163.

[120] *P. Patay:* Corpus campanarum antiquarum Hungariae. Magyarország régi harangjai és harangöntői 1711 előtt [Old bells and bell casters of Hungary before 1711]. Budapest, n.d. [1989] 40, 52 and fig. 107.

[121] *I. Genthon:* Magyarország műemlékei [The monuments of Hungary]. Budapest 1951, 576.

[122] ArchKözl 6 (1866) 120.

[123] HNM inv. no. 1875.221.1–12.

[124] *V. Lipp:* Les temps préhistoriques dans le Comté de Vas. Compte-Rendu de la huitième session à Budapest. I. Budapest 1877, 664–667, 669.

[125] *T. Ortvay:* Összehasonlító vizsgálatok a hazai és észak-európai prehistorikus kőeszközök eredete és régisége körül [Comparison of the origins and antiquity of Hungarian and North European prehistoric stone artefacts]. Vols I–II. ÉTtK XII. 7. Budapest 1885, 59; *T. Ortvay:* Vergleichende Untersuchungen über den Ursprung der ungarischen und nordeuropäischen prähistorischen Steinwerkzeuge. MAGW 1887, 57.

[126] A MNM régiségtára [The Department of Antiquities of the Hungarian National Museum]. ArchÉrt 12 (1878) 156.

In May, 1880, Imre Gózon sold various objects to the Hungarian National Museum;[127] most of these originated from Szentgyörgyvölgy, with a few coming from Márokföld and Felsőszenterzsébet and one piece from Resznek. These included polished stone adzes, perforated stone axes, broken stone axes with traces of drilling, finely carved globular maceheads, stone flakes, stone blades and coarse pottery fragments,[128] as well as Roman pottery.[129] According to the inventory book of the Hungarian National Museum, these were found in an area called Szél-dűlő. These finds are mentioned by József Korek[130] and Katalin H. Simon,[131] who listed the site as the findspot of stone artefacts, whose cultural attribution was not possible. In her study on the chipped stone implements from Hungary, Erzsébet Bácskay noted that some of the lithics from the site can be assigned to the Transdanubian *Linearbandkeramik* (LBK) culture.[132]

Finds from Szentgyörgyvölgy can also be found in the collection of the Szombathely museum. A polished, perforated stone axe, a black stone adze and six axes made from hard limestone came to light in the garden of the Catholic priest in 1872.[133] Vilmos Lipp also mentions stone artefacts and pottery sherds found at Szentgyörgyvölgy in later years.[134]

The report of the Archaeological Society of County Vas mentions six stone adzes and other finds found in the village in 1884.[135]

Dr. Ignác Berger, the parish priest, also collected various finds which he presented to the museum in Szombathely. Most of these were stone artefacts.[136]

The single Roman period find known from Szentgyörgyvölgy is a Roman oil lamp.[137]

Zalabaksa

There were several medieval villages on the territory of present-day Zalabaksa: *Cup, Baksafalva, Szentandrás* and *Györgyfalva.*

The settlement is first mentioned in 1341 as *Poss. Boxafolua.*[138] Cup first appears as *villa Chup* in 1334.[139] The chapel in the village of *Szentandrás* is first mentioned in 1287, the stone church dedicated to St. Andrew appears in a charter from 1344.[140] *Györgyfalva* is first mentioned in documents from the 15th century; its name is preserved by Győrfa.

The 1549 *dica* tax register lists *Szentandrás, Peternye, Iszófölde, Barabás* and *Baksafalva* together.[141]

The volume *Zala megye földrajzi nevei* contains the following data (p. 323): *Cup:* village part (Site 323/1), *Fösü Györfa* [Upper Györfa]: village part (Site 323/8), *Asu Györfa* [Lower Györfa]: village part (Site 323/11), *Szentandrás:* the site of the village of Szentandrás, destroyed by the Turks (Site 323/55).

Several archaeological finds and assemblages are known from this area. The 1854 yearbook of the Central Commission of National Monuments in Vienna published a report on the tumulus burials by the village.[142] These tumuli were also mentioned by Arnold Ipolyi.[143]

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[127] HNM Inv. No. 1880.50.1–67.

[128] *J. Hampel:* A M.N.M. érem- és régiségosztályának gyarapodása május havában [New acquisitions of the Departments of Coins and Antiquities of the Hungarian National Museum in May]. ArchÉrt 14 (1880) 225.

[129] Op. cit., 226.

[130] *Korek 1960* 72.

[131] *Simon 1990* 49.

[132] *Bácskay 1976* 33–34.

[133] *V. Lipp:* Szombathelyi közlemények 14 [Reports from Szombathely]. ArchÉrt 7 (1893) 96–100.

[134] *V. Lipp:* Lelhelyeink [Our sites]. VREJ 1875; *V. Lipp:* A történelem előtti kor Vasmegyében [The prehistory of County Vas]. VREJ 4 (1876) 73; *V. Lipp:* Hazai tudományos intézetek és leletek [Scholarly institutions in Hungary and their finds]. ArchÉrt 10 (1876) 95.

[135] *V. Lipp:* Keszthely és vidéke múltjából [The history of the Keszthely area]. VREJ 10–11 (1884) 7.

[136] *V. Lipp:* Vasmegyei Régiségtár [The Department of Antiquites of County Vas]. VREJ 13 (1885) 7.

[137] *D. Iványi:* Die pannonischen Lampen. DissPann II. 2. Budapest 1935.

[138] *Csánki 1897* 32.

[139] *Csánki 1897* 45.

[140] *Holub 1933* 742.

[141] *Maksay 1990* 972.

[142] *Seidl 1854* 128.

[143] *Ipolyi 1861* 281.

According to the 1884 report of the Archaeological Society of County Vas, the Szombathely museum acquired a Roman brick fragment bearing the inscription QUENN M F, an oil lamp, two horseshoes, a sabre and pottery fragments from Zalabaksa.[144]

The best-known archaeological find from Zalabaksa is the Roman tombstone found during the construction of the Kerka bridge in 1952, now exhibited in the Zalalövő museum. The first report on this find was written by Tamás Pekáry, the archaeologist who surveyed the site after the find was reported.[145] The large tombstone lifted from the Kerka is one of the most magnificent stone carvings from Pannonia, decorated with dolphins in the corners, a medusa head in the pediment and a hunting scene in the main panel.[146] An iron artefact, found at the same time, was inventoried as dating from the Roman Age. However, Róbert Müller later demonstrated that this artefact was in fact a medieval reed cutter.[147]

The single prehistoric find known from Zalabaksa is a stone axe.[148]

Breakdown of sites*[149] *according to archaeological and historic periods (Mária Bondár)

Prehistoric (without a more precise date)

Site	Site no.	Period	Inv. no.
Baglad-Völgyi patak	55	Roman Age, Middle Ages	2000.18.1–15
Csesztreg-Lenti út	36		
Csesztreg-Petőfi tsz	37	Middle Ages	2000.31.1–2
Nemesnép-Első-tag	19	Roman Age, Middle Ages	2000.16.1–7
Ramocsa-Két út köze	21	Middle Ages	2000.21.1–62
Zalabaksa-Belterület	48	Late Bronze Age (?), Roman Age, Middle Ages	2000.43.1–14, 2000.46.1–5
Zalabaksa-Nagyréti-dűlő	38	Roman Age	2000.35.1–7

[144] *Gy. Rezsőfy:* Titkári jelentés. VREJ 10–11 (1884) 154; *B. Lőrincz:* Római kori bélyeges téglák Zala megyében (Gestempelte römische Ziegeln im Komitat Zala). ZGy 12 (1979) 25.

[145] *T. Pekáry:* Értékes római lelet Zalabaksán [A remarkable Roman find from Zalabaksa]. Zala 8:288 (1952. dec. 9).

[146] *A. Mócsy:* Zala megye római-kori kőemlékeiről (Steindenkmäler aus der Römerzeit im Komitat Zala). ZGy 6 (1976) 21–32; *L. Barkóczi – A. Mócsy:* Die Römischen Inschriften Ungarns (RIU) 2. Salla, Mogentiana, Mursella, Brigetio. Budapest 1976, 285.

[147] *R. Müller:* A mezőgazdasági vaseszközök fejlődése Magyarországon a késővaskortól a törökkor végéig (Die Entwicklung der eisernen Agrargeräte in Ungarn von der Späteisenzeit bis Ende der Türkenherrschaft), vol. 1–2. ZGy 19 (1982) Vol. 1, 386.

[148] ZGM 54.7.13; *Korek 1960* 72; *Simon 1990* 50.

[149] Key to the Hungarian words: "domb, hegy" = hill, "erdő" = wood, "templom" = church, "út" = road, "telek, dűlő" = field, "kert" = garden, "rét, mező" = meadow, "patak" = stream, "part" = stream or river bank.

Neolithic

Site	Site no.	Period	Inv. no.
Csesztreg-Felsőerdei-dűlő	31		
Kerkabarabás-Barabási háromszög	54		2000.33.1–31
Kerkafalva-Agyag	25	Middle Ages	2000.25.1–10
Márokföld-Pityerdomb	10	Copper Age	2000.45.16–52
Nemesnép-Külső Micske	18	Roman Age, Middle Ages	2000.15.1–13
Ramocsa-Tölgyeserdei-dűlő	23		2000.23.1–8
Szentgyörgyvölgy-Haraszti erdő	6		2000.2.1–26
Szentgyörgyvölgy-Pityerdomb	2	Copper Age	2000.45.1–52
Zalabaksa-Cupi patakpart	40	Copper Age, Middle Ages	2000.35.1–9
Zalabaksa-Győrfa	46	Late Bronze Age (?), Roman Age, Middle Ages	2000.41.1–9

Copper Age

Site	Site no.	Period	Inv. no.
Csesztreg-Sarjas kertek, déli vég	34	Middle Ages	2000.32.16–25, 37–40
Kerkakutas-Cupi patak	27		2000.26.1–4
Márokföld-Pityerdomb	10	Neolithic	2000.45.16–52
Nemesnép-Harmadik-dűlő	20	Bronze Age, Roman Age	2000.17.1–4
Nemesnép-Kövecses-dűlő	12		2000.9.1–3
Ramocsa-Cikkelyes	24		2000.24.1–4
Szentgyörgyvölgy-Katolikus templomdomb I	4		2000.4.1–2, 13–16
Szentgyörgyvölgy-Pityerdomb	2	Neolithic	2000.45.1–52
Zalabaksa-Cupi patakpart	40	Neolithic Middle Ages	2000.35.1–9
Zalabaksa-Zsidótemető	44	Middle Ages	2000.37.1–14

Bronze Age

Site	Site no.	Period	Inv. no.
Kissziget-Temetődomb	59	Árpádian Age, Middle Ages	
Nemesnép-Harmadik-dűlő	20	Copper Age, Roman Age	2000.17.1–4
Ramocsa-Két út köze, betongyűrű	22		2000.22.1–5
Zalabaksa-Belterület	48	Prehistoric, Roman Age, Middle Ages	2000.43.1–14, 2000.46.1–5
Zalabaksa-Győrfa	46	Neolithic, Roman Age, Middle Ages	2000.41.1–9

Celtic period

Site	Site no.	Period	Inv. no.
Felsőszenterzsébet-Alsó nyároska	28	Middle Ages	2000.28.1
Kerkabarabás-Ótelki-dűlő I	52		2000.34.21–24

Roman Age

Site	Site no.	Period	Inv. no.
Baglad-Kis mező I	56	Middle Ages	2000.19.1–4
Baglad-Kis mező II	57		2000.20.1
Baglad-Völgyi patak	55	Prehistoric, Middle Ages	2000.18.1–15
Csesztreg-Berek melléki rét	35		2000.32.10–15, 26–36
Nemesnép-Alsó telek	16		2000.13.1–2
Nemesnép-Egresi út	15		2000.12.1–2
Nemesnép-Első-tag	19	Prehistoric, Middle Ages	2000.16.1–7
Nemesnép-Harmadik-dűlő	20	Copper Age, Bronze Age	2000.17.1–4
Nemesnép-Jakabfai erdő	14		2000.11.1
Nemesnép-Külső Micske	18	Neolithic, Middle Ages	2000.15.1-13
Nemesnép-Vágás	13		2000.10.1–4
Szentgyörgyvölgy-Cilinkó	7		2000.5.1–5
Zalabaksa-Belterület	48	Prehistoric, Late Bronze Age (?), Middle Ages	2000.43.1–14, 2000.46.1–5
Zalabaksa-Cupi patak, hídfő	41	Middle Ages	2000.39.1–5
Zalabaksa-Cseri-dűlő, víztorony	42	Middle Ages	2000.44.1–7
Zalabaksa-Győrfa	46	Neolithic, Late Bronze Age (?), Middle Ages	2000.41.1–9
Zalabaksa-Iskola udvar	47		
Zalabaksa-Kerka patakpart	45	Árpádian Age, Middle Ages	2000.38.1–18
Zalabaksa-Nagyréti-dűlő	38	Prehistoric	2000.35.1–7
Zalabaksa-Szentandrás-Sáncvár	49		

Árpádian Age

Site	Site no.	Period	Inv. no.
Csesztreg-Sarjas kertek	32		2000.32.1–9
Csesztreg-Kerkaújfalú határa	30	Middle Ages	2000.30.1–3
Kisszíget-Temetődomb	59	Bronze Age, Middle Ages	
Zalabaksa-Kerka patakpart	45	Roman Age, Middle Ages	2000.38.1–18

Middle Ages

Site	Site no.	Period	Inv. no.
Alsószenterzsébet-Cser-hegy	29		2000.29.1–5
Baglad-Kis mező I	56	Roman Age,	2000.19.1–4
Baglad-Völgyi patak	55	Prehistoric, Roman Age	2000.18.1–15
Csesztreg-Mihomi erdő	33		
Csesztreg-Petőfi tsz	37	Prehistoric	2000.31.1–2
Csesztreg-Sarjas kertek, déli vég	34	Copper Age	2000.32.16–25, 37–40
Csesztreg – Kerkaújfalu határa	30	Árpádian Age	2000.30.1–3
Felsőszenterzsébet-Alsó nyároska	28	Celtic period	2000.28.1
Kerkabarabás-Ótelki-dűlő II	53		2000.34.1–20
Kerkafalva-Agyag	25	Neolithic	2000.25.1–10
Kerkakutas-Patakpart	26		2000.27.1–10
Kissziget-Temetődomb	59	Bronze Age, Árpádian Age	
Nemesnép-Árkon belüli dűlő	11		2000.8.1–4
Nemesnép-Első-tag	19	Prehistoric, Roman Age	2000.16.1–7
Nemesnép-Külső Micske	18	Neolithic, Roman Age	2000.15.1–13
Nemesnép-Útkereszteződés	17		2000.14.1–2
Ramocsa-Két út köze	21	Prehistoric	2000.21.1–62
Resznek-Földvár	58		
Szentgyörgyvölgy-Alsófarkasi	9		2000.7.1–10
Szentgyörgyvölgy-Csekeszer	3		2000.1.1.–25, 2000.4.3–12
Szentgyörgyvölgy-Katolikus templomdomb II	5		2000.3.1–27
Szentgyörgyvölgy-Kógyár	1		
Szentgyörgyvölgy-Kógyár-Szentgyörgy patak	8		2000.6.1–3
Zalabaksa-Belterület	48	Prehistoric, Late Age?, Roman Age	2000.43.1–14, 2000.46.1–5
Zalabaksa-Cup-"Eichenhof"	39		2000.36.1–6
Zalabaksa-Cupi patakpart	40	Neolithic, Copper Age	2000.35.1–9
Zalabaksa-Cupi patak, hídfő	41	Roman Age	2000.39.1–5
Zalabaksa-Császárirtás	43		
Zalabaksa-Cseri-dűlő, víztorony	42	Roman Age	2000.44.1–7
Zalabaksa-Győrfa	46	Neolithic, Late Bronze Age (?), Roman Age	2000.41.1–9
Zalabaksa-Kerka patakpart	45	Roman Age, Árpádian Age	2000.38.1–18
Zalabaksa-Medesi patak, nyiladék	51		2000.42.1–5
Zalabaksa-Szentandrás-Templomdomb	50		2000.40.1–4
Zalabaksa-Zsidótemető	44	Copper Age	2000.37.1–14

The excavated sites (Eszter Bánffy)

We investigated a total of six sites during the micro-region project. These are the following:

Szentgyörgyvölgy-Pityerdomb. Neolithic, earliest LBK. The excavation was conducted over four seasons (1995–98), the investigated territory totalled roughly 1000 m^2. Excavation director: Eszter Bánffy.

Zalabaksa-Zsidótemető. Middle Copper Age, Balaton–Lasinja culture. The excavation was conducted for two seasons (1996–97), the investigated territory totalled roughly 216 m^2. Excavation director: Mária Bondár.

Nemesnép-Jakabfai erdő (Tatárdomb). Roman period, 2nd–3rd centuries. Cutting through the burial mound, 25 m^2. The excavation was conducted for one season (1997). Excavation director: Ferenc Redő.

Zalabaksa-Iskola udvar. Roman period, 2nd–4th centuries. The excavations are still in progress (1997–2000). A total of 70 m^2 has been excavated to date. Only a preliminary report of the findings has been included in this volume. Excavation director: Ferenc Redő.

Resznek-Földvár. Late Middle Ages. The excavation was conducted for one season (1996) and the main goal was to cut through the medieval rampart. Excavation director: László Vándor.

Csesztreg-Mihomi erdő. Late Middle Ages. The excavation was conducted for one season (1995). Excavation director: Judit Kvassay.

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Eszter Bánffy

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THE KERKA VALLEY MICRO-REGION: DESCRIPTION OF THE SITES AND THEIR FINDS

The sites identified in the Kerka Valley micro-region are described in the following order:

Szentgyörgyvölgy (Sites 1–9), Márokföld (Site 10), Nemesnép (Sites 11–20), Ramocsa (Sites 21–24), Kerkafalva (Site 25), Kerkakutas (Sites 26–27), Felsőszenterzsébet (Site 28), Alsószenterzsébet (Site 29), Csesztreg (Sites 30–37), Zalabaksa (Sites 38–51), Kerkabarabás (Sites 52–54), Baglad (Sites 55–57), Resznek (Site 58), Kissziget (Site 59).

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The inventory numbers of the inventoried finds are listed in the footnotes. The most typical finds are illustrated and a description of these finds follows the description of the sites.

Sites[1]

1. Szentgyörgyvölgy-Kógyár (Middle Ages)
2. Szentgyörgyvölgy-Pityerdomb (Neolithic, Copper Age)
3. Szentgyörgyvölgy-Csekeszer (Middle Ages)
4. Szentgyörgyvölgy-Katolikus templomdomb I (Copper Age)
5. Szentgyörgyvölgy-Katolikus templomdomb II (Middle Ages)
6. Szentgyörgyvölgy-Haraszti erdő (Neolithic)
7. Szentgyörgyvölgy-Cilinkó (Roman Age, Middle Ages)
8. Szentgyörgyvölgy-Kógyár, Szentgyörgy-patak partja (Middle Ages)
9. Szentgyörgyvölgy-Alsófarkasi (Middle Ages)
10. Márokföld-Pityerdomb (Neolithic, Copper Age)
11. Nemesnép-Árkon belüli dűlő (Middle Ages)
12. Nemesnép-Kövecses-dűlő (Copper Age)
13. Nemesnép-Vágás (Roman Age)
14. Nemesnép-Jakabfai erdő (Roman Age)
15. Nemesnép-Egresi út (Roman Age)
16. Nemesnép-Alsó telek (Roman Age)
17. Nemesnép-Útkereszteződés (Middle Ages)
18. Nemesnép-Külső Micske (Neolithic, Roman Age, Middle Ages)
19. Nemesnép-Első-tag (Prehistoric, Roman Age, Middle Ages)
20. Nemesnép-Harmadik-dűlő (Copper Age, Bronze Age, Roman Age)

[1] Key to the Hungarian words: "domb, hegy" = hill, "erdő" = wood, "templom" = church, "út" = road, "telek, dűlő" = fields, "kert" = garden, "rét, mező" = meadow, "patak" = stream, "part" = bank.

21. Ramocsa-Két út köze (Prehistoric, Middle Ages)
22. Ramocsa-Két út köze, betongyűrű (Bronze Age)
23. Ramocsa-Tölgyeserdei-dűlő (Neolithic)
24. Ramocsa-Cikkelyes (Copper Age)
25. Kerkafalva-Agyag (Neolithic, Middle Ages)
26. Kerkakutas-Patakpart (Middle Ages)
27. Kerkakutas-Cupi patak (Copper Age)
28. Felsőszenterzsébet-Alsó nyároska (La Tène?, Middle Ages)
29. Alsószenterzsébet-Cser-hegy (Middle Ages)
30. Csesztreg – Kerkaújfalu határa (Árpádian Age, Middle Ages)
31. Csesztreg-Felsőerdei-dűlő (Neolithic)
32. Csesztreg-Sarjas kertek (Árpádian Age, late Middle Ages)
33. Csesztreg-Mihomi erdő (Middle Ages)
34. Csesztreg-Sarjas kertek, déli vég (Copper Age, Middle Ages)
35. Csesztreg-Berek melléki rét (Roman Age)
36. Csesztreg-Lenti út (Prehistoric)
37. Csesztreg-Petőfi tsz (Prehistoric, Middle Ages)
38. Zalabaksa-Nagyréti-dűlő (Prehistoric, Roman Age)
39. Zalabaksa-Cup-"Eichenhof" (Middle Ages)
40. Zalabaksa-Cupi patakpart (Neolithic, Copper Age, Middle Ages)
41. Zalabaksa-Cupi patak, hídfő (Roman Age, Middle Ages)
42. Zalabaksa-Cseri-dűlő, víztorony (Roman Age, Middle Ages)
43. Zalabaksa-Császárirtás (Middle Ages)
44. Zalabaksa-Zsidótemető (Copper Age, Middle Ages)
45. Zalabaksa-Kerka patakpart (Roman Age, Árpádian Age, Middle Ages)
46. Zalabaksa-Győrfa (Neolithic, Late Bronze Age?, Roman Age, Middle Ages)
47. Zalabaksa-Iskola udvar (Roman Age)
48. Zalabaksa-Belterület (Late Bronze Age? Roman Age, Middle Ages)
49. Zalabaksa-Szentandrás-Sáncvár (Roman Age)
50. Zalabaksa-Szentandrás-Templomdomb (Middle Ages)
51. Zalabaksa-Medesi patak, nyiladék (Middle Ages)
52. Kerkabarabás-Ótelki-dűlő I (La Tène)
53. Kerkabarabás-Ótelki-dűlő II (Middle Ages)
54. Kerkabarabás-Barabási háromszög (Neolithic)
55. Baglad-Völgyi patak (Prehistoric, Roman Ages, Middle Ages)
56. Baglad-Kis mező I (Middle Ages)
57. Baglad-Kis mező II (Roman Age)
58. Resznek-Földvár (Middle Ages)
59. Kissziget-Temetődomb (Bronze Age, Árpádian Age, Middle Ages)

Szentgyörgyvölgy



1. Szentgyörgyvölgy-Kógyár (Middle Ages)
Medieval sherds were found scattered over a larger patch on the northern, flat bank of the Szentgyörgy Stream (Bánffy – Bondár 1995).

2. Szentgyörgyvölgy-Pityerdomb (Neolithic, Copper Age)[2]
An intensive site of the Transdanubian *Linearbandkeramik* (LBK) was found on the cone at the north-western end of Pityerdomb, a hill rising south of the Szentgyörgy Stream on the boundary between Szentgyörgyvölgy and Márokföld. The large vessel fragments lay scattered over two larger patches measuring 20 m by 15 m and 20 m by 20 m respectively. The burnt daub fragments indicated the presence of houses. Chipped stone implements and cores, all made from red radiolarite, were also collected from the two patches. The finds included a few fragments from vessels of the Balaton–Lasinja culture (Bánffy – Bondár 1995; Bánffy – Bondár – Lippert 1995; Bánffy – Bondár – Havasi 1996; Bánffy – Somogyi – Roeder 1997; cf. also the excavation report in this volume).

3. Szentgyörgyvölgy-Csekeszer (Middle Ages)[3]
Traces of an intensive, late medieval settlement were found over a roughly 50 m by 100 m large area at the base of the gently sloping hill in the north-western part of the village near the stream. The pottery finds included an ornamented clay pipe (Bánffy – Bondár – Szőke – Vándor 1995).

1. Rim fragment of a greyish-brown vessel tempered with pebbles. Diam. of rim: 12 cm *(fig. 1. 1)*.
2. Fragment of a red clay pipe made from finely levigated clay, decorated with a pattern of fine punctates *(fig. 1. 2)*.
3. Rim fragment of a yellowish-grey vessel tempered with mica *(fig. 1. 3)*.
4. Rim fragment of a light yellow, coarse vessel tempered with pebbles. Diam. of rim: 19 cm *(fig. 1. 4)*.
5. Rim fragment of a light brown, coarse vessel tempered with pebbles. Diam. of rim: 16 cm *(fig. 1. 5)*.

[2] ZGM (Zalaegerszeg, Göcseji Múzeum) Inv. no. 2000.45.1–15.

[3] ZGM Inv. no. 2000.1.1–25; 2000.4.3–12.

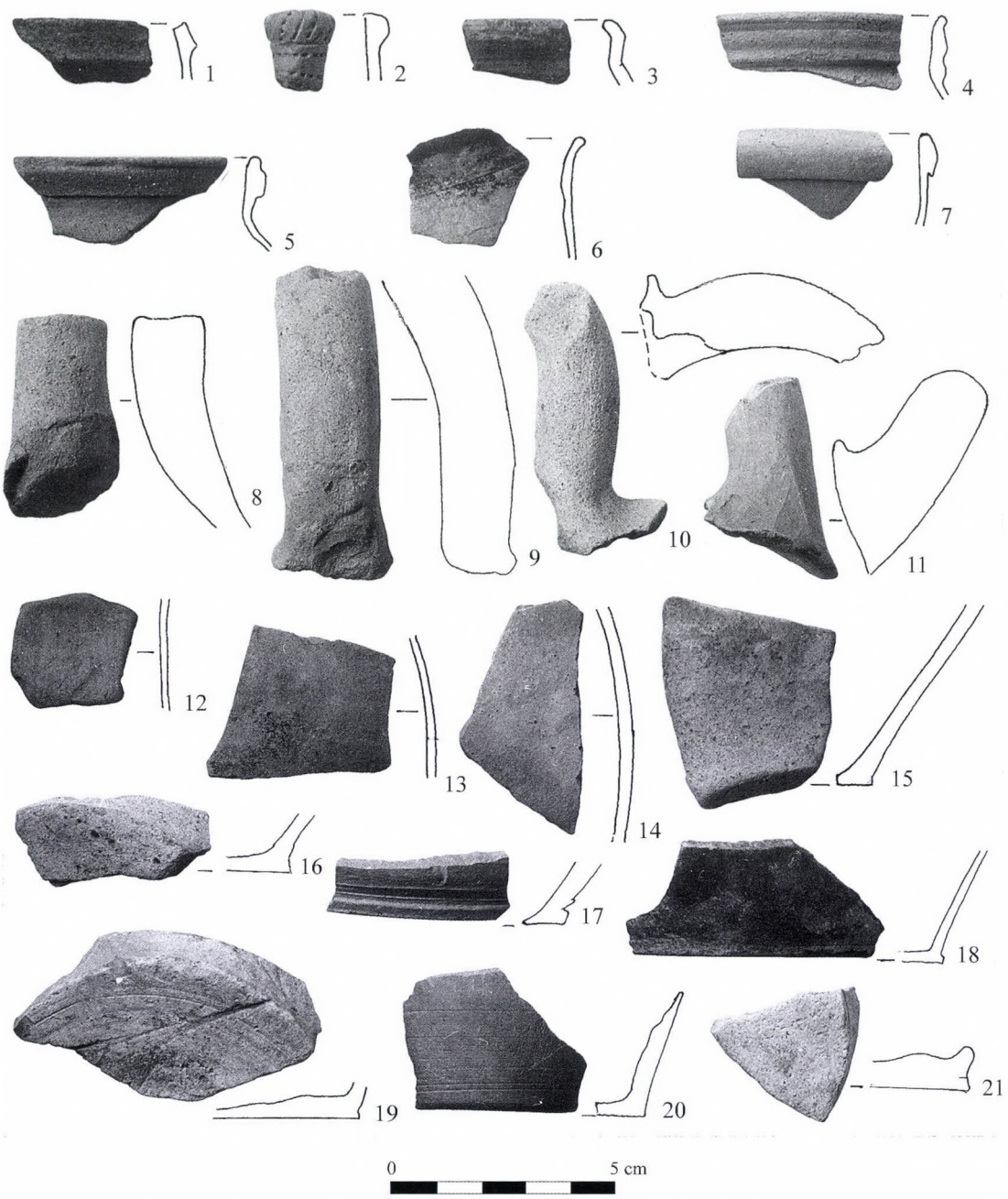


fig. 1. Szentgyörgyvölgy-Csekeszer. Finds from the field survey

6. Shoulder fragment of a yellowish-black, mottled, thin-walled vessel tempered with mica, decorated with a green glazed band in its interior *(fig. 1. 6)*.
7. Rim fragment of a light yellowish vessel made from finely levigated clay, decorated with a green glazed band under the rim in its interior *(fig. 1. 7)*.
8. Yellowish vessel handle, tempered with pebbles *(fig. 1. 8)*.
9. Pinkish vessel handle, tempered with pebbles *(fig. 1. 9)*.
10. Rim and handle fragment of a large, yellowish vessel tempered with pebbles *(fig. 1. 10)*.
11. Vessel handle of a yellowish vessel made from finely levigated clay *(fig. 1. 11)*.
12. Body sherd of a thin-walled vessel tempered with mica *(fig. 1. 12)*.
13. Reddish-brown body sherd, tempered with mica *(fig. 1. 13)*.
14. Yellow body sherd, tempered with mica *(fig. 1. 14)*.
15. Base fragment of a yellow, thick-walled vessel with porous surface, tempered with mica and pebbles *(fig. 1. 15)*.

16. Base fragment of a yellow vessel tempered with mica and pebbles *(fig. 1. 16)*.
17. Base fragment of a bright red vessel made from finely levigated clay *(fig. 1. 17)*.
18. Base fragment of a reddish-brown vessel made from finely levigated clay. Diam. of base: 7 cm *(fig. 1. 18)*.
19. Light yellow base fragment *(fig. 1. 19)*.
20. Base fragment of a yellowish-grey vessel tempered with mica. Diam. of base: 11 cm *(fig. 1. 20)*.
21. Light yellow base fragment *(fig. 1. 21)*.

4. Szentgyörgyvölgy-Katolikus templomdomb I (Copper Age)[4]

The hill overlooking the eastern part of the village, south of the Szentgyörgy Stream, has a gently sloping northern side, and a steep, conical side facing the river. No traces of any fortifications could be observed. Small prehistoric sherds and the fragment of an animal figurine were found scattered over a smaller area on the northern side of the hill. The few worn, brownish-yellow sherds came from vessels tempered with sand and they either date to the final phase of the Lengyel culture or to the Balaton–Lasinja culture *(fig. 2. 15–20)*. We returned to the site several times both in spring and in autumn, but the Austrian owner of the fields in this area left the area fallow, this being the reason that we could not examine more closely the Copper Age settlement traces that probably extended towards the top of the hill (Bánffy – Bondár – Lippert – Szőke – Vándor 1995; Bánffy – Somogyi – Bernhard 1996; Bánffy – Pálfay 1996; Bánffy – Bondár – Vándor 1997).

1. Fragment of the cylindrical body of a small, reddish-yellow figurine depicting a four-legged animal, tempered with pebbles and sand, with the stumps of the legs *(fig. 2. 17)*.

5. Szentgyörgyvölgy-Katolikus templomdomb II (Middle Ages)[5]

Intensive traces of a late medieval settlement were observed along a roughly 30 m wide area in the field by Jenő Szabó's house near the base of the hill, on the north-western side (Bánffy – Bondár – Lippert – Szőke – Vándor 1995; Bánffy – Somogyi – Bernhard 1996; Bánffy – Pálfay 1996; Bánffy – Bondár 1997).

1. Light yellow rim fragment, tempered with mica *(fig. 2. 1)*.
2. Yellowish-grey rim fragment made from finely levigated clay *(fig. 2. 5)*.
3. Yellowish-grey rim fragment made from finely levigated clay *(fig. 2. 6)*.
4. Fragment of a reddish-yellow clay pipe made from finely levigated clay *(fig. 2. 2)*.
5. Strongly worn grey body sherd, tempered with mica *(fig. 2. 3)*.
6. Strongly worn yellowish-grey rim fragment, tempered with mica *(fig. 2. 4)*.
7. Reddish-yellow ribbed rim fragment, tempered with mica *(fig. 2. 7)*.
8. Large, reddish-yellow vessel handle *(fig. 2. 8)*.
9. Yellowish-grey vessel handle, tempered with pebbles *(fig. 2. 9)*.
10. Grey vessel handle, tempered with coarse pebbles *(fig. 2. 10)*.
11. Light brown vessel handle, tempered with coarse pebbles *(fig. 2. 11)*.
12. Reddish-brown body sherd, tempered with coarse pebbles *(fig. 2. 13)*.
13. Reddish-grey whetstone *(fig. 2. 14)*.
14. Bone tool *(fig. 2. 12)*.

6. Szentgyörgyvölgy-Haraszti erdő (Neolithic)[6]

The finds of the Transdanubian LBK (pottery sherds and chipped stone tools made of red radiolarite) were found scattered over a 20 m by 15 m large area near the top of a ridge bordered by the Szentgyörgy Stream, the road leading from Cilinkó to Magyarföld and the Felsőszenterzsébet Woods. The ornamented pottery sherds suggest that the finds can be assigned to the classical phase of the culture, contemporary with the Notenkopf type in northern Transdanubia (Bánffy – Bondár – Redő 1995; Bánffy – Somogyi – Havasi 1996).

[4] ZGM Inv. no. 2000.4.1–2; 2000.4.13–16.

[5] ZGM Inv. no. 2000.3.1–27.

[6] ZGM Inv. no. 2000.2.1–26.

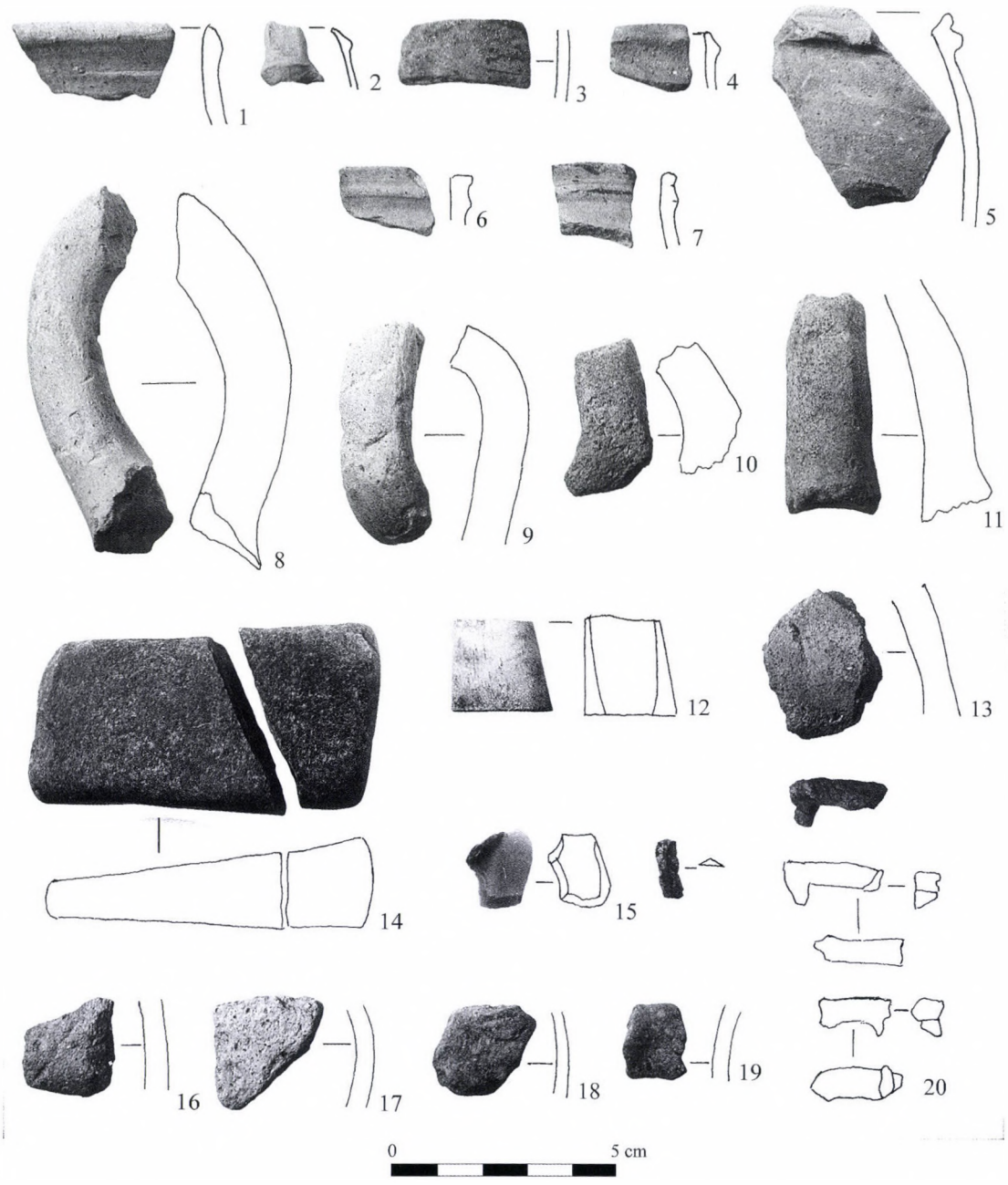


fig. 2. 1–14. Szentgyörgyvölgy-Katolikus templomdomb II; 15–20. Szentgyörgyvölgy-Katolikus templomdomb I. Finds from the field survey

1. Rim fragment of a grey, gourd shaped vessel tempered with sand and chaff *(fig. 4. 1)*.
2. Rim fragment of a greyish and yellowish-red mottled storage jar with an uneven surface, tempered with sand and pebbles *(fig. 4. 2)*.
3. Rim fragment of a grey, gourd shaped vessel tempered with chaff and sand *(fig. 4. 3)*.
4. Linear ornamented body sherd of a grey, thin-walled vessel made from finely levigated clay tempered with sand and mica *(fig. 4. 4)*.
5. Rim fragment of a greyish-brown vessel tempered with sand and chaff *(fig. 4. 6)*.
6. Body sherd with the stub of a round knob from a light cream coloured, poorly fired vessel tempered with sand and chaff *(fig. 4. 7)*.
7. Body sherd of a light brown, well fired, globular vessel tempered with pebbles and sand, decorated with wide incised lines *(fig. 4. 5)*.

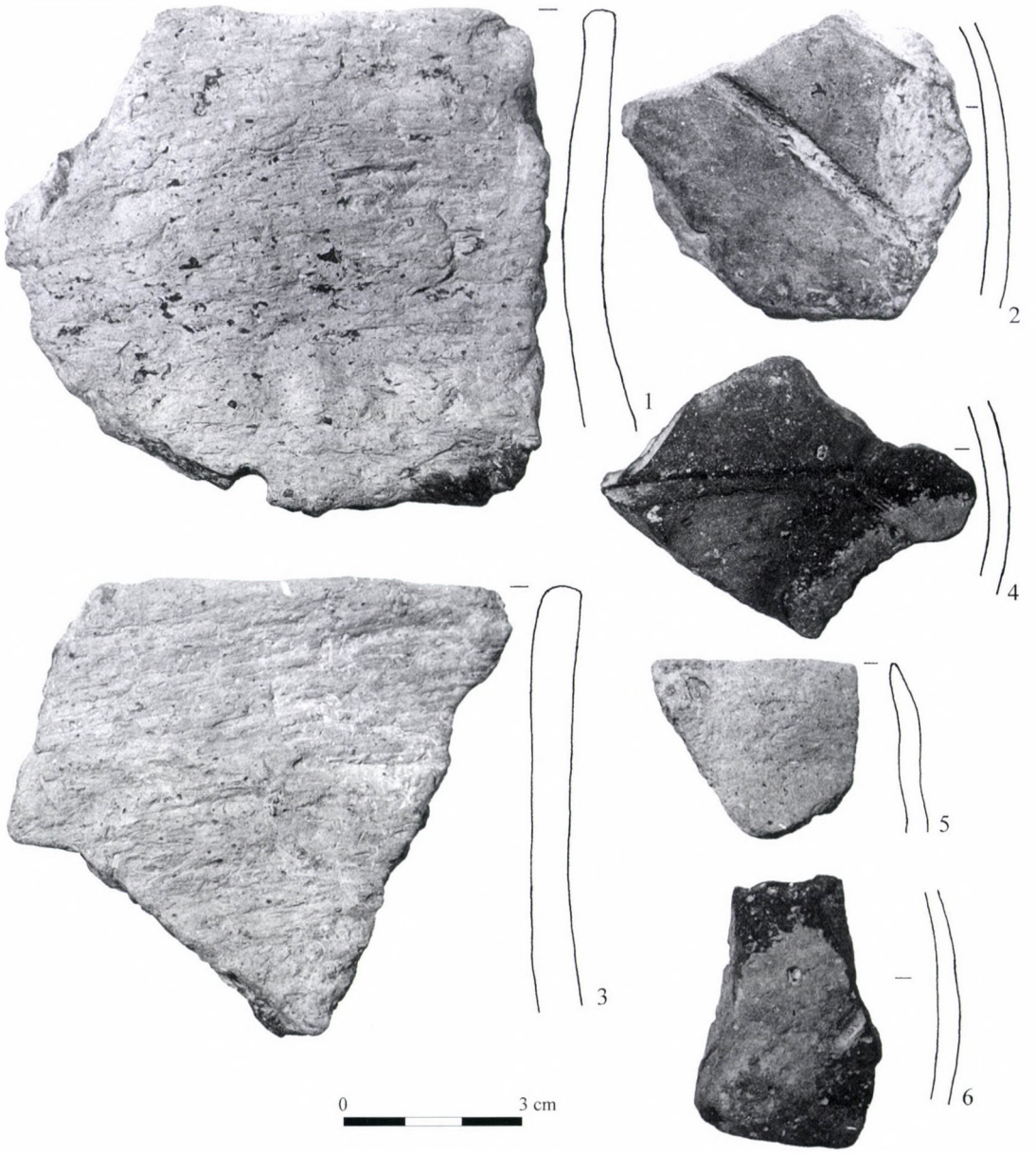


fig. 3. Szentgyörgyvölgy-Haraszti erdő. Finds from the field survey

8. Rim fragment of a light red storage jar with uneven surface, tempered with chaff and sand *(fig. 3. 1)*.
9. Rim fragment of a light red storage jar with uneven surface, tempered with chaff and sand *(fig. 3. 3)*.
10. Body sherd of a brown, well-fired globular vessel made from finely levigated clay tempered with sand and crushed pottery, decorated with a wide incised line *(fig. 3. 2)*.
11. Body sherd of a greyish-black and red mottled globular vessel made from finely levigated clay tempered with sand and crushed pottery, decorated with a wide incised line *(fig. 3. 4)*.
12. Linear ornamented body sherd of a black and red mottled globular vessel tempered with sand and crushed pottery *(fig. 3. 6)*.
13. Rim fragment of a light reddish-brown globular vessel tempered with sand *(fig. 3. 5)*.

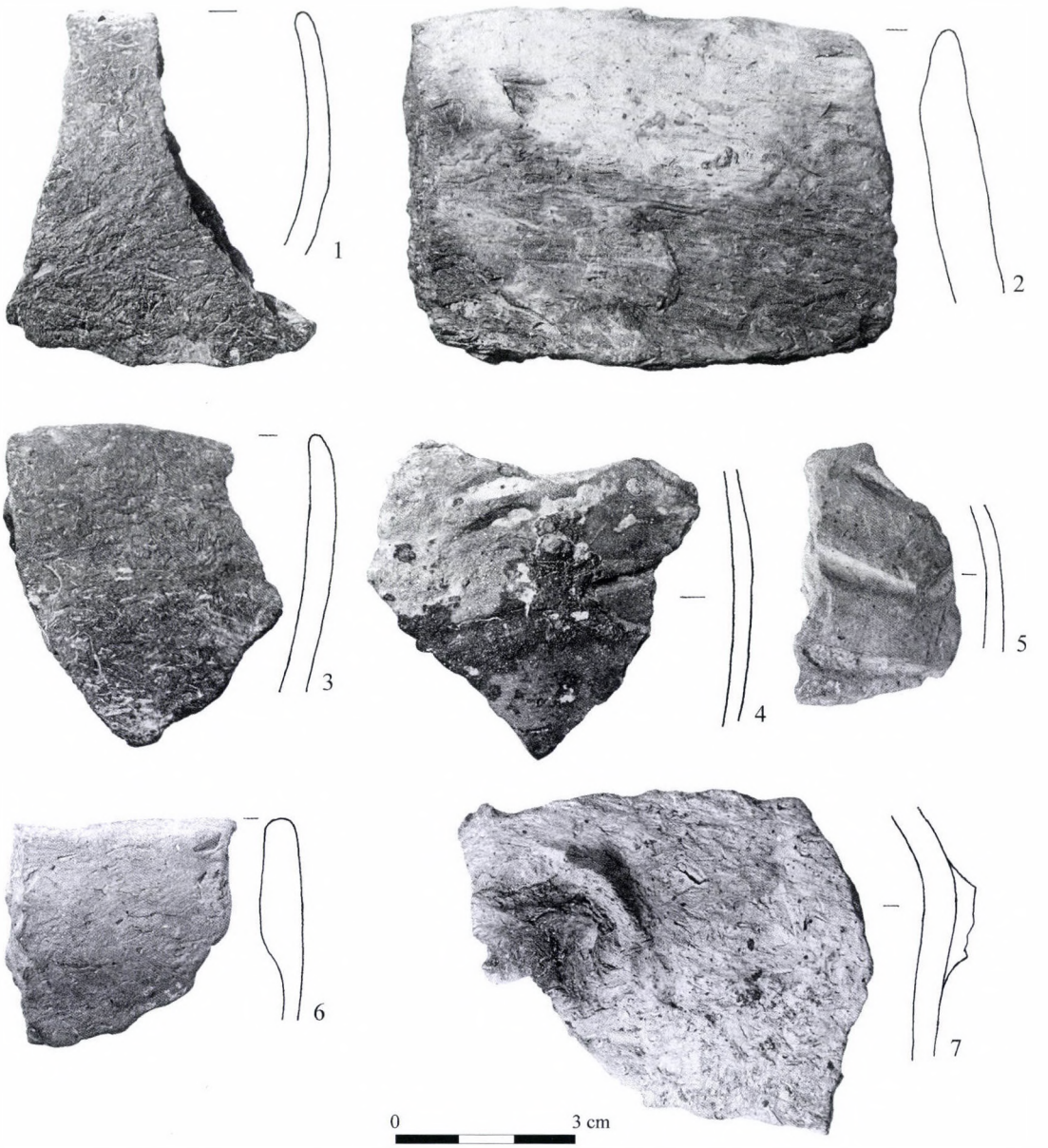


fig. 4. Szentgyörgyvölgy-Haraszti erdő. Finds from the field survey

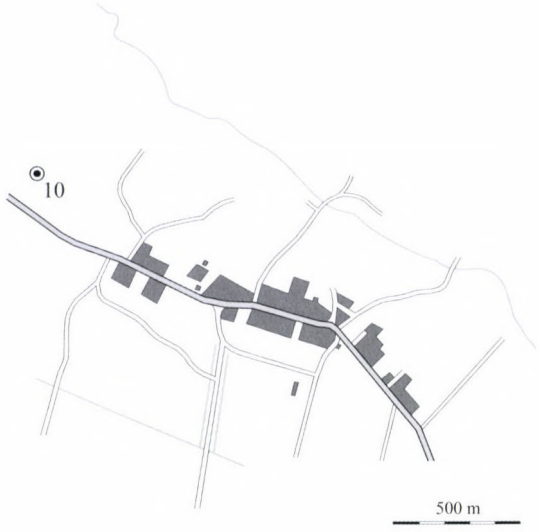
7. Szentgyörgyvölgy-Cilinkó (Roman Age, Middle Ages)[7]
Roman Age and late medieval pottery sherds were found on the eastern slope of the ridge bordered by the Szentgyörgy Stream, the road leading from Cilinkó to Magyarföld and the Felsőszenterzsébet Woods (Bánffy – Bondár – Redő 1995).

8. Szentgyörgyvölgy-Kógyár, Szentgyörgy-patak partja (Middle Ages)[8]
Medieval pottery sherds lay scattered over a roughly 400 m long area in the fields north of the Szentgyörgy Stream in the north-western part of the village (Bánffy – Bondár – Havasi – Vándor 1997).

9. Szentgyörgyvölgy-Alsófarkasi (Middle Ages)[9]
We collected late medieval pottery sherds on the agricultural plots of land between the houses and the left bank of the Szentgyörgy Stream in an area called Alsófarkasi (Bánffy – Bondár – Havasi – Vándor 1997).

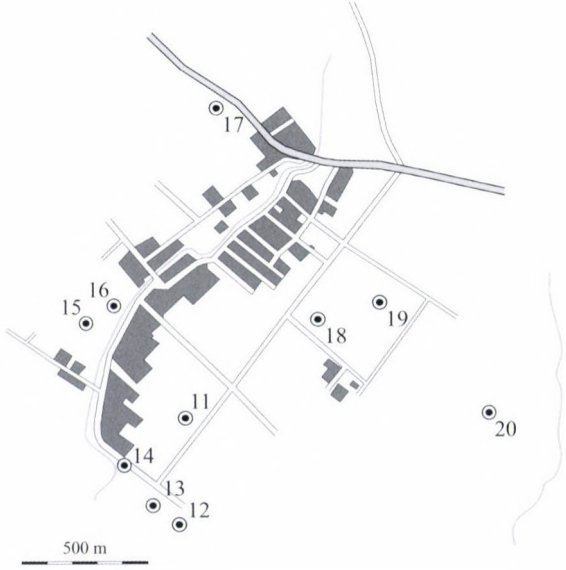
[7] ZGM Inv. no. 2000.5.1–5.
[8] ZGM Inv. no. 2000.6.1–3.
[9] ZGM Inv. no. 2000.7.1–10.

Márokföld



10. Márokföld-Pityerdomb (Neolithic)[10]
The depression across the Szentgyörgyvölgy-Pityerdomb site marks the administrative boundary between the villages of Márokföld and Szentgyörgyvölgy. The greater part of the Pityerdomb, including the eastern settlement nucleus of the Neolithic site, falls on the territory of Márokföld. The large pottery sherds lying on the surface indicated settlement features destroyed by ploughing. While we did not detect any finds on the highest point of the hill owing to erosion, they formed a dense scatter a few metres to the west and north. The burnt daub fragments indicated one-time buildings. The eastern scatter of finds yielded a high number of chipped stone tools and cores, all made from red radiolarite (Bánffy – Bondár – Lippert 1995; Bánffy – Bondár – Havasi 1996; Bánffy – Somogyi – Roeder 1997; cf. also the preliminary report in this volume).

Nemesnép



[10] ZGM Inv. no. 2000.45.16–52.

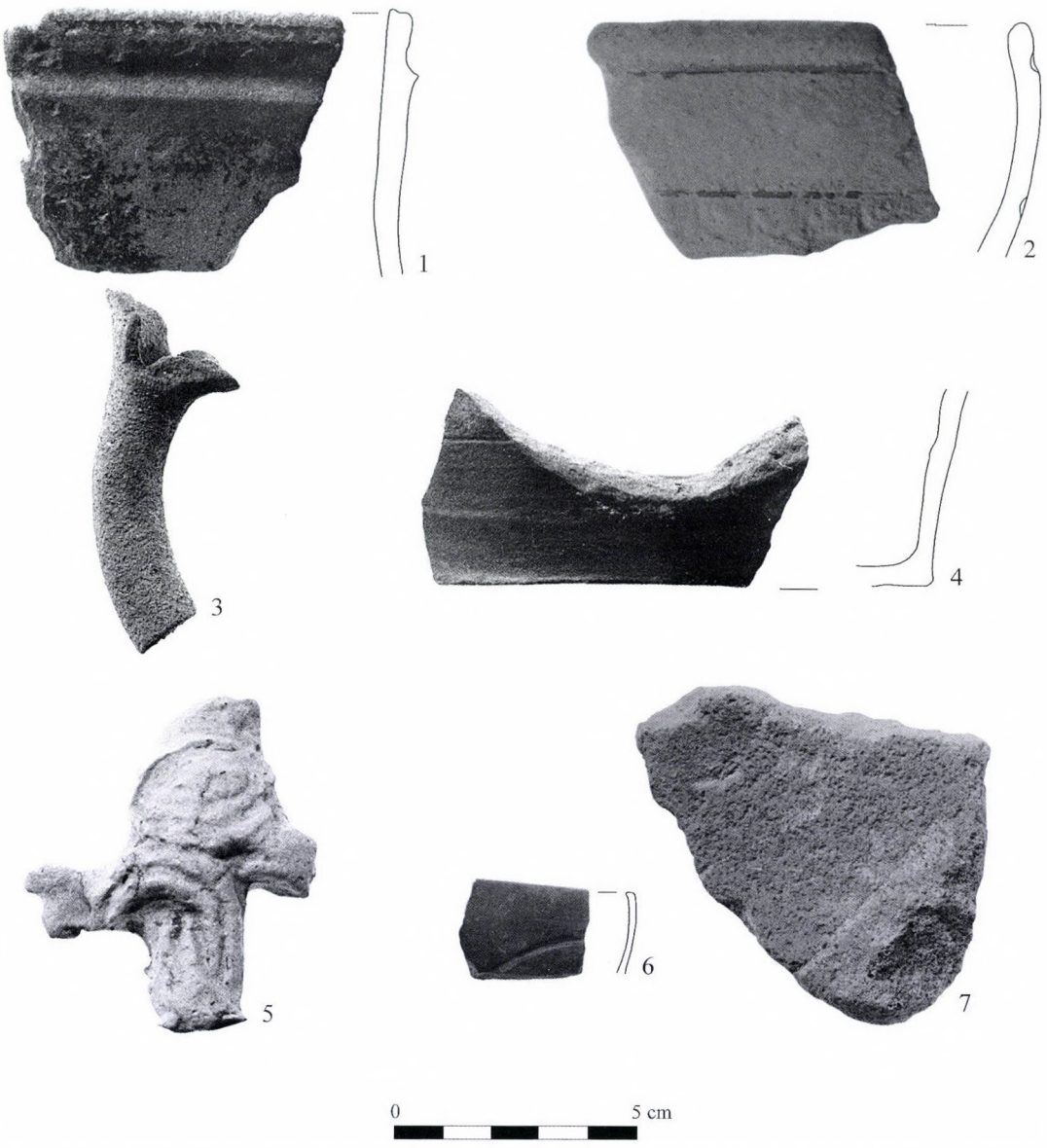


fig. 5. 1. Zalabaksa-Cseri dűlő, víztorony; 2. Baglad-Kis mező I; 3–5. Zalabaksa-Cup-"Eichenhof"; 6–7. Nemesnép-Külső Micske. Finds from the field survey

11. Nemesnép-Árkon belüli dűlő (Middle Ages)[11]
A few late medieval sherds lay scattered over the southern end of a flat terrace beside the dirt track running parallel to the macadam road, south-east of the village (Frankovics – Redő 1997).

12. Nemesnép-Kövecses-dűlő (Copper Age)[12]
Pottery sherds of the Balaton–Lasinja culture lay scattered over a smaller area south of the village, at the meeting point of the flat ridge and the Jakabfa Woods (Frankovics – Redő 1997).

13. Nemesnép-Vágás (Roman Age)[13]
A few worn pottery fragments, assigned to the Roman Age on the basis of their fabric, were found south of the village, on the edge of the marshland at the meeting point of the flat ridge and the Jakabfa Woods (Frankovics – Redő 1997).

[11] ZGM Inv. no. 2000.8.1–4.
[12] ZGM Inv. no. 2000.9.1–3.
[13] ZGM Inv. no. 2000.10.1–4.

14. Nemesnép-Jakabfai erdő (Roman Age)[14]
Two tumulus burials, a larger one with a diameter of over 10 m and a smaller one with a diameter of roughly 3 m, both about 1.5 m high, were identified south of the village, at the meeting point of the flat ridge and the Jakabfa Woods. The other 1st–2nd century tumulus cemeteries in the area suggest that these burials can be assigned to the same period (Frankovics – Redő 1997).

15. Nemesnép-Egresi út (Roman Age)[15]
Roman pottery sherds were found over a smaller area south of the village, at a distance of some 150 m north-east of the two tumulus burials (Frankovics – Redő 1997).

16. Nemesnép-Alsó telek (Roman Age)[16]
A small scatter of Roman pottery sherds was found on the western outskirts of the village, about 100 m south of the road leading to Márokföld (Frankovics – Redő 1997).

17. Nemesnép-Útkereszteződés (Middle Ages)[17]
Late medieval finds were collected on the western outskirts of the village, some 15 m south-east of the point, where the road leading to Baglad branches off the road leading to Márokföld (Frankovics – Redő 1997).

18. Nemesnép-Külső Micske (Neolithic, Roman Age, Middle Ages)[18]
Countless vessel fragments lay scattered over a roughly 400 m by 250 m large area on a north–south oriented ridge rising slightly above a former waterlogged area that has since been drained with ditches and drain-pipes, east of the village and north-east of the former co-operative stalls, in an area called Külső-micske and, to a lesser extent, in an area called Első-tag-dűlő. Aside from pottery, we also found chipped stone implements, the fragment of a grinding stone and burnt daub fragments. Most of these finds could be assigned to the Transdanubian LBK; a few sherds came from Lengyel vessels, from Roman and medieval pottery (Frankovics – Kvassay – Siraki – Tóth 1997).

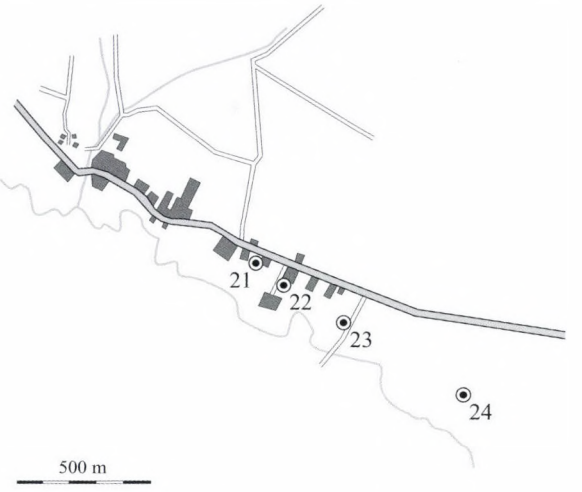
1. Rim fragment of a thin-walled, finely made, dark, polished vessel *(fig. 5. 6)*.
2. Fragment of a large grinding stone *(fig. 5. 7)*.

19. Nemesnép-Első-tag (Prehistoric, Roman Age, Middle Ages)[19]
A scatter of very worn, small pottery sherds and burnt daub fragments was observed over a roughly 300 m by 350 m large area on a ridge rising slightly above a former waterlogged area that has since been drained, east of the village. The chipped stone implements were prehistoric, while the pottery sherds could be assigned to the Roman Age (Frankovics – Kvassay – Siraki – Tóth 1997).

20. Nemesnép-Harmadik-dűlő (Copper Age, Bronze Age, Roman Age)[20]
Typical Middle Copper Age, Late Bronze Age and Roman Age pottery sherds were found over a roughly 400 m by 150 m large area in an unploughed field on the gently sloping side of the hill overlooking the western bank of the Völgyi Stream, east of the village. The finds were concentrated in the northern third of the site; only a loose scatter of sherds lay towards the south (Frankovics – Kvassay – Siraki – Tóth 1997).

[14] ZGM Inv. no. 2000.11.1.
[15] ZGM Inv. no. 2000.12.1–2.
[16] ZGM Inv. no. 2000.13.1–2.
[17] ZGM Inv. no. 2000.14.1–2.
[18] ZGM Inv. no. 2000.15.1–13.
[19] ZGM Inv. no. 2000.16.1–7.
[20] ZGM Inv. no. 2000.17.1–4.

Ramocsa



21. Ramocsa-Két út köze (Prehistoric, Middle Ages)[21]

The remains of a ploughed-up, late medieval house were found over a roughly 12 m by 20 m large area south of the road leading from Ramocsa to Kerkaújfalu (Csesztreg). A high number of pottery sherds, including large vessel fragments, lay among the burnt daub fragments in the freshly ploughed furrows. The location of the hearth inside the house was indicated by a concentration of burnt clay fragments and the burnt pottery sherds used for the construction of the hearth's foundation. A large, intact, polished stone axe lay among the remains of the hearth. The find circumstances indicated that this stone axe lay *in situ* among the remains of the hearth, suggesting that the medieval occupants of the house had found the prehistoric – probably Neolithic – axe somewhere in the area and had placed it under the hearth out of superstition or as a lightning conductor (Bánffy – Bondár – Redő – Vándor 1996).

1. Light yellowish-red, thickened rim fragment painted black *(fig. 6. 1)*.
2. Rim fragment of a light yellowish-grey amphora with outturned rim, tempered with sand and decorated with a rib between the rim and the shoulder. Diam. of rim: 21 cm *(fig. 6. 2)*.
3. Rim fragment of a light yellowish-grey amphora with outturned rim, tempered with sand, decorated with a rib between the rim and the shoulder. Diam. of rim: 21 cm *(fig. 6. 4)*.
4. Rim fragment of a light red amphora with outturned rim, tempered with sand, decorated with a rib between the rim and the shoulder. Diam. of rim: 12 cm *(fig. 6. 5)*.
5. Rim fragment of a light yellowish-grey amphora with outturned, thickened rim, tempered with sand. Diam. of rim: 26 cm *(fig. 6. 6)*.
6. Rim fragment of a brownish-grey, thin-walled amphora with outturned, thickened rim, made from well levigated clay tempered with mica and sand. Diam. of rim: 21 cm *(fig. 6. 7)*.
7. Rim fragment of a light greyish-brown amphora with outturned rim, tempered with mica and sand. Diam. of rim: 19 cm *(fig. 6. 8)*.
8. Base fragment of a light yellowish-grey vessel tempered with sand and pebbles. Diam. of base: 12 cm *(fig. 6. 9)*.
9. Light yellowish-white base fragment, tempered with pebbles and sand *(fig. 6. 10)*.
10. Yellowish-grey base fragment, tempered with pebbles and sand. Diam. of base: 12 cm *(fig. 6. 3)*.
11. Rim fragment of a greyish-brown vessel with thickened rim, tempered with sand *(fig. 7. 1)*.
12. Black painted rim fragment of a yellowish-grey amphora with outturned rim, tempered with sand *(fig. 7. 4)*.

[21] ZGM Inv. no. 2000.21.1–62.

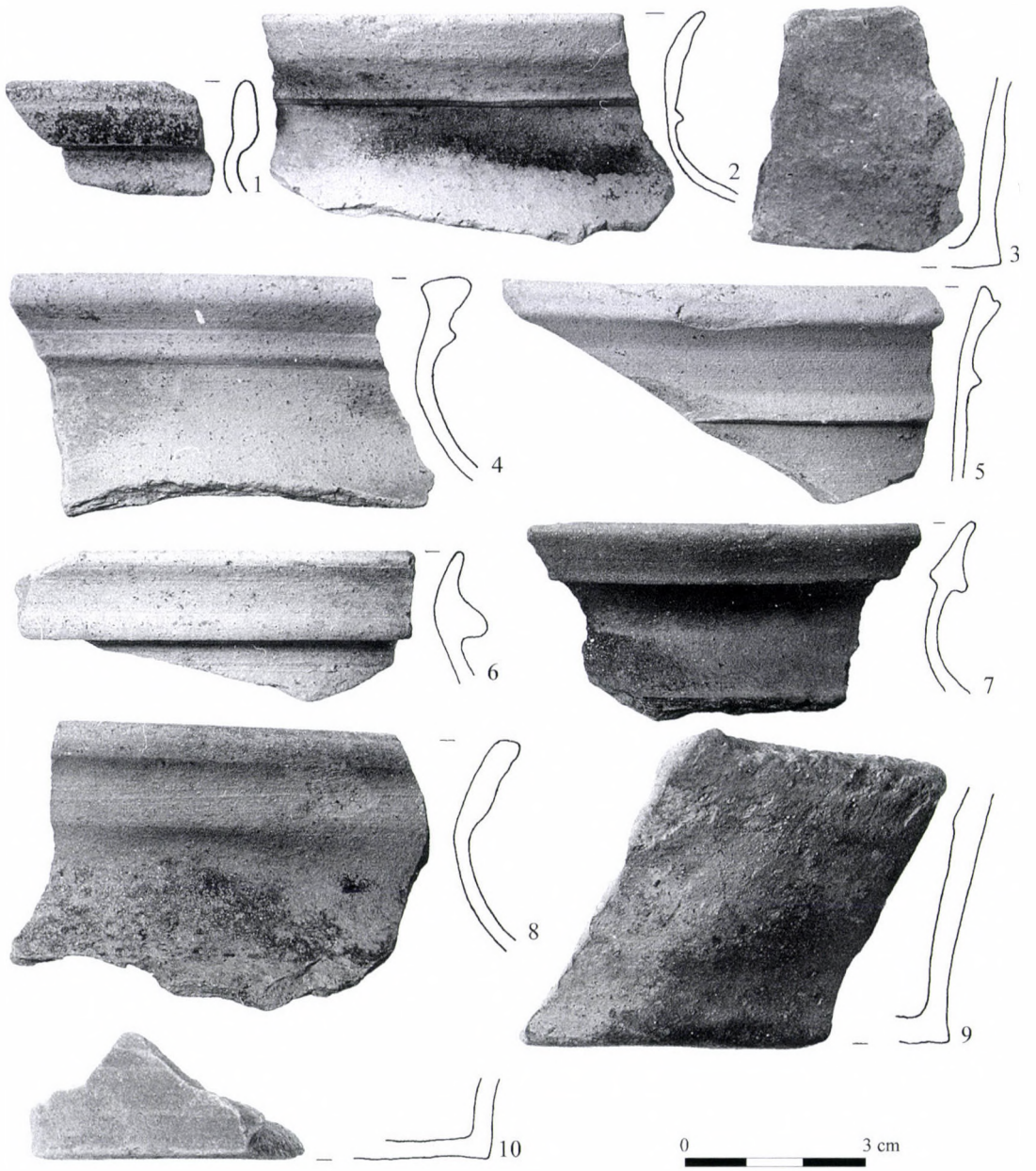


fig. 6. Ramocsa-Két út köze. Finds from the field survey

13. Rim fragment of yellowish-grey amphora with outturned rim, tempered with sand *(fig. 7. 2)*.
14. Rim fragment of a light grey vessel with inward thickening rim, tempered with sand *(fig. 7. 5)*.
15. Rim fragment of a yellowish-white vessel with outward thickening rim, tempered with sand *(fig. 7. 6)*.
16. Rim fragment of a yellowish-white vessel with outward thickening rim, tempered with sand *(fig. 7. 7)*.
17. Rim fragment of a blackish-grey, thin-walled vessel, tempered with sand *(fig. 7. 3)*.
18. Rim fragment of a yellowish-white vessel with outturned rim, tempered with sand, decorated with a rib between the rim and the shoulder *(fig. 7. 8)*.
19. Rim fragment of a yellowish-white vessel with outturned rim, tempered with sand *(fig. 7. 10)*.
20. Rim fragment of a grey vessel with outturned rim, tempered with sand *(fig. 7. 11)*.

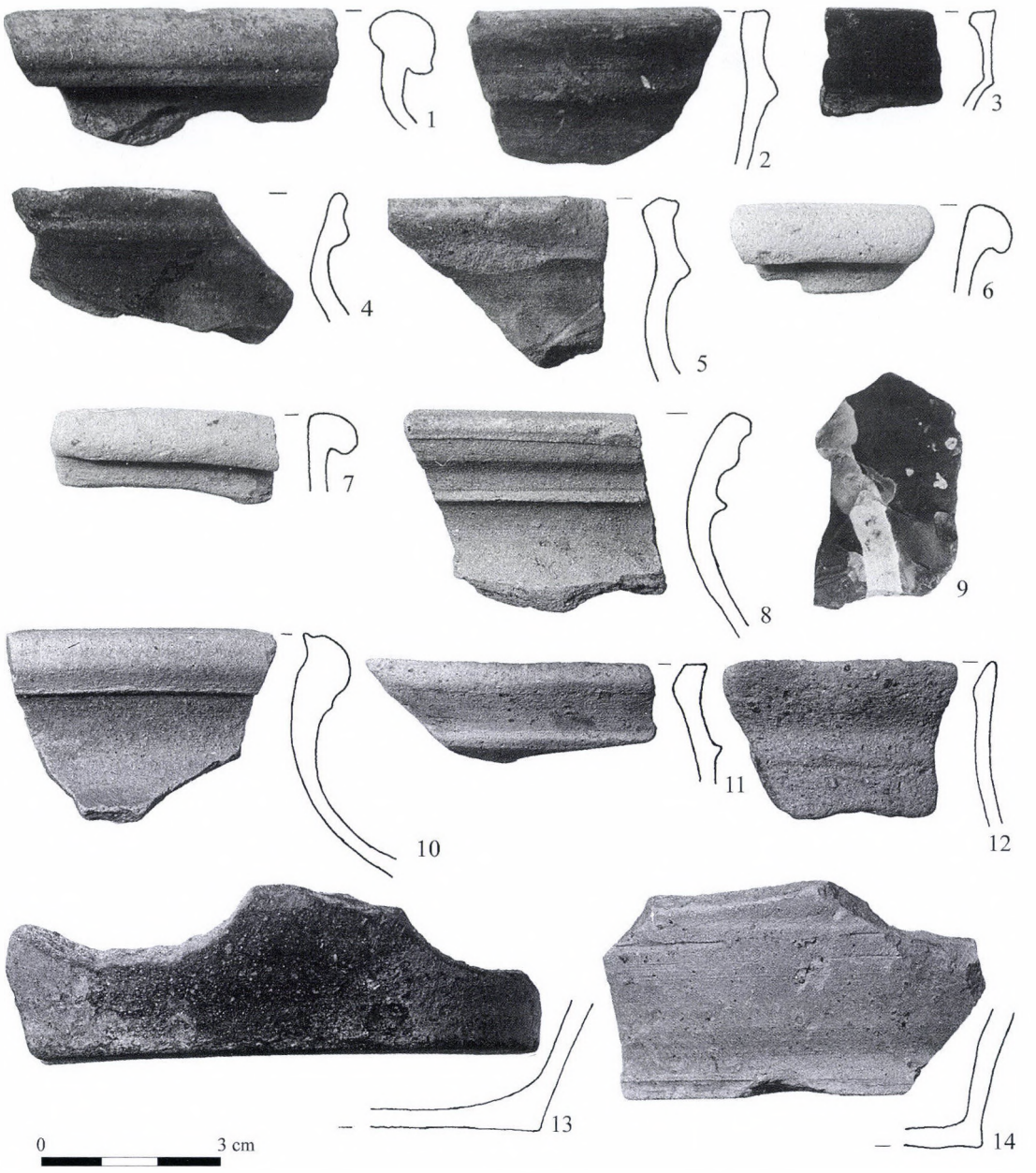


fig. 7. Ramocsa-Két út köze. Finds from the field survey

21. Rim fragment of a red vessel with outturned rim, tempered with pebbles and sand *(fig. 7. 12)*.
22. Base fragment of a yellowish-grey mottled vessel tempered with pebbles and sand *(fig. 7. 13)*.
23. Base fragment of a yellowish-white vessel tempered with pebbles and sand *(fig. 7. 14)*.
25. Scraper made of Szentgál radiolarite *(fig. 7. 9)*.
26. Rim fragment of a light yellowish-red vessel with coarsened surface, tempered with pebbles. Diam. of rim: 24 cm *(fig. 8. 1)*.
27. Rim fragment of a greyish-brown, S profiled, smaller vessel with coarsened surface, tempered with pebbles *(fig. 8. 2)*.
28. Rim fragment of a reddish, thin-walled vessels with outturned rim, decorated with black glazing on the rim and in its interior. Diam. of rim: 27 cm *(fig. 8. 4)*.
29. Rim fragment of a whitish-yellow vessel, tempered with sand, with marks of turning *(fig. 8. 3)*.

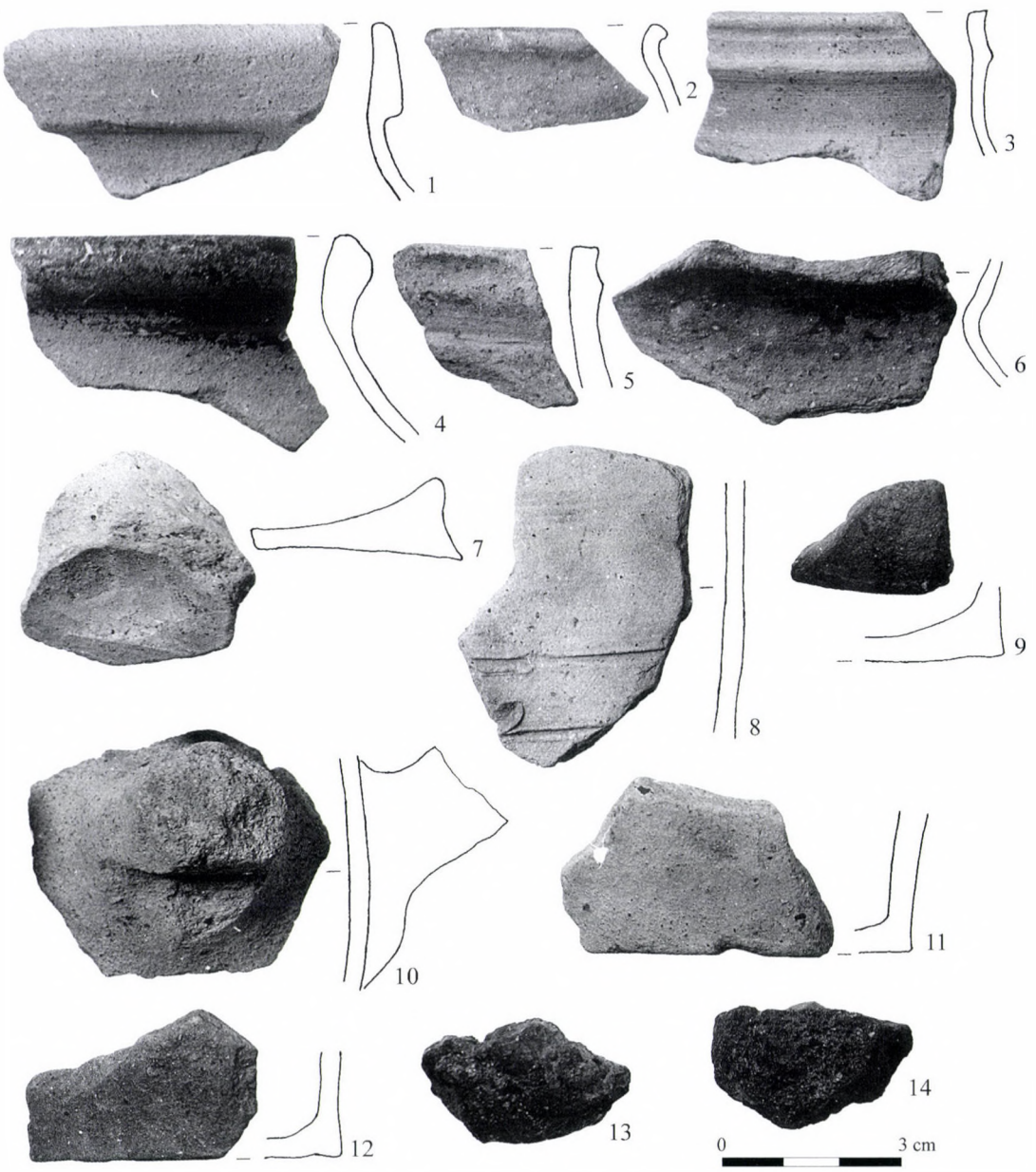


fig. 8. Ramocsa-Két út köze. Finds from the field survey

30. Rim fragment of a large, yellowish-white pot, tempered with sand *(fig. 8. 5)*.
31. Shoulder fragment of a yellowish-brown vessel with rounded shoulder, tempered with coarse pebbles, bearing the remains of black glazing towards the rim *(fig. 8. 6)*.
32. Fragment of the knobbed upper part of a yellowish-white vessel lid, tempered with pebbles *(fig. 8. 7)*.
33. Body sherd of a greyish-white, thin-walled vessel tempered with sand, ornamented with horizontal stabs and pinched decoration *(fig. 8. 8)*.
34. Body sherd of a yellow storage jar tempered with coarse pebbles, with the stub of the strap handle *(fig. 8. 10)*.
35. Base fragment of a reddish-grey small cup or mug tempered with sand. Diam. of base: 6 cm *(fig. 8. 9)*.
36. Base fragment of a reddish-brown vessel tempered with sand and pebbles *(fig. 8. 12)*.
37. Base fragment of a larger yellow vessel tempered with sand and pebbles *(fig. 8. 11)*.
38. Slag *(fig. 8. 13–14)*.

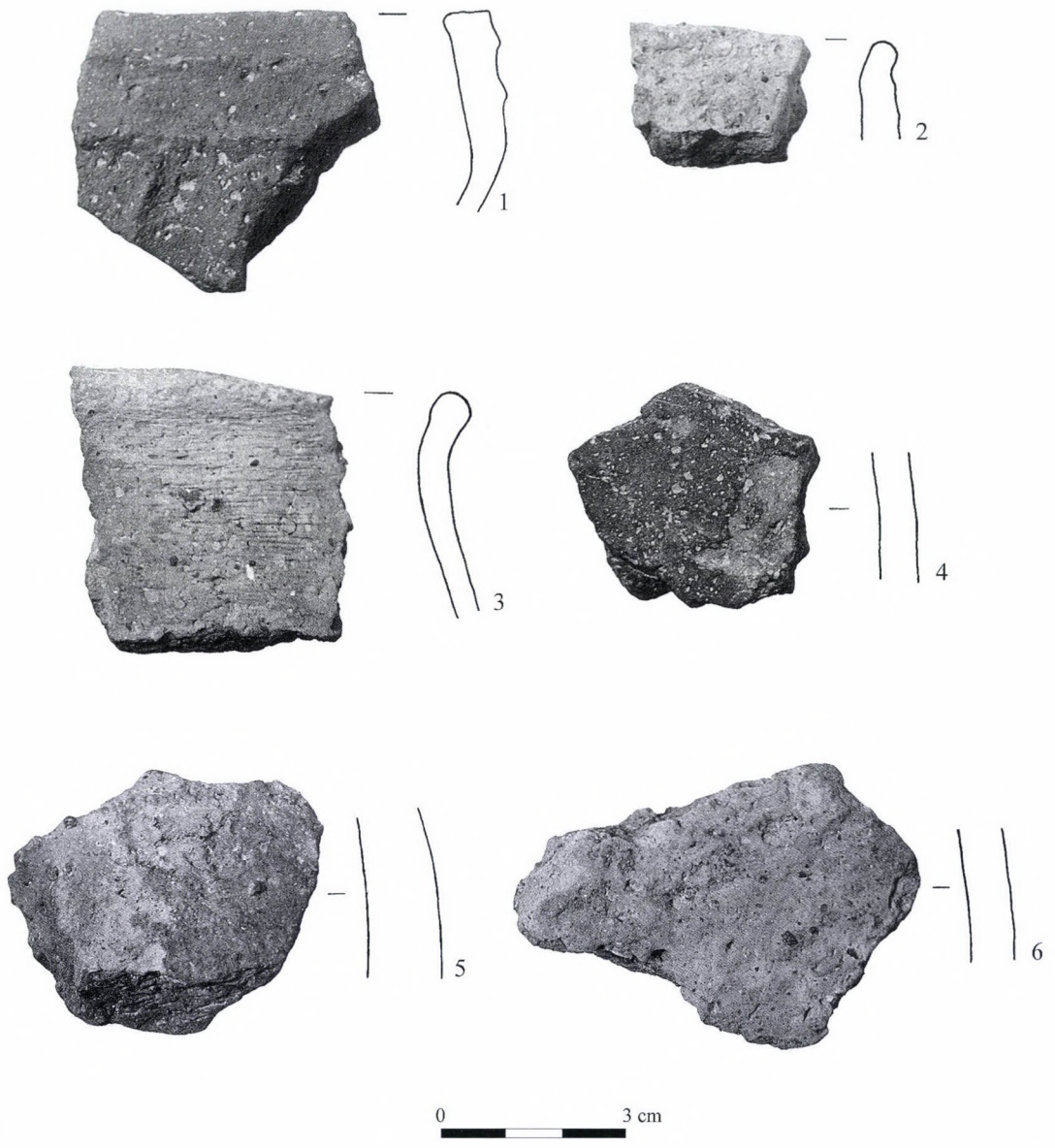


fig. 9. Ramocsa-Két út köze, betongyűrű. Finds from the field survey

22. Ramocsa-Két út köze, betongyűrű (Bronze Age)[22]

A few Bronze Age sherds lay around a concrete ring used for draining the area south of the road leading from Ramocsa to Kerkaújfalu (Csesztreg), about halfway between the road and the Kerka Stream. The exact dating of the household pottery is not possible; the sherds probably date from the close of the Middle Bronze Age or the Late Bronze Age (Bánffy – Bondár – Redő – Vándor 1996).

1. Rim fragment of a bright red, large storage jar tempered with crushed sherds, with uneven interior and exterior surface, decorated with hand-drawn ribbing. Diam. of rim: 34 cm *(fig. 9. 1)*.
2. Rim fragment of a cream coloured, poorly fired, larger vessel tempered with crushed sherds and pebbles *(fig. 9. 2)*.
3. Rim fragment of a yellowish-red, large storage jar with slightly outturned rim, tempered with crushed sherds *(fig. 9. 3)*.
4. Body sherd of a reddish-black vessel tempered with crushed sherds *(fig. 9. 4)*.

[22] ZGM Inv. no. 2000.22.1–5.

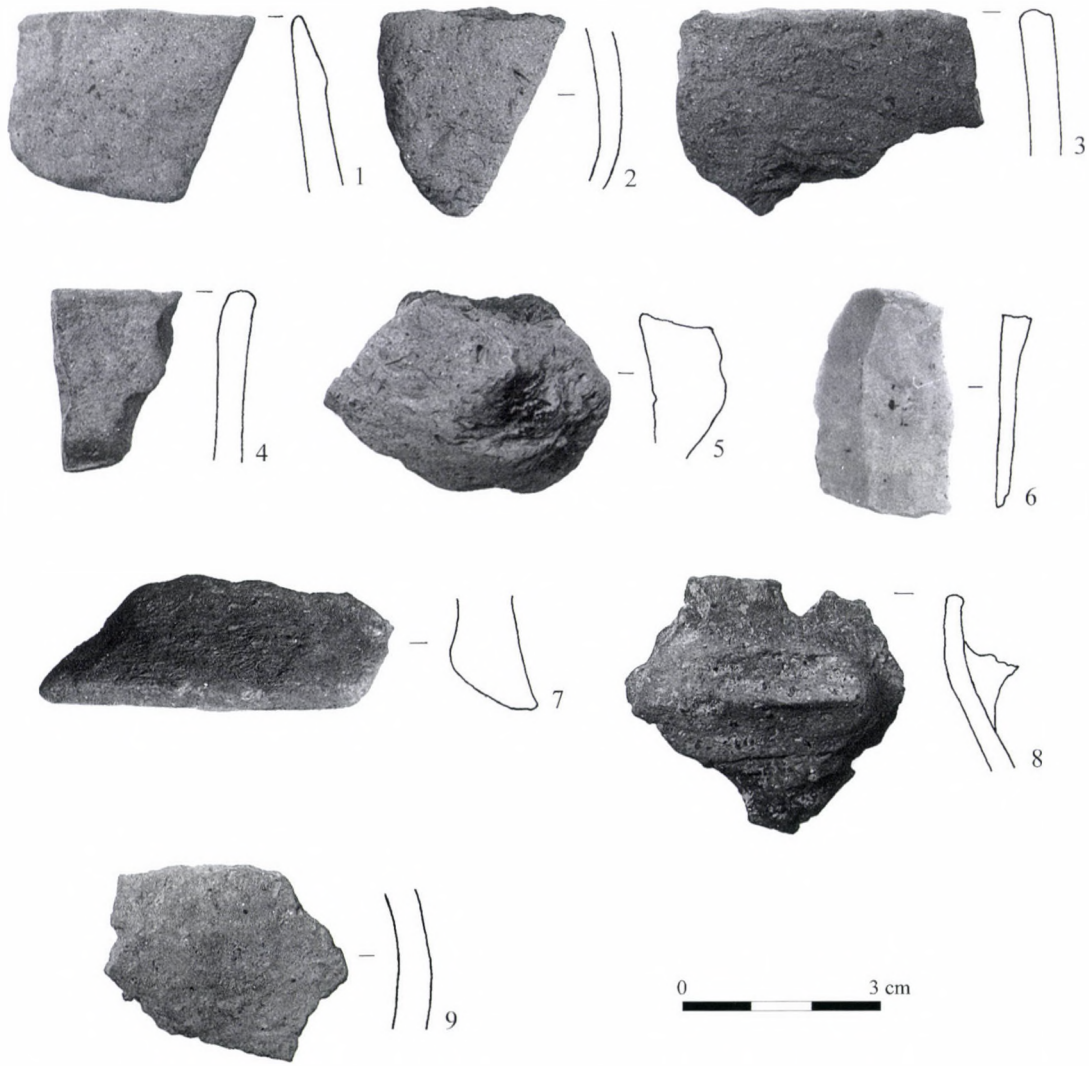


fig. 10. 1–6. Ramocsa-Tölgyeserdei-dűlő; 7–9. Ramocsa-Cikkelyes.
Finds from the field survey

5. Body sherd of a reddish-brown, thick-walled vessel tempered with crushed sherds *(fig. 9. 5)*.
6. Body sherd of a bright red, poorly fired, larger vessel with uneven surface, tempered with crushed sherds *(fig. 9. 6)*.

23. Ramocsa-Tölgyeserdei-dűlő (Neolithic)[23]

We found a few worn sherds of the Transdanubian LBK and a handful of stone implements made of red radiolarite in the field between Tölgyeserdő and the Vadas road, south of the road leading from Ramocsa to Kerkaújfalu (Csesztreg) (Bánffy – Bondár – Redő – Vándor 1996).

1. Rim fragment of a reddish-brown bowl tempered with sand *(fig. 10. 1)*.
2. Body sherd of smaller vessel tempered with chaff and sand *(fig. 10. 2)*.
3. Rim fragment of a gourd shaped vessel tempered with chaff and sand, decorated with finger and nail impressions and an oblique, incised line *(fig. 10. 3)*.
4. Yellowish-brown rim fragment, tempered with sand *(fig. 10. 4)*.
5. Yellowish-red body sherd, tempered with chaff and sand, decorated with a horizontally set knob and a finger impression *(fig. 10. 5)*.
6. Yellowish-white stone tool, trapezoidal in section *(fig. 10. 6)*.

[23] ZGM Inv. no. 2000.23.1–8.

24. Ramocsa-Cikkelyes (Copper Age)[24]

Sherds of the Balaton–Lasinja culture were found in an area bordered by the Malomi and Rétaljai roads, on a low terrace above the left bank of the Kerka Stream, south-east of the village (Bánffy – Bondár – Redő – Vándor 1996).

1. Fragment of the lower part of a greyish-brown, bell shaped pedestal, tempered with crushed sherds *(fig. 10. 7)*.
2. Rim fragment of a reddish-grey, ovoid pot tempered with crushed sherds, with the stub of a vertically set strap handle under the rim *(fig. 10. 8)*.
3. Body sherd of a light red vessel tempered with crushed sherds and sand *(fig. 10. 9)*.

Kerkafalva

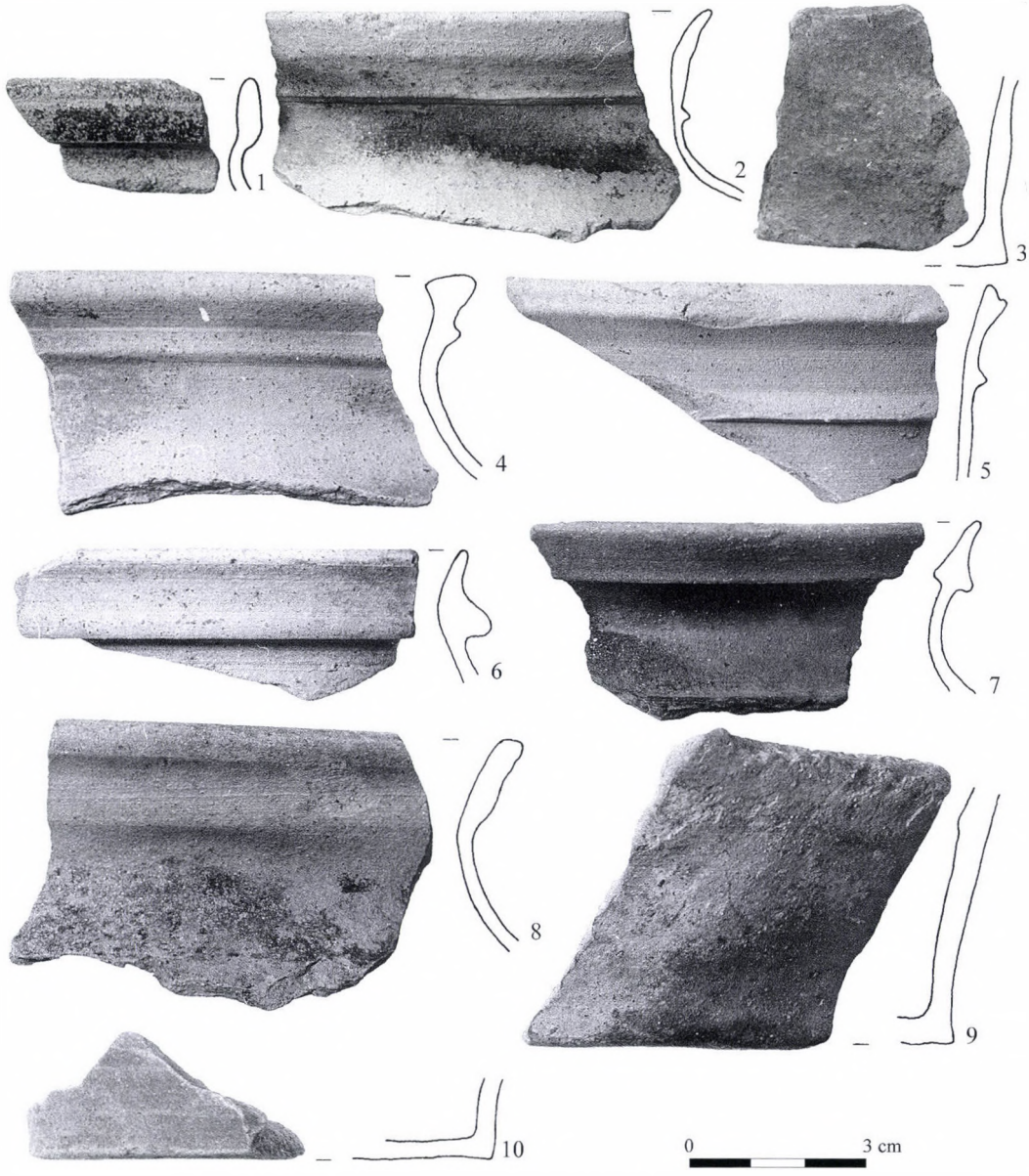


fig. 11. Kerkafalva-Agyag. Finds from the field survey

25. Kerkafalva-Agyag (Neolithic, Middle Ages)[25]

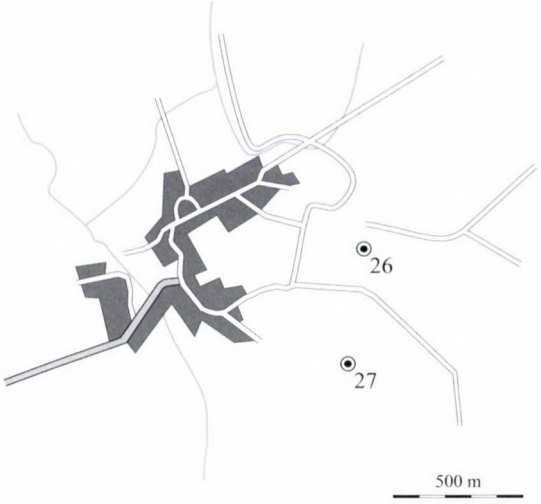
Pottery sherds of the classical, Keszthely phase of the Transdanubian LBK and various stone tools were found over a 20 m by 30 m large area near a milestone (marking a distance of 17 km) between the Válicka Stream and the fields north of the road leading from Kerkafalva to

[24] ZGM Inv. no. 2000.24.1–4.

[25] ZGM Inv. no. 2000.25.1–10.

Csesztreg (Kerkaújfalu) on the left bank of the River Kerka. Late medieval sherds lay scattered for some 400 m towards Csesztreg, without any visible concentration (Bánffy – Bondár – Havasi 1997).

Kerkakutas



26. Kerkakutas-Patakpart (Middle Ages)[26]
Late medieval sherds were found scattered along the small creek flowing into the Cupi Stream, south-east of the village (Frankovics – Redő 1997).

27. Kerkakutas-Cupi patak (Copper Age)[27]
Pottery fragments of the Middle Copper Age Balaton–Lasinja culture were found over a smaller area near the Cupi Stream, south-east of the village (Frankovics – Redő 1997).

Felsőszenterzsébet



28. Felsőszenterzsébet-Alsó nyároska (La Tène?, Middle Ages)[28]
A few graphitic sherds lay scattered over a smaller area on a hill divided by small forest belts south-west of the village. These were tentatively assigned to the Celtic period on the basis of their fabric. A few medieval sherds were also found scattered in the ploughed-up field, without any visible concentration (Bánffy – Bondár – Redő – Vándor 1996).

1. Base fragment of a wheel-turned, graphitic vessel with shiny black exterior and greyish interior made from finely levigated clay *(fig. 12. 6)*.
2. Light grey strap handle made from finely levigated clay tempered with sand *(fig. 12. 7)*.

[26] ZGM Inv. no. 2000.27.1–10.
[27] ZGM Inv. no. 2000.26.1–4.
[28] ZGM Inv. no. 2000.28.1.

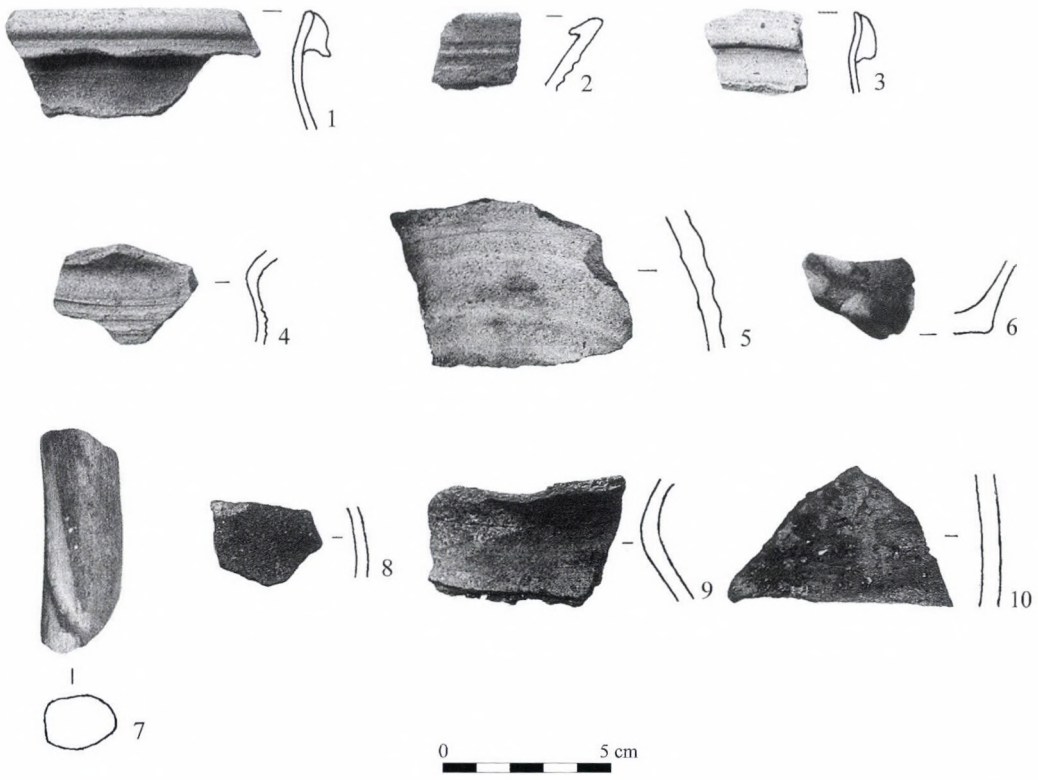
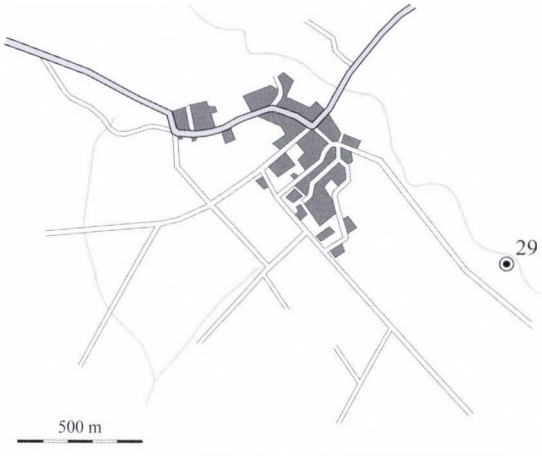


fig. 12. 1–5. Kissziget-Temetődomb; 6–7. Felsőszenterzsébet-Alsó nyároska; 8–10. Csesztreg-Kerkaújfalu határa. Finds from the field survey

Alsószenterzsébet



29. Alsószenterzsébet-Cser-hegy (Middle Ages)[29]
Worn medieval sherds were found over a 100 m by 150 m large area without any concentration on the eastern slope of the hill, at the end of a dirt track branching southward towards the Kerka Stream from the road leading from the village to the cemetery (Bánffy – Bondár – Havasi 1997).

[29] ZGM Inv. no. 2000.29.1–5.

Csesztreg



30. Csesztreg-Kerkaújfalu határa (Árpádian Age, Middle Ages)[30]
A few Árpádian Age and late medieval sherds were found over an area with a diameter of 10 m along the northern edge of the meadow by the Berek, east of the macadam road connecting the two villages (Bánffy – Bondár – Redő 1996).

1. Body sherd of a wheel-turned vessel with light yellow interior and dark grey exterior, tempered with pebbles *(fig. 12. 8)*.
2. Shoulder fragment of a blackish-grey, wheel-turned amphora with outturned rim, tempered with pebbles *(fig. 12. 9)*.
3. Body sherd of a storage jar with grey exterior and light yellow interior, tempered with coarse pebbles and crushed pottery *(fig. 12. 10)*.

31. Csesztreg-Felsőerdei-dűlő (Neolithic)
Some twenty-five small sherds of the Transdanubian LBK and eight stone tools lay scattered west of the road leading from Kerkaújfalu to Csesztreg towards the Felső Woods (Bánffy – Bondár – Redő – Vándor 1996).

32. Csesztreg-Sarjas kertek (Árpádian Age, late Middle Ages)[31]
We found a few Árpádian Age sherds and late medieval pottery fragments on the flat hill bordered by the Kerka and the Cupi streams and by the raised hunters' hide in the north-eastern part of the area, between Csesztreg and Kerkaújfalu (Bánffy – Bondár – Redő – Vándor 1996).

[30] ZGM Inv. no. 2000.30.1–3.

[31] ZGM Inv. no. 2000.32.1–9.

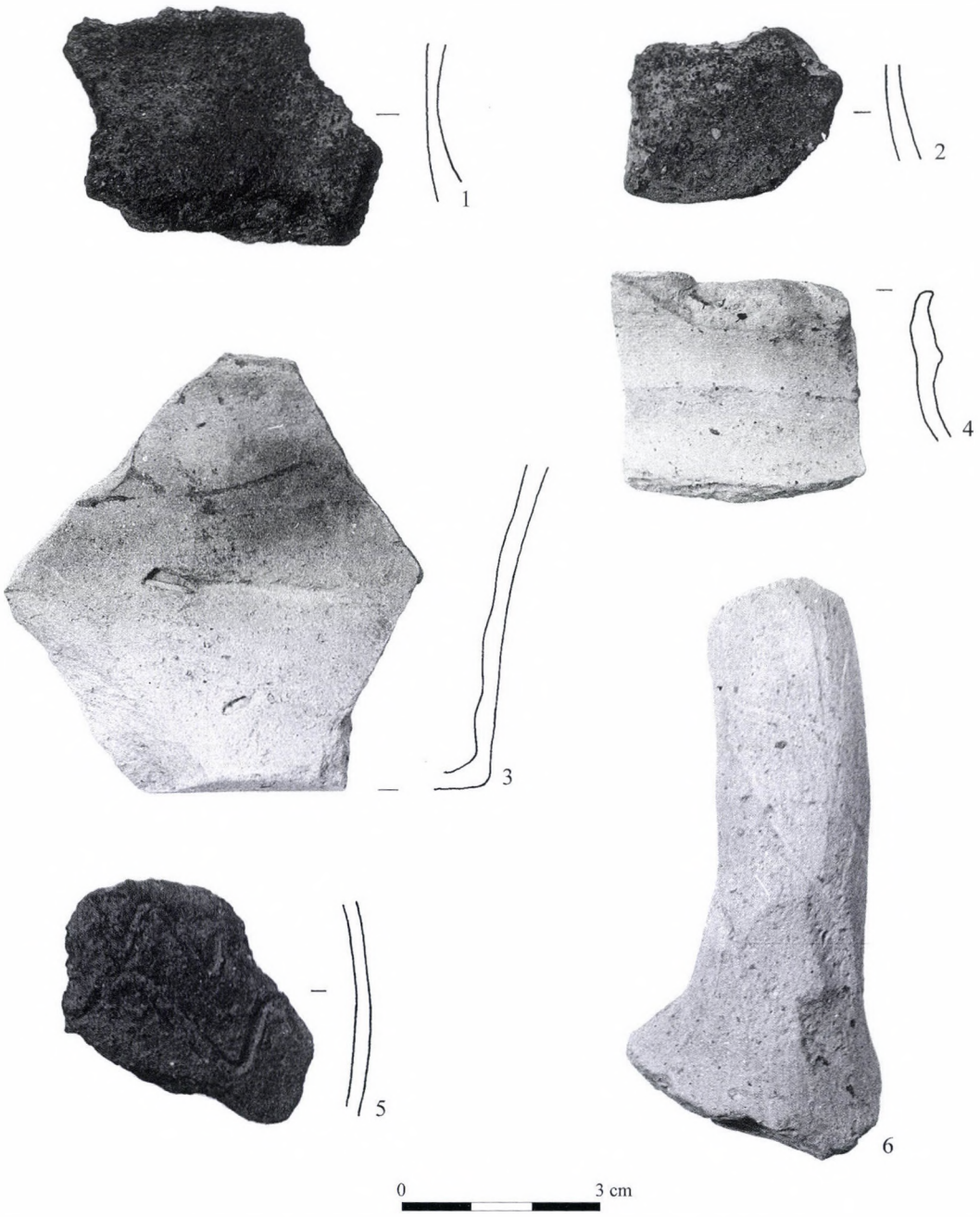


fig. 13. Csesztreg-Sarjas kertek. Finds from the field survey

1. Handle of a light grey vessel tempered with sand and mica *(fig. 13. 6)*.
2. Body sherd of a greyish-red, thin-walled vessel tempered with sand, decorated with a wavy line *(fig. 13. 5)*.
3. Shoulder fragment of a blackish-grey amphora with uneven wall thickness, tempered with pebbles *(fig. 13. 1)*.
4. Body sherd of a vessel with dark grey exterior and yellowish-red interior, tempered with coarse pebbles *(fig. 13. 2)*.
5. Base fragment of a light yellowish-grey, thin-walled vessel tempered with sand, with marks of turning in its interior *(fig. 13. 3)*.
6. Rim fragment of a light yellow vessel with outturned rim, with marks of turning on its exterior and interior *(fig. 13. 4)*.

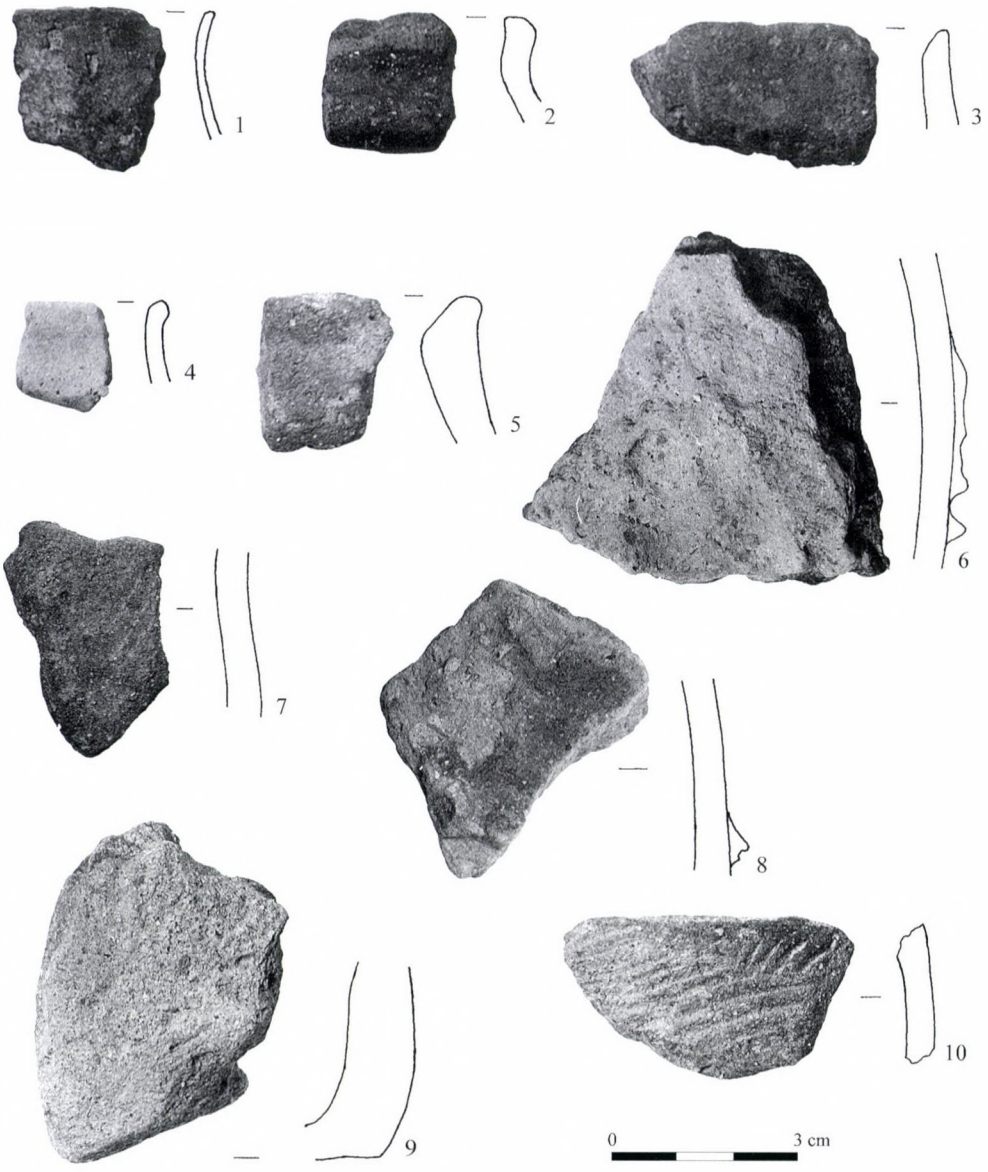


fig. 14. Csesztreg-Sarjas kertek, déli vég. Finds from the field survey

33. Csesztreg-Mihomi erdő (Middle Ages)
The remains of a late medieval house were found at the edge of the Mihomi Woods on the eastern bank of the Cupi Stream, north of the macadam road leading from Csesztreg to Cup (Zalabaksa). According to the written sources, the area was part of the medieval village of Mihon. Judit Kvassay conducted a small sounding excavation on the site;[32] cf. also the excavation report in this volume.

34. Csesztreg-Sarjas kertek, déli vég (Copper Age, Middle Ages) [33]
Worn sherds assigned to the Middle Copper Age Furchenstich group on the basis of an ornamented fragment were found in an area with a diameter of roughly 10 m on the southern elevation of a flat area bordered by the Kerka and Cupi streams between Csesztreg and Kerkaújfalu. A few late medieval pottery fragments were also collected (Bánffy – Bondár – Redő – Vándor 1996; Bánffy – Bondár – Havasi 1997; Bánffy – Somogyi – Roeder 1997).

[32] *J. Kvassay:* 15–16. századi ház a középkori Mihon falu területén [15th–16th century building of the medieval village of Mihon], in: *Csesztreg 1996* 69–95; *J. Kvassay:* 16. századi vastárgyak a középkori Mihon faluból (Eisengegenstände des 16. Jahrhunderts aus dem mittelalterlichen Dorf Mihon). ZalaiMúz 10 (2001) 161–173.

[33] ZGM Inv. no. 2000.32.16–25; 2000.32.37–40.

1. Rim fragment of a brown, thick-walled vessel with slightly outturned rim, tempered with pebbles *(fig. 14. 1)*.
2. Rim fragment of a brown, thick-walled vessel tempered with pebbles and sand *(fig. 14. 2)*.
3. Rim fragment of a pot with greyish-brown exterior and reddish interior *(fig. 14. 3)*.
4. Rim fragment of a yellowish-brown vessel with slightly outturned rim, tempered with sand *(fig. 14. 4)*.
5. Rim fragment of a yellowish-grey, thick-walled vessel with slightly outturned rim, tempered with sand *(fig. 14. 5)*.
6. Body sherd of a large storage jar with bright red, coarsened exterior and dark grey interior, tempered with pebbles *(fig. 14. 6)*.
7. Body sherd of a large, greyish-brown vessel tempered with pebbles, decorated with smoothed-in lines *(fig. 14. 7)*.
8. Body sherd of a thick-walled vessel with reddish-brown exterior and grey interior, tempered with sand, ornamented with applied decoration or intentional coarsening *(fig. 14. 8)*.
9. Body sherd of a small, brownish vessel tempered with pebbles, decorated with a pattern of fine stabs *(fig. 14. 10)*.
10. Base fragment of an extremely thick-walled vessel with red exterior and grey interior, tempered with pebbles and sand, decorated with a pattern of finely incised stabs *(fig. 14. 9)*.

35. Csesztreg-Berek melléki rét (Roman Age)[34]

Intensive Roman settlement traces were noted on the western side of a flat area bordered by the Kerka and Cupi streams between Csesztreg and Kerkaújfalu (Bánffy – Bondár – Redő – Vándor 1996; Bánffy – Bondár – Havasi 1997; Bánffy – Somogyi – Roeder 1997).

1. Rim fragment of a dark grey, thick-walled vessel with thickened rim, tempered with coarse pebbles, decorated with horizontal stabs under the rim in its interior *(fig. 15. 1)*.
2. Rim fragment of a brown bowl with thickened, flat rim, tempered with coarse pebbles and sand, decorated with a horizontal rib under the rim *(fig. 15. 3)*.
3. Rim fragment of a grey vessel with thickened rim, tempered with pebbles *(fig. 15. 2)*.
4. Fragment of a grey strap handle, tempered with coarse pebbles; the handle was originally set on the rim *(fig. 15. 5)*.
5. Rim fragment of a vessel with thickened, outturned rim tempered with coarse pebbles *(fig. 15. 4)*.
6. Shoulder fragment of a light grey, thick-walled vessel tempered with coarse pebbles, decorated with rows of horizontal stripes *(fig. 15. 6)*.
7. Body sherd with yellowish-red exterior and grey interior, tempered with coarse pebbles, decorated with a row of horizontal stabs *(fig. 15. 7)*.
8. Body sherd of a reddish, thin-walled vessel tempered with pebbles, decorated with horizontal stabs *(fig. 15. 8)*.
9. Base fragment of a light grey vessel tempered with pebbles, decorated with stabs *(fig. 15. 9)*.
10. Base fragment of a coarse, grey vessel with brown mottling, tempered with pebbles *(fig. 15. 10)*.

[34] ZGM Inv. no. 2000.32.10–15; 2000.32.26–36.

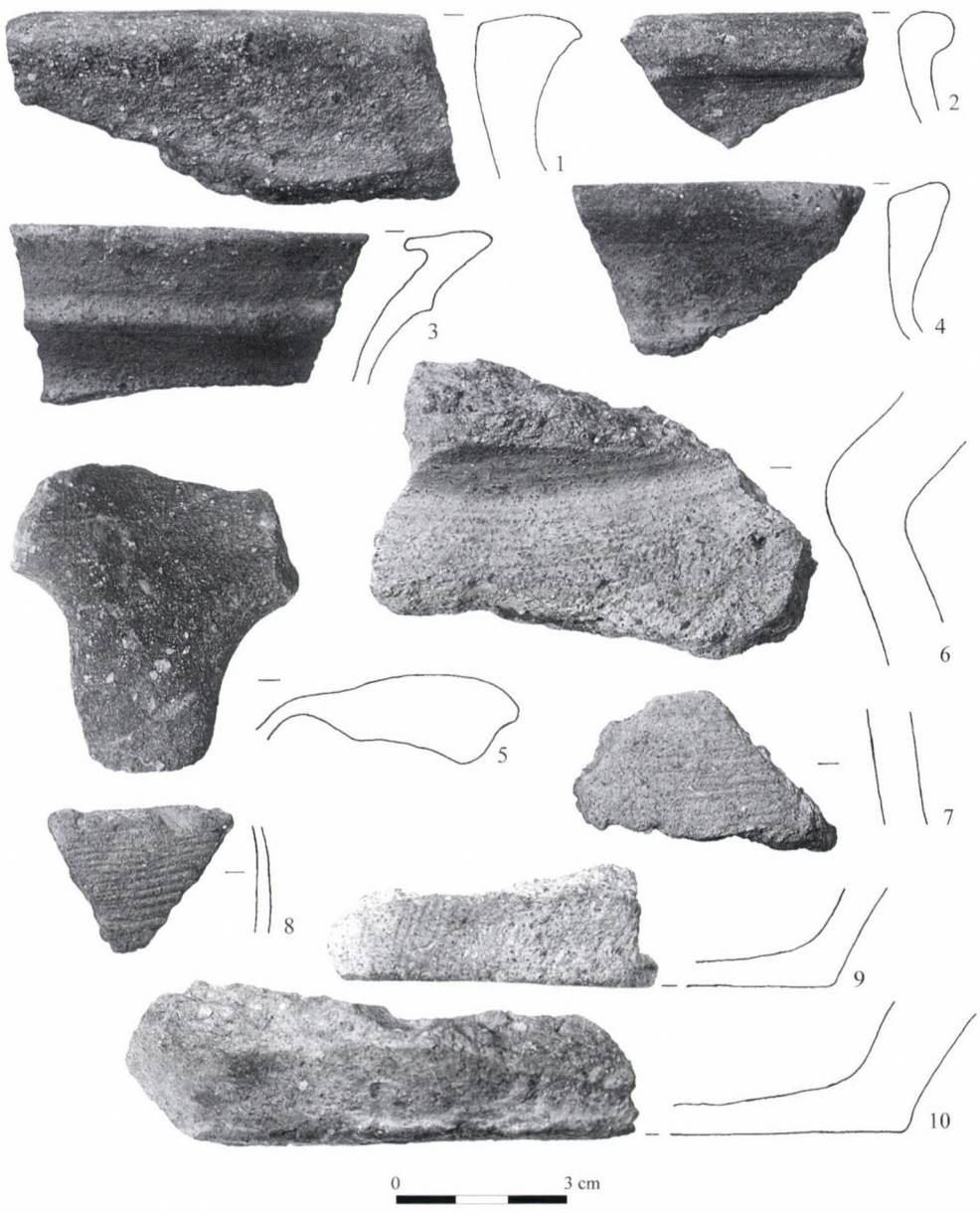


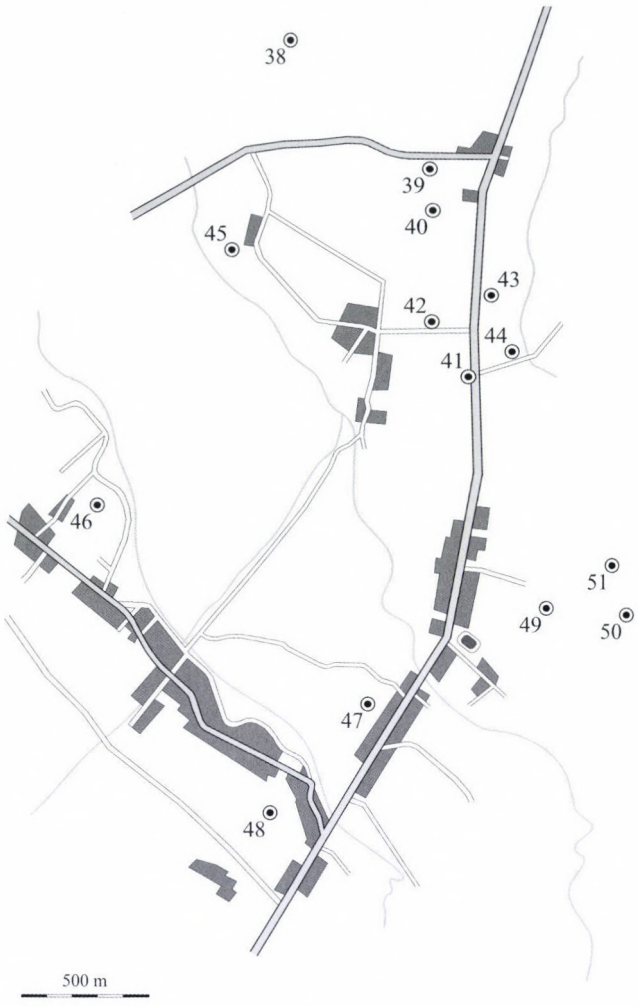
fig. 15. Csesztreg-Berek melléki rét. Finds from the field survey

36. Csesztreg-Lenti út (Prehistoric)
The remains of a hearth were found in a scantily planted maize field on the eastern side of the road track and some 20 m from it, on the outskirts of Csesztreg, by the north–south road crossing Road 86 between Csesztreg and Lenti. A few small sherds from hand-thrown pottery lay among the broken fragments of the burn clay platform, together with two red radiolarite blades. The hearth was assigned to the prehistoric period on the basis of the latter (Somogyi – Roeder 1997).

37. Csesztreg-Petőfi tsz (Prehistoric, Middle Ages)[35]
A few late medieval sherds and a prehistoric chipped stone implement were found near the western edge of the co-operative, on the western outskirts of the village, north of the road leading to Nemesnép (Bánffy – Bondár – Havasi 1997).

[35] ZGM Inv. no. 2000.31.1–2.

Zalabaksa



38. Zalabaksa-Nagyréti-dűlő (Prehistoric, Roman Age)[36]
Prehistoric and Roman Age vessel fragments, as well as the fragment of a Roman Age glass flask were found on the edge of an elevation bordered by the Mihom Woods, the macadam road from Zalabaksa to Csesztreg and Road 86, the highest point of the gently rising ploughland east and south of the Mihom Woods (Redő 1997).

39. Zalabaksa-Cup-"Eichenhof" (Middle Ages)[37]
Many medieval sherds were found scattered on the banks of the stream, now a dead channel owing to earlier regulation, south-east of an Austrian residence called Eichenhof, on the ploughed plots between the houses in the village part called Cup. It seems likely that the houses of the medieval village of Cup once stood beside this stream (Redő 1997).

1. Fragment of a light cream coloured stove tile tempered with sand *(fig. 5. 5)*.
2. Handle fragment of a light red, coarse jug tempered with pebbles and sand, decorated with irregularly incised lines *(fig. 5. 3)*.
3. Base fragment of a light cream coloured, thick-walled vessel tempered with sand *(fig. 5. 4)*.

40. Zalabaksa-Cupi patakpart (Neolithic, Copper Age, Middle Ages)[38]
A red patch, perhaps concealing the remains of a hearth, was found north of the road, on the bank rising above the stream, near the houses of the medieval village of Cup. A little to

[36] ZGM Inv. no. 2000.35.1–7.
[37] ZGM Inv. no. 2000.36.1–6.
[38] ZGM Inv. no. 2000.35.1–9.

the west, some 50 m from the stream, we found prehistoric pottery fragments mixed with a few medieval sherds in the ploughed field. Judging from the chaff tempering, some of these pottery fragments were Neolithic, while others could be assigned to the Middle Copper Age Balaton–Lasinja culture (Redő 1997).

41. Zalabaksa-Cupi patak, hídfő (Roman Age, Middle Ages)[39]
According to the locals, the huge gravestone (now in the collection of the Zalalövő Museum) was not found during the construction of the bridge over the Kerka Stream, but by the bridge over the Cupi Stream. The fields lying by the road west of the bridge, where the stream turns north-west, are not cultivated and not even grass grows in this area. It would appear that the area was used as the base for the construction works. Roman sherds, the fragments of grey pots made from finely levigated clay and a few medieval sherds lay scattered over this small area. It is also possible that the earth was transported here from some other area, making this site rather uncertain (Redő 1997).

42. Zalabaksa-Cseri-dűlő, víztorony (Roman Age, Middle Ages)[40]
A Drag. 31 terra sigillata was found together with a handful of Roman and medieval sherds in the hard, clayey soil some 100 m from the first house, near the Zalabaksa water tower, in the triangle between Road 86 and the Cupi Stream (Redő 1997).

1. Light red terra sigillata rim fragment with worn exterior and interior, decorated with a horizontal line and a festoon pattern under the rim. Diam. of mouth: 18 cm *(fig. 5. 1)*.

43. Zalabaksa-Császárirtás (Middle Ages)
A few small medieval sherds lay on top of the slope towards the Cupi Stream on the northern outskirts of the village (Redő 1997).

44. Zalabaksa-Zsidótemető (Copper Age, Middle Ages)[41]
A roughly 10 m by 10 m large grey, ashy patch was noted near the ridge on the eastern slope of the hill overlooking the abandoned Jewish cemetery, some 100 m to the south of the burial ground lying by Road 86 in the northern part of the village. Pottery fragments of the Balaton–Lasinja culture were collected from this patch, together with a few medieval sherds (Bánffy – Bondár – Szőke – Vándor 1995; Bánffy – Bondár – Redő 1996; cf. also the excavation report in this volume).

1. Rim fragment of a reddish-grey bowl with outturned rim, tempered with crushed pottery and sand *(fig. 16. 1)*.
2. Body sherd of a large, dark grey vessel tempered with sand *(fig. 16. 2)*.
3. Body sherd of a light red vessel tempered with crushed pottery, decorated with a horizontally set, slightly drooping knob *(fig. 16. 3)*.
4. Base fragment of a smaller, dark grey pot tempered with crushed pottery and sand *(fig. 16. 4)*.
5. Vertically set greyish-brown strap handle, tempered with crushed pottery and sand *(fig. 16. 5)*.
6. Rim fragment of a dark grey biconical bowl with porous surface, tempered with crushed pottery and sand, with the carination 2 cm under the thickened rim *(fig. 16. 6)*.
7. Shoulder fragment of a small, greyish-brown vessel with outturned rim, tempered with crushed pottery and sand *(fig. 16. 13)*.
8. Rim fragment of a dark grey bowl with indrawn rim and coarsened surface, tempered with crushed pottery and sand, with the carination 1.3 cm under the rim *(fig. 16. 7)*.
9. Shoulder fragment of a reddish-brown, thick-walled vessel tempered with sand, decorated with irregularly spaced, vertical, incised lines *(fig. 16. 8)*.

[39] ZGM Inv. no. 2000.39.1–5.

[40] ZGM Inv. no. 2000.44.1–7.

[41] ZGM Inv. no. 2000.37.1–14.

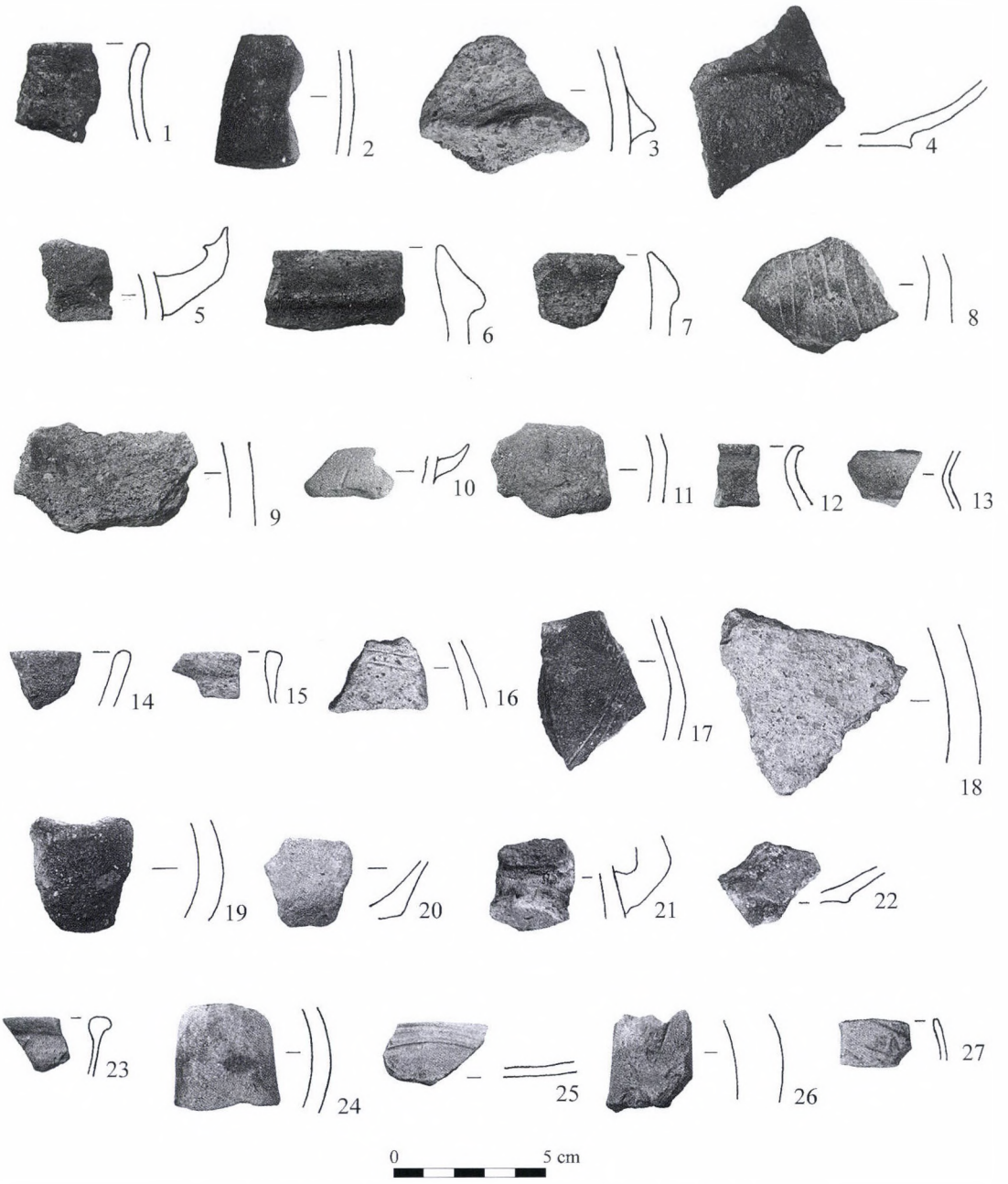


fig. 16. Zalabaksa-Zsidótemető. Finds from the field survey

10. Body sherd of a worn, bright red cup tempered with sand, with the stub of a strap handle *(fig. 16. 10)*.
11. Body sherd of a thick-walled storage jar with red exterior and grey interior, tempered with sand *(fig. 16. 9)*.
12. Body sherd of a worn, reddish-brown vessel tempered with sand *(fig. 16. 11)*.
13. Rim fragment of a light grey, thin-walled cup with outturned rim, tempered with crushed sherds and sand *(fig. 16. 12)*.
14. Rim fragment of a reddish, conical bowl tempered with crushed sherds and sand *(fig. 16. 14)*.
15. Rim fragment of a light grey, thin-walled, small bowl with thickened rim, tempered with sand *(fig. 16. 15)*.

16. Body sherd of a reddish vessel tempered with crushed sherds and sand, decorated with two incised lines *(fig. 16. 16)*.
17. Body sherd of a greyish-brown vessel with coarse surface, tempered with sand, decorated with an incised network pattern *(fig. 16. 17)*.
18. Body sherd of a large, light red storage jar with uneven surface, tempered with crushed sherds *(fig. 16. 18)*.
19. Greyish and reddish-brown strap handle, tempered with coarse pebbles *(fig. 16. 19)*.
20. Base fragment of a small, reddish-brown vessel tempered with sand *(fig. 16. 20)*.
21. Grey handle fragment from the shoulder of a squat storage jar tempered with crushed sherds *(fig. 16. 21)*.
22. Base fragment of a greyish-brown vessel tempered with sand *(fig. 16. 22)*.
23. Rim fragment of a yellowish-red, thin-walled vessel with thickened rim *(fig. 16. 23)*.
24. Yellowish-grey, well-fired, vertical strap handle, tempered with sand *(fig. 16. 24)*.
25. Base fragment of a yellowish-pink, thin-walled vessel with marks of turning in its interior and textile remains on its exterior *(fig. 16. 25)*.
26. Fragment of a yellowish, oval sectioned jug handle *(fig. 16. 26)*.
27. Rim fragment of a yellowish, thin-walled vessel, the interior is worn, the exterior decorated with incisions *(fig. 16. 27)*.

45. Zalabaksa-Kerka, patakpart (Roman Age, Árpádian Age, Middle Ages)[42]
Countless pottery sherds lay scattered over a 150 m by 100 m large area on the edge of the elevation on the right bank of the Kerka Stream, some 100 m south of the confluence of the Kerka and the Kerka-ág streams, north–north-east of the village, on the outskirts of Csesztreg. Two black patches, each with a diameter of roughly 5 m, probably the remains of ploughed-up houses, were also observed. The soil became pebbly at the northern edge of the site and the finds were scarcer here. In addition to sherds, burnt daub fragments and slag were also found (Frankovics – Kvassay – Siraki – Tóth 1997).

46. Zalabaksa-Győrfa (Neolithic, Late Bronze Age?, Roman Age, Middle Ages)[43]
A roughly 400 m by 80–150 m large site was identified in the ploughland by the northern edge of the area called Győrfa, by the northern edge of the village. Countless sherds lay on the surface in a 50–80 m long strip on the elevation overlooking the right bank of the Kerka Stream. The finds became scarcer towards the south-west, although a few were found along the road between Zalabaksa and Csesztreg. The south-western edge of the site probably extends under the outermost house of Győrfa (Frankovics – Kvassay – Siraki – Tóth 1997).

47. Zalabaksa-Iskola udvar (Roman Age)
Finds indicating an intensive Roman Age settlement were found on the grassy meadow behind the elementary school and in the narrow grassy strip between the school and Road 86, when the gas pipes were laid (Redő 1998; cf. also the excavation report in this volume).

48. Zalabaksa-Belterület (Late Bronze Age? Roman Age, Middle Ages)[44]
In spite of very poor circumstances for observation (the plots were not all cultivated, the cultivated area was for the greater part covered with the rubble of houses demolished during development projects), a few sherds were found in the cultivated plots behind the houses near the right bank of the stream, west of the Kerka bridge, on the south-western edge of the village's inner area. The extent of the site could not be determined since the area was built-up for the greater part (Frankovics – Kvassay – Siraki – Tóth 1997).

[42] ZGM Inv. no. 2000.38.1–18.
[43] ZGM Inv. no. 2000.41.1–9.
[44] ZGM Inv. no. 2000.43.1–14; 2000.46.1–5.

49. Zalabaksa-Szentandrás-Sáncvár (Roman Age)
There are tumulus burials in the eastern part of the village between the Cupi and the Medesi streams, halfway to the medieval site of Templomdomb. Three of these burials appeared to be intact, while traces of a grave robber's pit could be observed in the case of the fourth. There was a ditch around the tumuli, but it was unclear whether it was artificial or not (Bondár 1997).

50. Zalabaksa-Szentandrás-Templomdomb (Middle Ages)[45]
The remains of the medieval village of Szentandrás were identified in an area called Szentandrás by the locals. The site lies on a hill on the bank of the Medesi Stream, to the east of the Cupi Stream flowing parallel to it, east of the eastern edge of the village. The location of the one-time church was indicated by a rubble of broken bricks in the unploughed field. The fortification around the church could also be made out. Many late medieval pottery sherds were collected in this area. The site of the one-time fishpond could also be identified south of the church, together with the embankment on its western side. Late medieval finds were concentrated in several patches along the northern shore of one-time fishpond, perhaps indicating the location of the houses built in this area. In addition to these two areas, medieval sherds lay scattered over the entire hill (Bánffy – Bondár – Havasi – Vándor 1997).

51. Zalabaksa-Medesi patak, nyiladék (Middle Ages)[46]
Late medieval sherds were found in the glade between two small forest belts on the eastern bank of the Medesi Stream towards Pórszombat, north of the village of Szentandrás. Traces of medieval ridge and furrow ploughing could be observed in the forest (Bánffy – Bondár – Havasi – Vándor 1997).

Kerkabarabás



52. Kerkabarabás-Ótelki-dűlő I (La Tène)[47]
Grey, graphitic, Celtic sherds lay scattered over an area no larger than a few square metres on the flat area extending west of the Kerka Stream, along the road from Zalabaksa to Kerkabarabás. They were assigned to the La Tène C period on the basis of the stamped decoration on one of the fragments (Bánffy – Bondár – Lippert – Szőke – Vándor 1995).

[45] ZGM Inv. no. 2000.40.1–4.
[46] ZGM Inv. no. 2000.42.1–5.
[47] ZGM Inv. no. 2000.34.21–24.

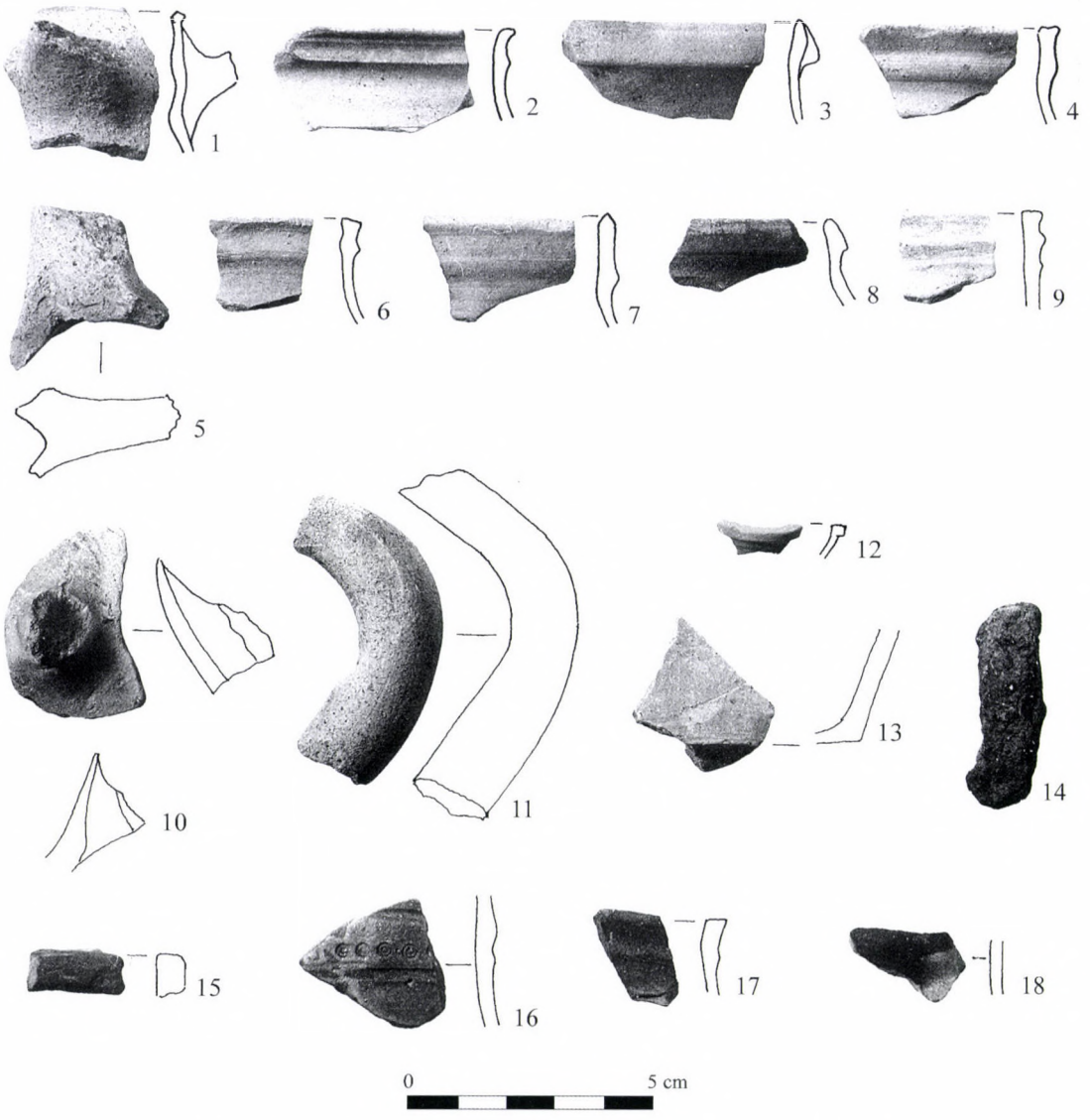


fig. 17. 1–14. Kerkabarabás-Ótelki-dűlő II; 15–18. Kerkabarabás-Ótelki-dűlő I.
Finds from the field survey

1. Rim fragment of a dark grey, coarse vessel with thickened rim, tempered with mica *(fig. 17. 15)*.
2. Body sherd of a grey vessel tempered with mica, decorated with a stamped pattern. *(fig. 17. 16)*.
3. Rim fragment of a grey vessel tempered with mica *(fig. 17. 17)*.
4. Body sherd of a grey vessel with smoothed surface made from finely levigated clay. *(fig. 17. 18)*.

53. Kerkabarabás-Ótelki-dűlő II (Middle Ages)[48]

The remains of a late medieval settlement, probably the ploughed-up remains of a manor house and its outbuildings were found over a 20 m by 80 m large area south of the Celtic site, on the flat area extending west of the Kerka Stream, along the road from Zalabaksa to Kerkabarabás (Bánffy – Bondár – Lippert – Szőke – Vándor 1995).

1. Rim fragment of a yellowish, coarse, one-handled cup tempered with pebbles and mica *(fig. 17. 1)*.
2. Yellowish-grey rim fragment, tempered with mica *(fig. 17. 2)*.

[48] ZGM Inv. no. 2000.34.1–20.



fig. 18. Kerkabarabás-Barabási háromszög. Finds from the field survey

3. Light brown rim fragment, tempered with mica *(fig. 17. 3)*.
4. Light yellow rim fragment, tempered with mica *(fig. 17. 4)*.
5. Body sherd of a light yellow, one-handled jug tempered with pebbles *(fig. 17. 5)*.
6. Rim fragment of a yellowish-grey vessel made from finely levigated clay *(fig. 17. 6)*.
7. Rim fragment of a yellowish-grey vessel made from finely levigated clay tempered with mica *(fig. 17. 7)*.
8. Rim fragment of a blackish-grey coarse vessel tempered with pebbles and mica *(fig. 17. 8)*.
9. Rim fragment of a yellowish-white vessel tempered with mica *(fig. 17. 9)*.
10. Handle fragment of a pinkish-yellow jug tempered with mica *(fig. 17. 10)*.
11. Handle fragment of a yellowish-pink large jug tempered with mica *(fig. 17. 11)*.
12. Fragment of a well fired, reddish clay pipe made from finely levigated clay *(fig. 17. 12)*.
13. Base fragment of a yellowish vessel tempered with mica and pebbles *(fig. 17. 13)*.
14. Large iron fragment *(fig. 17. 14)*.

54. Kerkabarabás-Barabási háromszög (Neolithic)[49]

Finds of the Transdanubian LBK were collected on a roughly 2.5 m high terraced elevation lying west of the Falu Stream between Road 86 and the road between Cseszstreg and Lenti, west of Kerkabarabás. The site can be assigned to the classical phase of the culture on the basis of the ornamented sherds, contemporary with the Notenkopf pottery of northern Transdanubia. In addition to pottery fragments, we also collected several stone tools made from red radiolarite (Bánffy – Bondár – Szőke – Vándor 1995; Bánffy – Lippert – Bernhard 1996; Bánffy – Bondár – Havasi 1996, Bánffy – Somogyi – Havasi – Roeder 1998).

1. Rim fragment of a yellowish vessel tempered with crushed pottery and sand, with a worn finger impressed knob *(fig. 18. 1)*.
2. Body sherd of a poorly fired vessel with red exterior and grey interior, tempered with chaff, decorated with two faint lines *(fig. 18. 2)*.
3. Body sherd of a yellowish-grey, thick-walled vessel tempered with chaff *(fig. 18. 3)*.
4. Rim fragment of a dark greyish-brown, thin-walled vessel with slightly outturned rim, tempered with crushed sherds *(fig. 18. 4)*.
5. Body sherd of a thick-walled vessel with yellowish exterior and dark grey interior, tempered with chaff and crushed sherds *(fig. 18. 5)*.
6. Rim fragment of a reddish-brown gourd shaped vessel tempered with crushed sherds and sand *(fig. 18. 6)*.
7. Body sherd of a reddish-black, thick-walled storage jar tempered with chaff and sand, with the remains of a large, horizontally set, bipartite knob *(fig. 18. 7)*.
8. Body sherd of a greyish, thin-walled vessel tempered with crushed sherds and sand *(fig. 18. 8)*.
9. Body sherd of a poorly fired storage jar with yellow exterior and blackish interior, tempered with chaff, decorated with a rib *(fig. 18. 9)*.
10. Body sherd of a poorly fired, reddish-black vessel tempered with chaff, sand and crushed sherds, decorated with an incised line *(fig. 18. 10)*.
11. Rim fragment of a red, thin-walled vessel with indrawn rim, tempered with crushed sherds and sand *(fig. 18. 11)*.
12. Fragment of a red radiolarite core *(fig. 18. 12)*.
13. Large grinding stone made from metamorphic rock *(fig. 18. 13)*.

Baglad



[49] ZGM Inv. no. 2000.33.1–31.

55. Baglad-Völgyi patak (Prehistoric, Roman Ages, Middle Ages)[50]
A great many pottery sherds lay over a roughly 350 m by 50–100 m large area in the ploughed field on the hill overlooking the eastern bank of the Völgyi Stream, on the northern edge of the village. The southern end of the site extends under the houses and its exact boundary could not be determined. Slag and pieces of molten metal lay over an area with a diameter of about 10 m in the middle of the site (Frankovics – Kvassay – Siraki – Tóth 1997).

56. Baglad-Kis mező I (Middle Ages)[51]
Pottery sherds lay scattered over a roughly 400 m by 100 m large area in an unploughed field on the ridge of the hill overlooking the eastern bank of the Völgyi Stream (Frankovics – Kvassay – Siraki – Tóth 1997).

1. Rim fragment of a terra sigillata, worn surface *(fig. 5. 2)*.

57. Baglad-Kis mező II (Roman Age)[52]
The site extends over an area with a diameter of roughly 100 m on the ridge of the hill overlooking the Völgyi Stream on the north-western outskirts of the village. We noted a medium dense scatter of sherds and a red, ashy patch with a diameter of about 2 m, perhaps the remains of a ploughed-up house (Frankovics – Kvassay – Siraki – Tóth 1997).

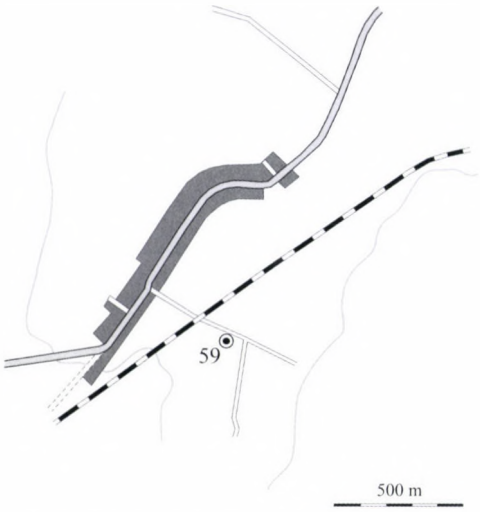
Resznek



58. Resznek-Földvár (Middle Ages)
A 1-1.2 m high elevation, the remains of the ramparts of a late medieval earthen fort were identified on the waterlogged meadow between the Paragos Stream and the village, west of the road traversing Resznek in a north–south direction (Bánffy – Bondár – Lippert – Szőke – Vándor 1995; cf. also the excavation report in this volume).

[50] ZGM Inv. no. 2000.18.1–15.
[51] ZGM Inv. no. 2000.19.1–4.
[52] ZGM Inv. no. 2000.20.1.

Kissziget



59. Kissziget-Temetődomb (Bronze Age, Árpádian Age, Middle Ages)
The village cemetery lies south of the village, on a hill rising above a waterlogged area. Early Bronze Age finds representing the Somogyvár–Vinkovci culture were found in the earth of the burials and on the northern part of the hill. A few Early and Middle Bronze Age sherds mixed with Árpádian Age and late medieval pottery fragments lay scattered on the northern and western slope of the hill (Bánffy – Bondár – Lippert – Szőke – Vándor 1995; Bánffy – Bondár – Redő – Vándor 1996).

1. Rim fragment of a greyish vessel with outturned, thickened rim, tempered with pebbles and sand *(fig. 19. 1)*.
2. Rim fragment of a reddish-grey vessel with indrawn, thickened rim, tempered with sand *(fig. 19. 2)*.
3. Fragment of a reddish strap handle tempered with pebbles and sand *(fig. 19. 3)*.
4. Body sherd of a large, coarse storage jar with red exterior and black interior *(fig. 19. 4)*.
5. Scraper of red radiolarite *(fig. 19. 5)*.
6. Base fragment of a small, light red vessel tempered with pebbles *(fig. 19. 6)*.
7. Rim fragment of a light grey bowl with outturned rim, tempered with sand *(fig. 19. 7)*.
8. Base fragment of a larger storage jar with light yellowish exterior and grey interior, tempered with pebbles and sand *(fig. 19. 8)*.
9. Body sherd of a reddish-brown, thin-walled vessel tempered with sand, decorated with irregularly incised, intersecting lines *(fig. 19. 9)*.
10. Rim fragment of a reddish-black, grey mottled bowl with inward thickening rim tempered with pebbles and sand *(fig. 19. 10)*.
11. Fragment of a vertically set strap handle from a yellow and grey mottled, large vessel *(fig. 19. 11)*.
12. Base fragment of a small, thin-walled vessel with dark grey exterior and red interior, tempered with pebbles and sand *(fig. 19. 12)*.
13. Rim fragment of a blackish-grey vessel tempered with pebbles and sand *(fig. 19. 13)*.
14. Small, yellowish-brown lug handle, tempered with sand *(fig. 19. 14)*.
15. Rim fragment of a light red vessel with straight, slightly thickened rim *(fig. 19. 15)*.
16. Shoulder fragment of a yellowish-red, coarse vessel with outturned rim, tempered with pebbles, with a horizontally set handle on the shoulder *(fig. 19. 16)*.
17. Base fragment of a light red, wheel-turned vessel *(fig. 19. 17)*.
18. Rim fragment of a light brown, thin-walled vessel made from finely levigated clay tempered with sand. Diam. of mouth: 8 cm *(fig. 19. 18)*.
19. Rim fragment of a large, greyish-brown, thick-walled bowl tempered with sand *(fig. 19. 19)*.

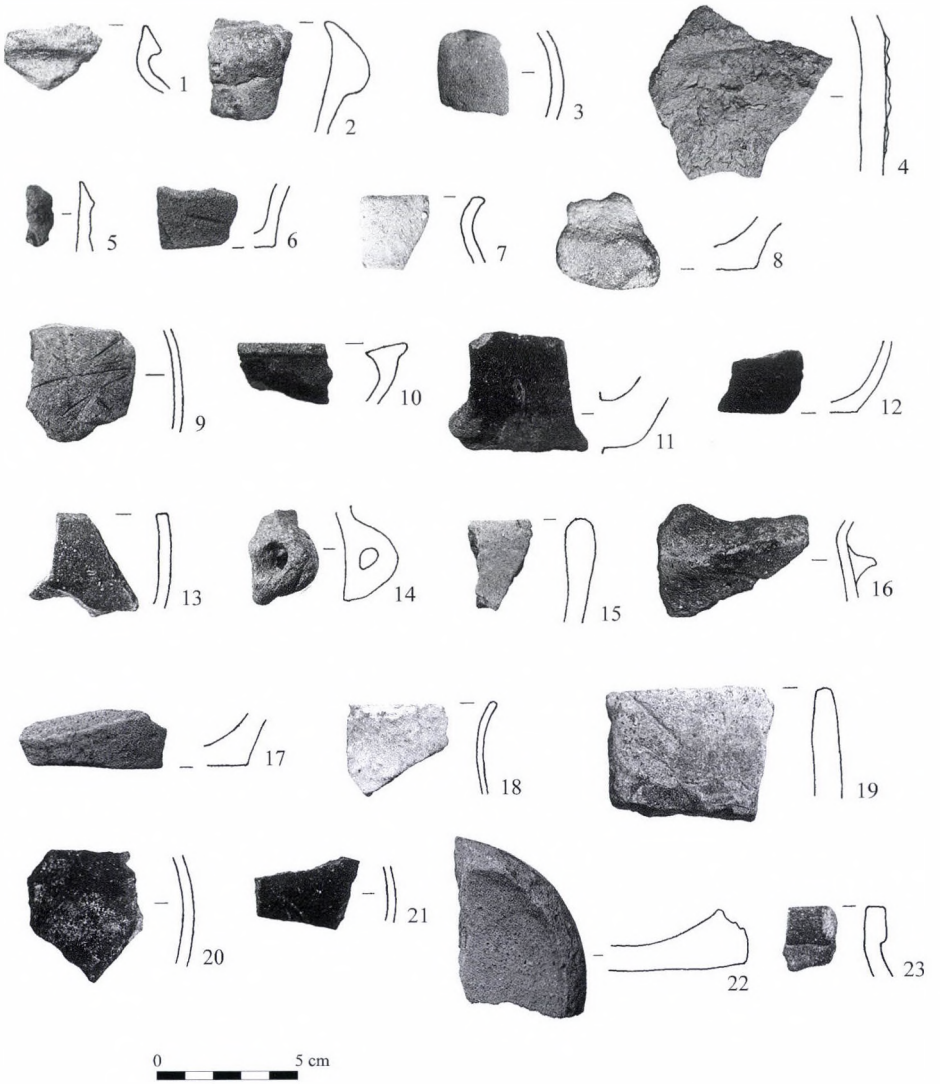


fig. 19. Kissziget-Temetődomb. Finds from the field survey

20. Body sherd of a blackish-grey vessel made from finely levigated clay tempered with sand, with marks of smoothing in its interior *(fig. 19. 20)*.
21. Body sherd of a blackish-grey vessel made from finely levigated clay tempered with sand *(fig. 19. 21)*.
22. Base fragment of a light red, thick-walled vessel tempered with sand; the breakage surface is worn. Diam. of base: 12 cm *(fig. 19. 22)*.
23. Rim fragment of a blackish-brown vessel tempered with pebbles *(fig. 19. 23)*.
24. Rim fragment of a light red, wheel-turned vessel with outward thickening rim *(fig. 12. 1)*.
25. Rim fragment of a light yellow bowl with outward thickening rim, decorated with stripes *(fig. 12. 2)*.
26. Rim fragment of a light yellow vessel with outward thickening rim *(fig. 12. 3)*.
27. Shoulder fragment of a yellowish-grey vessel with outturned rim, tempered with mica *(fig. 12. 4)*.
28. Shoulder fragment of a yellowish-grey, larger vessel with wavy surface owing to turning *(fig. 12. 5)*.

Eszter Bánffy

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THE KERKA VALLEY IN THE NEOLITHIC AND THE COPPER AGE

The main goal of the micro-region research in the Kerka Valley was to gain a detailed picture and a better understanding of the settlement history of this area. In spite of the many sites identified during the spring and autumn field surveys, this picture remained rather sketchy. The few sounding excavations and two major excavations yielded important information in the settlement patterns of different periods. Still, we could hardly neglect – and neither would it have made any sense to do so – the findings of the field surveys conducted as part of the micro-region projects in neighbouring areas of western Transdanubia. All of the archaeologists participating in the Kerka Valley Micro-Region Project also took part in the Little Balaton and the Hahót Valley Micro-Region Project. The findings of these micro-region research projects and the comparison of settlement dynamics in different regions offer valuable insights for the reconstruction of settlement patterns. Wider comparisons can prove useful for all prehistoric periods.

In the comparison with the settlement patterns of a broader region we could rely not only on the findings of our own, earlier investigations, but also on József Korek and Róbert Müller's studies on the prehistoric sites of County Zala and, in particular, of the Göcsej area, as well as the field surveys and excavations conducted by our colleagues Katalin H. Simon and László András Horváth, both working in the Zalaegerszeg museum.[1] Their systematic work has greatly enriched our knowledge of the Neolithic and the Copper Age in western Transdanubia. Similar works are also available for other prehistoric and historic periods: these will be quoted in the chapters on the Bronze Age, Iron Age, Roman Age and medieval settlement patterns.

Finally, another study must be mentioned that allows comparisons with areas to the west and south-west of the Kerka Valley. Irena Šavel's gazetteer of the sites in the Prekmurje area (the area beyond the Mura) and an Austrian research project led by Andreas Lippert, focusing on the analysis of pollen remains from the Kerka Valley, Styria and in the Prekmurje area both complement the field surveys in the Kerka Valley.[2]

Finally, mention must be made of János Makkay's studies on settlement patterns, based on his field surveys in the Szarvas district (County Békés),[3] which I studied extensively before evaluating the survey data and the preparation of the section on settlement history. His reconstruction of settlement patterns offered an excellent example of how valid and reliable conclusions on the history and settlement patterns of a region could be based on the few finds recovered in the course of field surveys. Makkay has already called attention to the fact that these field surveys are usually conducted in the 24th hour[4] since agricultural work, soil meliorisation are rapidly and irrevocably destroying many sites or making them undetectable during surface surveys.[5] His distressing conclusions enhance the importance of the field survey in the Kerka Valley and also add to our responsibility since it is possible that a similar survey cannot be repeated or conducted in the future.

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[1] *J. Korek:* Adatok Zala megye őskorához (Angaben zur Urgeschichte des Komitates Zala), in: I. Szentmihályi (ed.): A Göcsej Múzeum Jubileumi Emlékkönyve 1950–1960. Zalaegerszeg 1960, 67–82; *R. Müller:* Régészeti terepbejárások a göcseji „szegek" vidékén és településtörténeti tanulságaik (Archäologische Bodenforschungen im Göcsejer "Szegek"-Gegend und ihre siedlungsgeschichtliche Lehren). A Göcseji Múzeum Kiadványai 30. Zalaegerszeg 1971; *H. Simon 1990; Horváth – H. Simon 2003.*

[2] *Šavel 1991; I. Draxler – A. Lippert et al.:* Pollenanalytische Daten und eine archäologische Bestandaufnahme zur frühen Siedlungsgeschichte im Gebiet zwischen Raab und Mur (Österreich, Slowenien, Ungarn). Abhandlungen der geologischen Bundesanstalt 56: 1 (1999) 337–396.

[3] *MRT 8.*

[4] The situation has deteriorated since his initial warning in 1980; the situation is less grave in Transdanubia than in the Great Hungarian Plain owing to shallow ploughing.

[5] *MRT 8* 20–21.

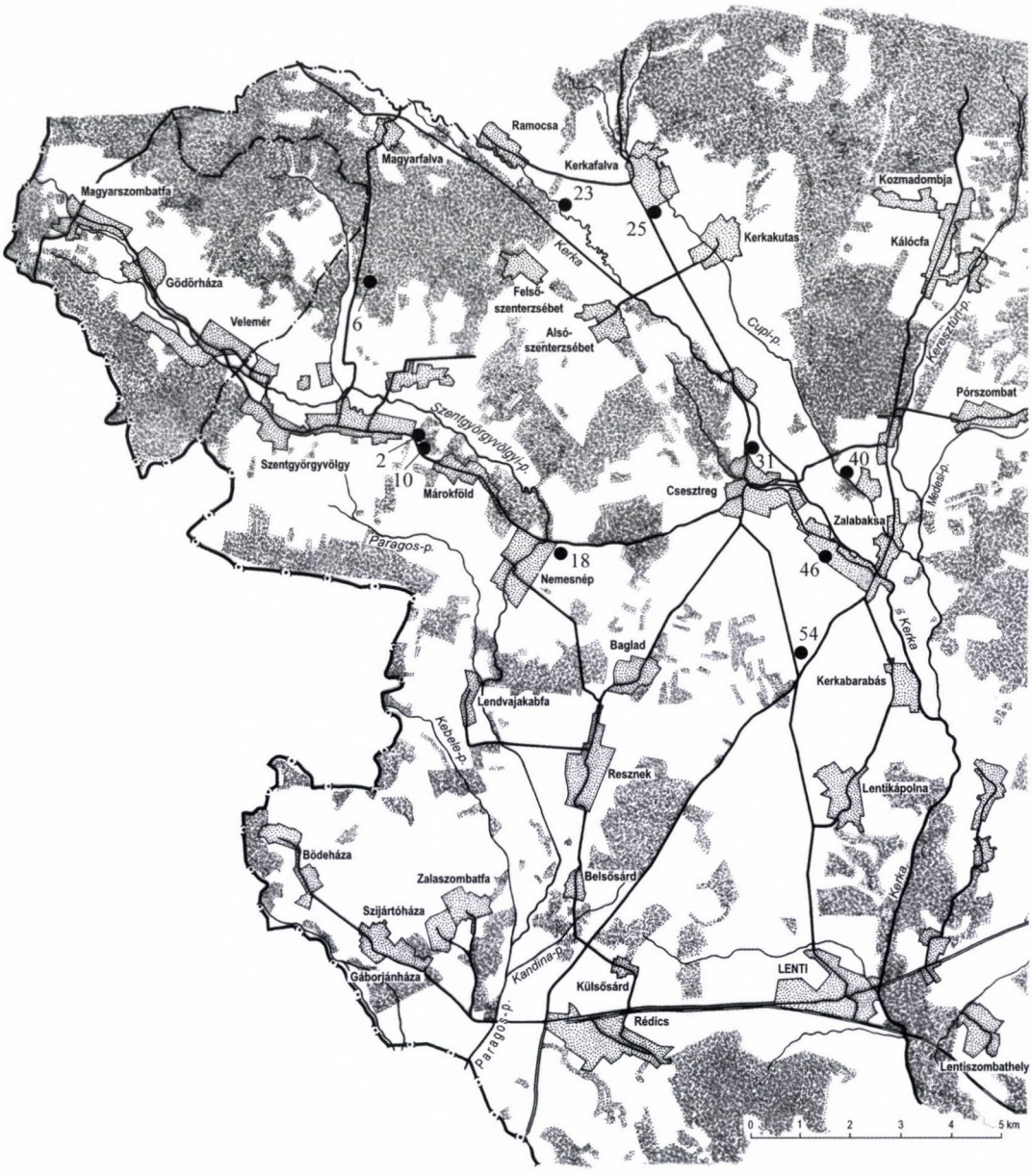

fig. 1. Neolithic sites in the Kerka Valley

The Neolithic *(fig. 1)*

Mesolithic prelude?

Similarly to other areas of the Carpathian Basin, there is no direct evidence for the pre-Neolithic occupation of the Kerka Valley and the neighbouring hilly region. We did not find any features resembling the Mesolithic settlement remains in the Jászság,[6] or stone tools indicating the presence of a Mesolithic population, such as the ones collected at Kaposhomok in southern Transdanubia.[7] It would nonetheless be rash to conclude that the Kerka Valley

[6] *R. Kertész:* Data to the Mesolithic of the Great Hungarian Plain. Tisicum 8 (1993) 81–104; *R. Kertész:* Late Mesolithic chipped stone industry from the site Jásztelek I (Hungary), in: *Lőrinczy 1994* 23–44; *R. Kertész:* The mesolithic in the Great Hungarian Plain: A survey of evidence, in: L. Tálas (ed.): At the fringes of three worlds. Hunters-gatherers in the Middle Tisza Valley. Szolnok 1996, 5–39; *R. Kertész – P. Sümegi – M. Kozák – M. Braun – E. Félegyházi:* Mesolithikum im nördlichen Teil der ungarischen Tiefebene. JAMÉ 36 (1994) 15–61.

[7] *R. Pusztai:* Mezolitikus leletek Somogyból (Mesolithische Funde im Komitat Somogy). JPMÉ 1957, 95–105.

was uninhabited during this period. Earlier arguments rejecting a Mesolithic occupation in the Great Hungarian Plain are rather instructive in view of the fact that a number of Mesolithic settlements have since been identified and there is no reason to assume that the hunter-gatherer groups of the Mesolithic would have avoided areas with a similar natural environment, even assuming that the greater part of the Carpathian Basin and Central Europe had been sparsely populated preceding the population growth of the Neolithic. The following section will review the indirect archaeological and environmental evidence for the possible Mesolithic settlement of this area.

The Early Neolithic: the earliest settlement remains

The earliest Neolithic settlements in the hills and low river terraces flanking the Kerka Valley can be linked to the Transdanubian *Linearbandkeramik* culture (LBK). We were lucky to have excavated a site – dating to the earliest phase of this culture – on which we could observe features and finds indicating the blend of population groups with different cultural traditions. This blending reflects the presence of two distinct cultures, two distinct lifeways and two distinct subsistence strategies, the implication being that in this region the typical traits of the earliest LBK evolved from this cultural blend.

Three arguments can be quoted for assuming the presence of local hunter-gatherer communities and their possible role in the emergence of the LBK. One concerns the settlement of the LBK communities, the other certain elements in the pottery on the northern fringes of the Starčevo distribution, the third the trade contacts between the two cultures.

One interesting observation made during the earlier micro-region surveys was the uneven scatter of LBK sites in the areas north of Lake Balaton. The survey of the gently rolling hills, interrupted by valleys with rather similar soils and a comparable climate, revealed that some lacked LBK sites altogether, while in others the sites lay so close to each other that the occupants of the hamlets and farmsteads probably saw each others' houses. Although we cannot rule out the possibility that the reason for this may lie in environmental and other factors, which cannot be detected using the current prospecting techniques, similar phenomena observed in the Balkans suggest that the mosaic-like occupation pattern of the southern agriculturalist groups can in part be explained by the presence of indigenous hunter-gatherer groups – the two populations simply avoided each others' settlement territories.[8]

It is rather conspicuous that the early agrarian communities in western and southern Transdanubia used one specific rock type for the manufacture of their chipped stone implements. The raw material came from the open mine at Szentgál, lying north-west of Veszprém in the Bakony Mts, an area quite far from the northern and western boundary of the Starčevo distribution. The archaeologists surveying the Balaton Uplands near Szentgál identified a number of early sites from the surface finds.[9] This would suggest that the Szentgál area was controlled by certain population groups, which at the same time also supplied the Starčevo and earliest LBK communities, whose settlements lay far from this area (often as far as 200 km) with this valuable commodity. The stone was then worked locally by these early agrarian communities. It seems likely that the traders came from the late Mesolithic population groups of Transdanubia. The huge lumps of metamorphic rocks brought to light on a LBK site at Balatonszemes on the southern shores of Lake Balaton were no doubt transported there on waterways with the mediation of local population groups.[10]

Interesting differences can be noted in the finds from late Starčevo and early LBK sites lying on the northern periphery, i.e. roughly along the shores of Lake Balaton and to its west.

[8] *A. Whittle:* Europe in the Neolithic. The creation of new worlds. Cambridge World Archaeology. Cambridge 1996, 150; *Kertész – Sümegi 1999* 16.

[9] *MRT 2; N. Kalicz:* Die älteste transdanubische (mitteleuropäische) Linienbandkeramik. Aspekte zur Ursprung, Chronologie und Beziehungen. ActaArchHung 47 (1995) 23–59.

[10] Péter Gergely Németh's excavation, as part of the archaeological investigations preceding the construction of the M7 motorway. The lithics will be analysed by Katalin T. Biró. I would here like to thank both of them for their kind permission to study the finds.

The finds from the latest (Spiraloid B) phase brought to light at Babarc in southern Transdanubia offer an interesting contrast to the late Starčevo sites excavated at Vörs-Máriaasszony-sziget and Gellénháza-Városrét, reflecting the differences in the pottery from these two areas.[11] The typical cultural traits of the late Starčevo culture have been identified among the finds from the earliest LBK settlements, at least from the two sites investigated in the Kerka Valley, namely Szentgyörgyvölgy-Pityerdomb and Andráshida-Gébárti-tó.[12]

To the above we may add an argument drawn from palaeoenvironmental studies: Pál Sümegi and Róbert Kertész's remarks on prehistoric forest clearing in the Carpathian Basin. They found traces of extensive slash-and-burn forest clearance in the area they had investigated.[13] Although this forest clearance could be linked to the activity of early agrarian communities, the currently available evidence nonetheless indicates that intensive agricultural production cannot be assumed for the earliest Neolithic and that the cleared areas were utilised as grazing fields for domesticates. We also know that the late Mesolithic population practiced forest clearing in several areas of Central Europe in order to create a better environment for thermophilous fruit trees, which would allow them to collect higher yields.[14] The spread of hazel, which could be stored over winter, is generally attributed to this practice and it has also been suggested that local horticulture, preceding arable farming, can perhaps be traced to this practice.

It therefore seems likely that future research will eventually be able to identify a borderland in Transdanubia, which can be regarded as one of the starting points, if not the most important starting point of neolithisation in Central Europe. Although many elements of this process are still unclear at the moment, we may nonetheless assume that the beginning of a production economy in western Transdanubia can be linked not only to a Balkanic population arriving from the south, but also to local hunter-gatherer groups, which made a contribution to the nature of the earliest food-producing communities with their shift to a new lifeway. The earliest food-producing groups are represented by LBK communities.

The settlement network of the Transdanubian LBK

Of the nearly two hundred sites identified during the micro-region research projects in the Little Balaton region, five could be dated to the earliest LBK culture and twenty-two to the classical or late (Zseliz) phase of the culture. In view of the density of sites, it came as somewhat of a disappointment that none of the seventy-eight new sites registered in the Hahót Basin to the west of the Little Balaton region could be dated to the period preceding the Late Neolithic. At the time we interpreted this as meaning that the Hahót Basin marked the western boundary of the culture's distribution and probably actually lay beyond this boundary since we could conceive of no other explanation for the absence of sites, seeing that the low-lying waterlogged meadows and the surrounding hill ranges represented an environment resembling the one in the Little Balaton region. It came as an unexpected surprise that twelve of the fifty-eight new sites identified in the Kerka Valley, lying some 55 km farther west than the Hahót

[11] *N. Kalicz – Zs. M. Virág – K. T. Biró:* The northern periphery of the early neolithic Starčevo culture in south-western Hungary: a case study of an excavation at Lake Balaton. DocPraehist (Poročilo...) 25 (1998) 151–187; *K. H. Simon:* Frühneolithische Kultgegenstände bei Gellénháza, Kom. Zala, in: *Lőrinczy 1994* 53–65; *K. H. Simon:* Ein neuer Fundort der Starčevo-Kultur bei Gellénháza (Kom. Zala, Ungarn) und seine südliche Beziehungen, in: F. Draşovean (ed.): The Vinča culture, its role and cultural connections. Timişoara 1996, 59–92. For the finds from Babarc, cf. *E. Bánffy:* Neue Funde der Starčevo-Kultur in Südtransdanubien, in: F. Draşovean (ed.): Festschrift für Gheorghe Lazarovici. Timişoara 2001, 41–58.

[12] *L. A. Horváth – K. H. Simon:* A neolitikum és rézkor Zalaegerszeg környékén (Neolithic and Copper Age in Zalaegerszeg and its environs), in: I. Kapiller (ed.): Zalaegerszeg évszázadai. Várostörténeti tanulmányok. Zalaegerszeg 1997, 7–48; *Horváth – H. Simon 2003.*

[13] *Kertész – Sümegi 1999* 18.

[14] Similar observations were made on the shores of Lake Zürich: *C. Erny-Rodman – E. Gross-Klee – J. N. Haas – S. Jacomet – H. Zoller:* Früher "human impact" und Ackerbau im Übergangsbereich Spätmesolithikum-Frühneolithikum im schweizerischen Mittelland. JSGU 80 (1997) 38–40; *D. Gronenborn:* A variation on a basic theme: The transition to farming in Southern Central Europe. Journal of World Prehistory 13: 2 (1999) 138.

Basin could be assigned to the LBK. The high number of sites is complemented by a series of off-site observations, namely that a handful of pottery fragments from chaff tempered vessels and chipped stone blades of red Szentgál radiolarite were collected from almost all of the ploughed fields. These stray finds cannot be interpreted as marking a settlement, but rather as an indication that these fields had been used and cultivated by LBK communities and that these finds reached the fields with manure. Another interesting observation is that these off-site phenomena were observed not on the higher-lying hills, but on ploughland with alluvial soils lying near water. It is quite possible that while settlements were established on river terraces and elevations, arable farming was practiced on lower-lying wet and less clayey land. This cultivation, however, can by no means be regarded as particularly intensive either in the Kerka Valley or in the broader area of other early LBK sites.

It is also possible that these were articles lost during the use of grazing fields and pathways. Be as it may, the off-site scatter of finds between individual LBK sites again underlines that in the Kerka Valley we witnessed an unusually intensive Early Neolithic occupation.

The sites can be assigned to two main types according to their location: one part of the sites lay on flat river terraces, but not directly beside the river itself, the other group on the slopes of the hills rising above the streams flowing into the rivers. Both site types are typical for the Early Neolithic.[15]

The most intensive LBK site was the settlement at Kerkabarabás-Barabási háromszög. The lower lying parts of the area between Zalabaksa and Kerkabarabás, called Nagyberek, outline the course of the one-time stream. The terrace above it, on which the site lay, was no more than 3-4 m high. We found about 6-7 greyish patches about 250 m from the one-time stream, all lying perpendicular to the watercourse. One typical representative of the other settlement type was the settlement on a small hill called Pityerdomb by Szentgyörgyvölgy and the site at Haraszti-erdő, lying on the opposite side of the Szentgyörgy Stream, but also farther from the water.

It is quite possible that these settlements did not mean so many smaller communities, but rather the successive settlements of the same population in search of new agricultural land and grazing fields. This possibility is suggested by the single layer settlement with two houses uncovered at Szentgyörgyvölgy-Pityerdomb and by the less intensive settlement features of the LBK identified during the field surveys. The few stray vessel fragments representing the classical (Keszthely) phase found at Pityerdomb in the upper part of the debris too support this possibility.[16] These finds suggest a few strongly eroded settlement features, i.e. small, transient classical LBK campsites or settlements. It would appear that after a few generations, the descendants of earlier communities returned to the place, where the one-time houses had stood. Unfortunately, erosion was so strong that it is impossible to ascertain whether it was mere chance that later LBK groups settled on the same hilltop, or whether the choice of location was a conscious return to a formerly abandoned settlement and whether the red burnt debris of the one-time houses was still visible, when they returned. The findings of recent excavations in Germany suggest that family traditions survived for several generations: this is reflected in the adherence to certain artefact types and lithic raw materials from distant regions, as well as in the remembrance of the location of the ancestors' settlement.[17]

The flat ridges flanking the Kerka Valley are covered with one of the most extensive woodlands of Hungary. There is no geographic, climatic or archaeological evidence to suggest

[15] *J. Kneipp:* Bandkeramik zwischen Rhein, Weser und Main. UPA 47 (1998) 14; *Lenneis 1982* 2–5; *Schier 2000* 167.

[16] Katalin H. Simon made similar observations during her excavation of early LBK sites in County Zala: a few stray later LBK sherds usually lay on top of the debris of early settlement features; these sherds apparently came from later settlement features that were destroyed. I would here like to thank Katalin H. Simon for sharing this information with me.

[17] *Chr. Frirdich:* Kulturgeschichtliche Betrachtungen zur Bandkeramik im Merzbachtal, in: J. Lüning – P. Stehli (eds): Die Bandkeramik im Merzbachtal auf der Aldenhovener Platte. Rheinische Ausgrabungen 36. Bonn 1994, 207–393; *J. Lüning:* Steinzeitliche Bauern in Deutschland. Die Landwirtschaft im Neolithikum. UPA 58. Bonn 2000, 15.

that this woodland had been smaller at the beginning of the Neolithic or that there had been intensive forest clearing at that time. This environmental reconstruction raises the question of whether the occupants could indeed have seen the LBK settlement on the opposite hill (which is clearly visible today across the ploughed land) and, also, of whether the empty area between the two houses of the Pityerdomb site had originally been a forested area, which separated the houses from each other. However, in view of the dense forestation we cannot entirely reject the possibility that smaller tracts of forest had been cleared during the mid-6th millennium or that there had been settlements in what is today woodland (cf. the forested tracts on the map of the Kerka Valley micro-region). In the latter case, we may even assume the double of the currently known twelve LBK sites, which would imply a very dense settlement network for this period.[18] However, even in the case of a settlement density resembling the one in the Kerka Valley, the settlement network of this period can best be conceptualised on the basis of German analogies, i.e. a loose chain of smaller hamlets and farmsteads occupied for no more than two or three successive generations.[19]

The later Neolithic

The finds of the later, so-called Keszthely phase of the LBK were identified during the field surveys, as well as on the Pityerdomb site.[20] This brings us to the end of the Neolithic settlement in this region since we did not come across any later Neolithic finds in the Kerka Valley. We did not find a single sherd, which could be assigned to the Zseliz culture or to the Sé type of the early Lengyel culture (or, for that matter, to the Brezovljani type, whose presence can hypothetically be assumed in view of the south-western siting of the region); white painted Lengyel sherds were also absent, as were pottery fragments of the late, unpainted Lengyel phase.

Similarly to the density of LBK sites, the absence of these late Neolithic cultures calls for some sort of explanation. A glance at the archaeological map of the region reveals that of the intensively investigated areas between the Little Balaton and the Mura region, the Kerka Valley is the single area devoid of any sites from this period.

The islands and hills rising above the marshland of the Little Balaton were settled during all phases of the Lengyel culture. The large oval enclosure dating to the latest phase of the culture has a special significance – it was not defensive in nature since the area enclosed by it was practically empty.[21] A settlement with large timber framed houses and pits, extending from the hilltop to the marshy waterside lay beside enclosure. A similar Lengyel settlement is known slightly farther to the north.[22] Several sites of the Lengyel culture were identified in the Hahót Basin and the most important site of the late Lengyel culture in western Transdanubia was also uncovered in this area.[23] Lengyel communities settled on almost all of the ridges. Irena Šavel noted a similarly intensive settlement network north of the Mura in Slovenia, where the settlement investigated at Bukovnica near Alsólendva (Lendava), spanning the classical (II)

[18] This settlement density is even higher than the one of the "nis" in Lower Austria. *Lenneis 1982* map 2; *E. Lenneis:* Zum Forschungsstand der ältesten Bandkeramik in Österreich. AKorr 19 (1989) fig. 1. Cf. also *Schier 2000* 13.

[19] *L. Lüning:* Frühe Bauern in Mitteleuropa im 6. und 5. Jahrtausend v. Chr. JRGZM 35 (1988) 27–93; *Schier 2000* 168.

[20] *N. Kalicz:* Die Keszthely-Gruppe der Transdanubischen (Mitteleuropäischen) Linienbandkeramik im Lichte der Ausgrabung in Kustánszeg (Westungarn). CommArchHung 1991, 5–32.

[21] Balatonmagyaród-Hídvégpuszta-Déli rév. *E. Bánffy:* Funde der späten Lengyel- und frühen Balaton–Lasinja-Kultur aus dem Kleinbalaton-Gebiet. Probleme des Übergangs, in: H. Todorova et al. (hrsg): Die Rolle des Schwarzen Meeres in der Urgeschichte Mittel- und Südosteuropas. Tolbuchin (Bulgaria), 20–26. May 1988. SP 11–12 (1992) 308–312; *E. Bánffy:* Kora rézkori körárok Balatonmagyaród-Hídvégpusztáról [Early chalcolithic circular ditch at Balatonmagyaród-Hídvégpuszta], in: *Évezredek 1996* 21–22.

[22] *Zs. M. Virág:* Újkőkor és korai rézkor [Neolithic and early Chalcolithic], in: *Évezredek 1996* 18.

[23] Zalaszentbalázs-Pusztatető I, Hahót-Szartóri I. és Zalaszentbalázs-Szőlőhegyi mező. *Bánffy 1996a; Bánffy 1996b; Bánffy 1996c; E. Bánffy:* Early Chalcolithic settlement at Zalaszentbalázs-Szőlőhegyi mező, in: *Hahót Basin 1995* 157–196; *M. Bondár:* Késő rézkor [Late Copper Age], in: *Évezredek 1996* 34–40.

and late (III) phase of the culture, yielded a wealth of new information.[24] Lengyel communities also settled north of the Kerka Valley and in other regions of southern Transdanubia.[25]

It remains a mystery why the Lengyel communities avoided the valley of the Kerka and its tributaries, as well as the flat ridges flanking the valleys in the northern part of the Lenti Basin. According to our present knowledge, there is nothing to explain the absence of sites. The assumption that all of the one-time Lengyel sites lie in areas, which are today covered by forests, this being the reason that we could not identify them, seems most unlikely – especially considering the fact that several settlements of the Balaton–Lasinja culture have been identified and we know that the two cultures favoured similar environments since in many cases their settlements lie close to each other.[26] For the time being we must regard the absence of Late Neolithic sites in the Kerka Valley as a baffling and enigmatic phenomenon.

The Copper Age *(fig. 2)*

The late Lengyel phase leads us the Early Copper Age since contemporaneously with the latest Lengyel phase, the economic and social transformations leading to the abandonment of the tell settlements and the emergence of the smaller mobile communities of the Tiszapolgár culture with their transient, briefly occupied settlements had already occurred in eastern Hungary.[27] One of the reasons for this transformation can be sought in climatic changes, as a result of which the dry and gradually warming climate forced the sedentary agrarian communities to change their lifeways. A similar change can also be demonstrated in Transdanubia during the Late Neolithic and the late Lengyel phase, even though the less extreme, more balanced climate led to less profound changes.[28]

It has been observed both in the Little Balaton region and the Hahót Basin that the extensive settlements could be divided into several settlement nuclei and that the earlier large villages were succeeded by several smaller, briefly occupied settlements marked by a handful of pits. This shift could be observed at the Balatonmagyaród-Hídvégpuszta site, where finds of the latest Lengyel phase were brought to light from the fill of the enclosure.[29] The settlement at Balatonmagyaród-Homoki dűlő, a site dating to the Balaton–Lasinja culture lying some 1 km farther, featured a unique find: a cult pit containing a child skeleton, which can probably be interpreted as a foundation deposit.[30] Similar assemblages have been reported by Katalin H. Simon from the activity area of the Göcsej Museum in Zalaegerszeg;[31] the proximity of the sites of these two cultures was also noted during the field surveys conducted in County Veszprém.[32]

[24] *Šavel 1991; I. Šavel:* Bukovnica – rezultati terenskih raziskav v letih 1987–88 (Bukovnica – Resultat der Ausgrabungen in den Jahren 1987–1988). Poročilo... 20 (1992) 57–86.

[25] *M. Károlyi:* Ergebnisse der Ausgrabungen bis 1980 in der befestigten Ansiedlung von Sé, Westungarn. MÖAG 33–34 (1983–84) 293–307; *N. Kalicz:* Übersicht über den Forschungsstand der Entwicklung der Lengyel-Kultur und die ältesten „Wehranlagen" in Ungarn. MÖAG 33–34 (1983–84) 281–293. Cf. also Gábor Ilon's recent excavations on sites in Szombathely that can most likely be dated to the late Lengyel period, as well as a number of sites in south-western Transdanubia that were investigated as part of the excavations preceding the construction of the M7 motorway by Judit P. Barna in 2000. Mention must also be made of the Lengyel enclosure found on the outskirts of Petrivente, excavated by László Horváth.

[26] *E. Bánffy:* Über den Ausklang der Lengyel-Kultur in Transdanubien, in: *Kovács 1995* 13; *E. Bánffy:* Kupferzeitliche Probleme in Westungarn, in: H.-J. Beier (hrsg.): Die Rössener Horizont. Wilkau – Hasslau 1994, 81.

[27] *Bánffy 1994.*

[28] *Bánffy 1996c* 160–166.

[29] László Horváth's excavation. The settlement features will be described and evaluated by the excavator, while the Lengyel finds will be described and evaluated by the present author. The finds from the excavation seasons up to 1985 have been evaluated. According to László Horváth, the finds from the 1986 season are still being inventoried and are thus inaccessible.

[30] *E. Bánffy:* Kultikus rendeltetésű leletegyüttes a Kis-Balaton középső rézkorából (A Middle Copper Age cult assemblage from the Little Balaton Region). ArchÉrt 112: 2 (1985) 187–192; *E. Bánffy:* Cultic finds from the Middle Copper Age of Hungary – connections to South East Europe, in: A. Bonanno (ed.): Archaeology and fertility cult in the Ancient Mediterranean. Papers presented at the first international conference on "Archaeology of the Ancient Mediterranean", Malta, 2–5. Sept. 1985. Amsterdam 1986, 69–77.

[31] *H. Simon 1990.*

[32] *MRT 2.*

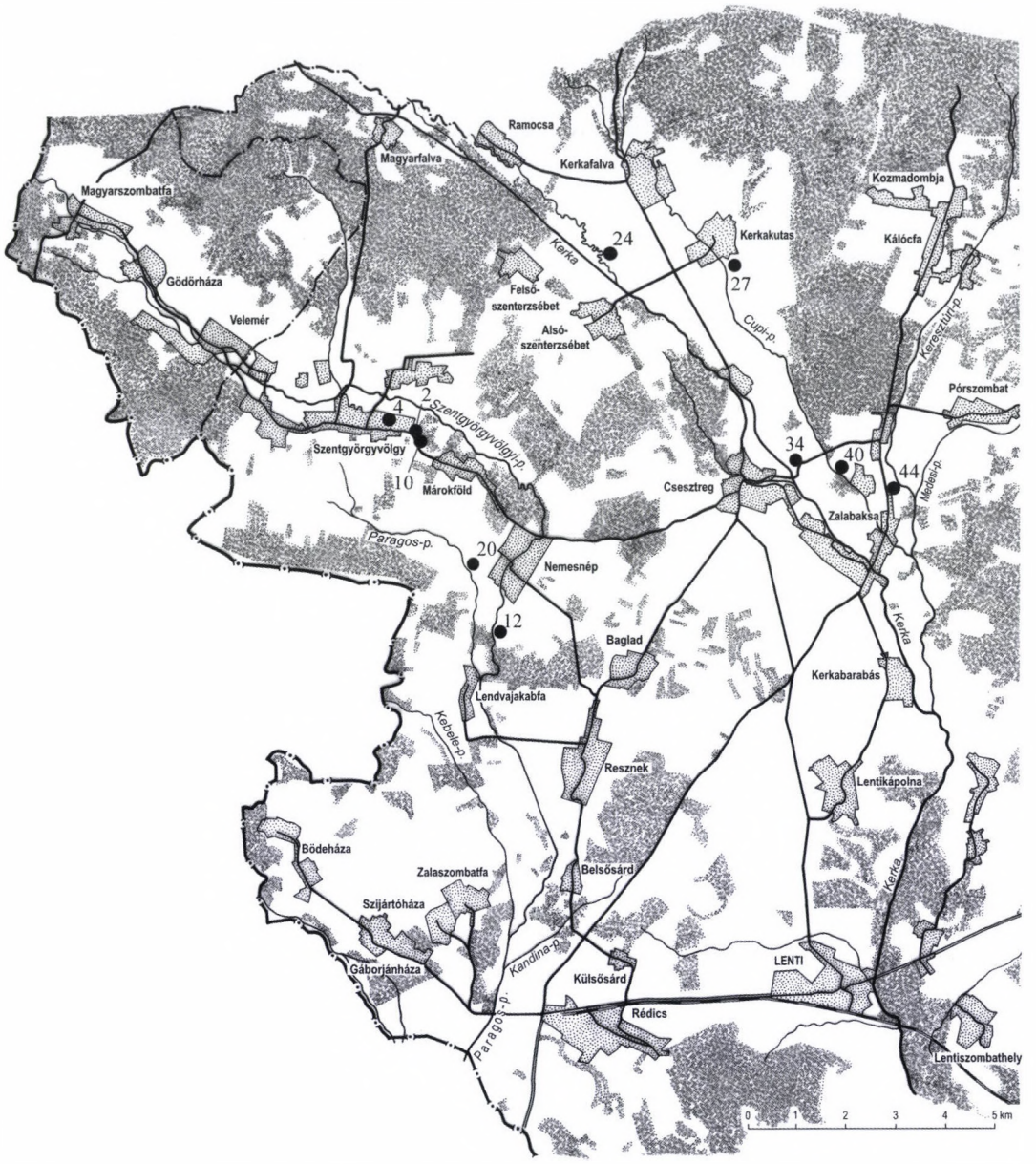

fig. 2. Copper Age sites in the Kerka Valley

Similarly, we observed several smaller and, probably, transient Balaton–Lasinja settlements lying near the extensive late Lengyel settlement at Zalaszentbalázs-Szőlőhegyi mező site. Two of these settlements were excavated.[33]

The number of Middle Copper Age sites remains well below the number of sites identified in the above-mentioned two micro-regions. In some cases, these sites lay very close to each other as, for example, at Szentgyörgyvölgy-Pityerdomb, where we found two small, rather eroded settlement features on the western side of the hill and a similar small settlement some 250 m away, on the Katolikus templomdomb. These sites represent the remains of small transient settlements with a few pits; the only exception is Zalabaksa-Zsidótemető, where Mária Bondár found a deep post-hole during her sounding excavation.[34] However, the presence of a single post-hole does not necessarily mean the presence of a building, even though we know that on the contemporary settlement of Zalavár-Basasziget in the Little Balaton area,[35] the post-holes lay rather far from each other. Since a fairly large area of this site was excavated,

[33] *Bánffy 1996a; Bánffy 1996b.*

[34] See the Mária Bondár's study in this volume.

[35] *Zs. M. Virág:* Javarézkori leletek Zalavár-Basaszigetről (Middle Copper Age finds from Zalavár-Basasziget). ArchÉrt 113 (1986) 3–14.

it was possible to reconstruct a large building from the scattered post-holes and thus the possibility that the post-hole found at Zalavár belonged to a building cannot be entirely ruled out. The clay animal statuette found at Szentgyörgyvölgy-Katolikus templomdomb, probably a small campsite, is a noteworthy find from this period.

The historical and cultural connections between the Lengyel and the Balaton–Lasinja cultures have been discussed in detail elsewhere,[36] and there is no need to re-iterate the arguments presented there, especially in view of the fact that no Lengyel sites and no significant Balaton–Lasinja sites were identified in the Kerka Valley. At the same time, two important phenomena must be noted here: both were observed in the course of the field surveys, and the clarification of these problems calls for further excavations and future research.

One of these is a series of distinctive traits characterising the Balaton–Lasinja culture of western Transdanubia. The typical, slightly coarsened wares of the culture tempered with fine sand and fired to a brown colour include certain household pottery types, which have only been found in the region between the Mura Valley and the area west of Zalaegerszeg. Although the vessel forms represent typical Balaton–Lasinja wares, the fabric is conspicuously coarse and the tempering agent was mica mixed with coarse pebbles. This pottery was fired to a light greyish cream colour. This pottery was not found on the sites in the Hahót Basin; in contrast, Katalin H. Simon and László András Horváth collected pottery of this type during their field surveys in the western part of County Zala.[37] I identified comparable Balaton–Lasinja wares among the finds from various prehistoric cultures found at Zalalövő, a site controlling the ford over the River Zala.[38] Mária Károlyi reported similar pottery from the Middle Copper Age sites in the Szombathely area[39] and a personal study of the pottery from the recently excavated Balaton–Lasinja site at Körmend-Várkert revealed that the finds from this site could also be assigned to this ware.[40]

It is not at all certain that the surface of these vessels was so coarse since faint traces of a slip can sometimes be made out on some sherds. Neither should we hasten to set up a local group within the Balaton–Lasinja culture based on a single observation. At the same time, it would be a mistake not to take note of this regional variation in pottery since together with other distinctive traits, it might assume importance at some later date. Elisabeth Ruttkay has kindly called my attention to the fact that local Balaton–Lasinja groups were strongly influenced by the local Lengyel population and traditions of a region.[41] However, local groups of the Lengyel culture have not been identified yet in Transdanubia. To the best of my knowledge, the single attempt in this respect was the suggestion that at the close of the Early Copper Age, the transition from the late Lengyel to the Balaton–Lasinja culture was influenced by the extent of the cultural impacts from the Central Balkans: this impact was stronger in south-western Transdanubia, weaker in the Budapest area and in the Little Hungarian Plain and barely perceptible in the Nitra (Nyitra) Basin.[42] Prehistorians term the archaeological heritage of surviving Lengyel communities of the Middle Copper Age Balaton–Lasinja, Ludanice or Lengyel V culture according to the extent of these cultural impacts. The separation of the so-called Kanzianiberg culture, earlier called the Alpine facies of the Lengyel culture, was based

[36] *Bánffy 1996c.*

[37] Kind personal communication. Cf. also *Horváth – H. Simon 2003.*

[38] Ferenc Redő's excavation. The finds will be evaluated and published by him. I determined the date and cultural attribution of the prehistoric finds at his request.

[39] *M. Károlyi:* A korai rézkor emlékei Vas megyében (The Early Copper Age in County Vas). Szombathely 1992.

[40] Gábor Ilon's excavation. The finds were evaluated by Krisztián Oross in his thesis. Cf. *K. Oross:* Funde der Balaton–Lasinja-Kultur bei Sé-Doberdó und Körmend-Várkert, in: *Prehistoric studies 2002* 283–324.

[41] *E. Ruttkay:* Das Neolithikum in Niederösterreich. FUFG 12. Wien 1983, and her kind personal communication.

[42] *Bánffy 1994; Bánffy 1996c; Zs. M. Virág:* Die Hochkupferzeit in der Umgebung von Budapest und in NO-Transdanubien (Das Ludanice-Problem). ActaArchHung 47 (1995) 61–94; *G. T. Németh:* Neolithikus település Lébény határában (Vorbericht über spätneolithische und frühkupferzeitliche Siedlungsspuren bei Lébény). JAMÉ 36 (1994) 241–269; *I. M. Egry:* Javarézkori település Ménfőcsanak határában (Siedlungsspuren der Kupferzeit auf dem Terrain des Einkaufzentrums Ménfőcsanak). Arrabona 37 (1999) 11–64; *J. Lichardus – J. Vladár:* Zu Problemen der Ludanice-Gruppe in der Slowakei. SlA 12 (1964) 69–157.

on similar considerations.[43] Neither can we exclude the possibility that various Lengyel groups retreated to the Northern Mountain Range,[44] where they preserved their cultural identity, as a result of which neither the *Furchenstich* (Stroke Ornamented Pottery) culture of the Middle Copper Age, nor the Hunyadihalom groups succeeding the Bodrogkeresztúr culture in the east gained a foothold in the Mátra and Bükk Mts, this being the reason that Lengyel–Ludanice traits were preserved in the local pottery until the proto-Boleráz horizon at the close of the Middle Copper Age.[45] It is possible that finer distinctions can be drawn in the future as a result of new field surveys and excavations. The observation of smaller regional variations can be of help for future research.

The other phenomenon is even more baffling and no conclusive explanation can be offered as yet. Two sites, whose cultural attribution within the Middle Copper Age is uncertain, were found during the field surveys in the Kerka Valley. The pottery sherds from Csesztreg-Sarjaskertek, déli vége site included some decorated with the *Furchenstich* technique, this being the reason that the site was assigned to the *Furchenstich* horizon succeeding the Balaton–Lasinja culture. In contrast, the Zalabaksa-Zsidótemető site could be unambiguously dated to the Balaton–Lasinja culture on the basis of the finds from the field survey; during her later excavation of the site, Mária Bondár found several *Furchenstich* fragments. There is nothing to indicate that these sites should be assigned to two different periods. The same phenomenon was also encountered on other sites, such as Bak and Becsvölgye-Töllesalja.[46]

The chronology and typology of the Middle Copper Age in Transdanubia was worked out by Nándor Kalicz. He published the first finds, which could be assigned to this period in 1969;[47] he subsequently refined and modified his views based on his own and others' excavations and research results.[48] The onset of this period is marked by the Balaton–Lasinja culture, incorporating a number of Balkanic elements; this culture was succeeded by the *Furchenstich* culture, arriving from Central Europe, and the end of the period is represented by the proto-Boleráz horizon, which also foreshadows the major cultural shifts of the Late Copper Age. The origins of the *Furchenstich* pottery from Transdanubia, earlier believed to lie somewhere in the Salzburg and Retz region, has been recently challenged on the basis of a number of new find assemblages. Elisabeth Ruttkay has argued that the Retz type finds from Lower Austria can be clearly distinguished from a "mixed group" *(gemischte Gruppe)* to the east and that there is no direct link between the two.[49] A study on the distribution of pottery decorated in the *Furchenstich* style in eastern Hungary suggested that the pottery ornamented using this technique cannot be regarded as genuine import wares from the west, but rather as an ornamental technique, which cannot be associated with a specific culture.[50] A closer

[43] *A. Pedrotti:* L'insediamento di Kanzianiberg: rapporti culturali fra Carinzia ed Italia Settentrionale durante il neolitico, in: P. Biagi (ed.): The Neolithisation of the Alpine Region. Monografie di "Natura Bresciane". Brescia 1990, 213–226.

[44] *N. Kalicz:* Wenden des Spätneolithikums im Oberen Theißgebiet. JAMÉ 36 (1994) 263–290.

[45] *E. Bánffy – K. Biró – A. Vaday:* Újkőkori és rézkori telepnyomok Kompolt 15. sz. lelőhelyen (Neolithic and chalcolithic finds from Kompolt, site Nr. 15). Agria 23 (1997) 19–57; *E. Bánffy:* Kompolt 15 – neolit és rézkori leletek [Kompolt, site Nr. 15, neolithic and chalcolithic finds], in: A. Vaday – E. Bánffy – K. T. Biró et al.: Kompolt 15: neolitikus, rézkori, szarmata és avar település az M3 autópálya nyomvonalán. VAH. In press.

[46] László András Horváth's excavation. *L. A. Horváth:* Beiträge zur Chronologie der mittleren Kupferzeit in der Grossen Ungarischen Tiefebene. ActaArchHung 46 (1994) 73–105.

[47] *N. Kalicz:* A rézkori Balatoni-csoport Veszprém megyében [Die kupferzeitliche Balaton-Gruppe im Komitat Veszprém]. VMMK 8 (1969) 83–90.

[48] *Kalicz 1973; N. Kalicz:* The Balaton–Lasinja Culture Groups in Western Hungary, Austria and northwestern Yugoslavia. Concerning their Distribution and origin. JIES 8 (1980) 245–271; N. Kalicz: Die Balaton–Lasinja-Kultur in der Kupferzeit Südost- und Mitteleuropas, in: *Kovács 1995* 37–49.

[49] *E. Ruttkay:* Zur jungneolithischen Furchenstichkeramik im östlichen Mitteleuropa. Die Fazies Gajary, in: C. Becker et al. (eds): Chronos. Beiträge zur prähistorischen Archäologie zwischen Nord- und Südosteuropa. Festschrift für Bernhard Hänsel. Espelkamp 1997, 165–180.

[50] *L. A. Horváth:* Die relativchronologische Position des Protoboleráz-Horizontes aufgrund seiner südlichen Komponenten, in: P. Roman – S. Diamandi (hrsg.): Černavodă III–Boleráz. Ein vorgeschichtliches Phänoman zwischen dem Oberrhein und unteren Donau. Symposium Mangalia/Neptun (18.–24. Oktober 1999). Bucureşti 2001 [2002] 459–515.

look at Kalicz's "Balaton II" types (later assigned to the *Furchenstich* horizon)[51] reveals a number of Balaton–Lasinja traits. Without drawing too far-reaching conclusions from the joint occurrence Balaton–Lasinja and *Furchenstich* sherds, it nonetheless seems to me that this problem definitely deserves further research and that Nándor Kalicz's earlier definition of Balaton II may lie closer to the truth: namely, that it was the later phase of the Balaton–Lasinja culture in which a popular ornamental technique was widely employed.

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[51] E.g. *Kalicz 1973.*

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THE KERKA VALLEY IN THE BRONZE AGE

It has already been mentioned repeatedly that County Zala was a *terra incognita* in terms of archaeological research for many decades and that the distribution maps of various periods showed this area as an "unknown country". This was especially true for the Copper and the Bronze Ages *(fig. 1)*.

Systematic research in County Zala started with the topographical surveys in the county's north-eastern part in the 1960s.[1] The archaeological investigation of the other parts of the county began with the field surveys of Jolán Horváth, László Horváth, Róbert Müller, László Vándor and Nándor Kalicz,[2] and a few small-scale excavations.[3] The rescue excavations preceding the reconstruction of the Little Balaton in the 1980s brought an upswing in the archaeological research of this region. The excavations conducted over extensive surfaces yielded important new information for practically all periods in the region's history.[4] The archaeological mapping of the region continued with the micro-region investigations in the Hahót Basin, as a result of which new sites were identified from practically all periods. Some of these sites were excavated. The findings of this research project were published in two volumes.[5] Parallel to the investigations in the Hahót Basin, László András Horváth and Katalin H. Simon conducted field surveys in the northern part of County Zala.[6] These were followed by the systematic field surveys and excavations in the Kerka Valley. As a result of these investigations, County Zala can no longer be regarded as "uncharted territory".

The most important finding of these investigations in terms of the Bronze Age is that the local population of the Late Copper Age could finally be determined: this population can be identified with the Baden communities, whose settlements have been identified at a few sites.[7] Their settlements span the entire Late Copper Age, from the early phase represented by the

[1] This area was part of County Veszprém at the time and was incorporated into County Zala at a later date. For the results of the survey, cf. *MRT 1.*

[2] *J. Horváth:* Az Alsó-Zalavölgy és környéke őskori településtörténete [Prehistoric settlement patterns in the Lower Zala Valley and its area]. University dissertation, Eötvös University, Budapest 1970 (Manuscript); *R. Müller:* Régészeti terepbejárások a göcseji „szegek" vidékén és településtörténeti tanulságaik (Archäologische Bodenforschungen im Göcsejer „Szegek"-Gegend und ihre siedlungsgeschichtliche Lehren). A Göcseji Múzeum Kiadványai 30. Zalaegerszeg 1971; *L. Vándor:* A Mura-völgy magyarországi szakaszának története [History of the Hungarian section of the Mura Valley]. University dissertation, Eötvös University, Budapest 1972 (Manuscript); *Horváth 1994.*

[3] *N. Kalicz:* Letenye-Szentkeresztdomb. Ausgrabung und Bibliographie. MittArchInst 1 (1970) 108–110; *N. Kalicz:* Nagykanizsa-Sánc. Ausgrabung und Bibliographie. MittArchInst 6 (1976) 149–150; *N. Kalicz:* Becsehely. Ausgrabung und Bibliographie. MittArchInst 7 (1977) 119–120; *N. Kalicz:* Becsehely. Ausgrabung und Bibliographie. MittArchInst 8–9 (1978–1979) 201–203; *Horváth 1984.*

[4] *Müller 1989; Évezredek 1996.*

[5] *Hahót Basin 1995* and *1996.*

[6] *Horváth – H. Simon 1997.*

[7] *Horváth 1984; M. Bondár:* Újabb adatok a badeni kultúra temetkezéseihez (Neue Beiträge zu Bestattungen der Badener Kultur). ZalaiMúz 1 (1987) 47–58; *K. H. Simon:* Neolit és rézkori települések Tekenye határában (Neolithische und kupferzeitliche Siedlungen in der Gemarkung von Tekenye). ZalaiMúz 1 (1987) 7–46; *M. Bondár:* Früh- und Mittelbronzezeit, in: *Müller 1989* 30–36; *L. A. Horváth:* Eine kupferzeitliche Kultstätte in der Gemarkung von Bak. ActaArchHung 42 (1990) 21–44; *K. H. Simon:* Der Stand und die Aufgaben der Neolithikum- und Kupferzeitforschung im Komitat Zala. ZalaiMúz 2 (1990) 47–66; *L. A. Horváth:* Rézkori település Nagykapornakon (Die kupferzeitliche Siedlung bei Nagykapornak). ZalaiMúz 3 (1991) 113–135; *M. Bondár:* A badeni kultúra telepe Balatonmagyaródon (Die Siedlung der Badener Kultur von Balatonmagyaród). ZalaiMúz 3 (1991) 137–154; *Horváth 1994; M. Bondár:* Késő rézkor [Late copper Age], in: *Évezredek 1996* 34–41, figs 6–11.; *E. Bánffy:* Neolithic and Copper Age settlements at Hahót and Zalaszentbalázs-Pusztatető, Hahót-Szartóri I–II, in: *Hahót Basin 1995* 35–50; *E. Bánffy:* Újkőkori és rézkori települések Zalaszentbalázs határában (Zalaszentbalázs-Pusztatető, Hahót-Szartóri I–II). (Neolithische und kupferzeitliche Siedlungen in der Gemerkung von Zalaszentbalázs. Zalaszentbalázs-Pusztatető, Hahót-Szartóri I–II). ZalaiMúz 6 (1996) 97–147; *Horváth – H. Simon 1997.*

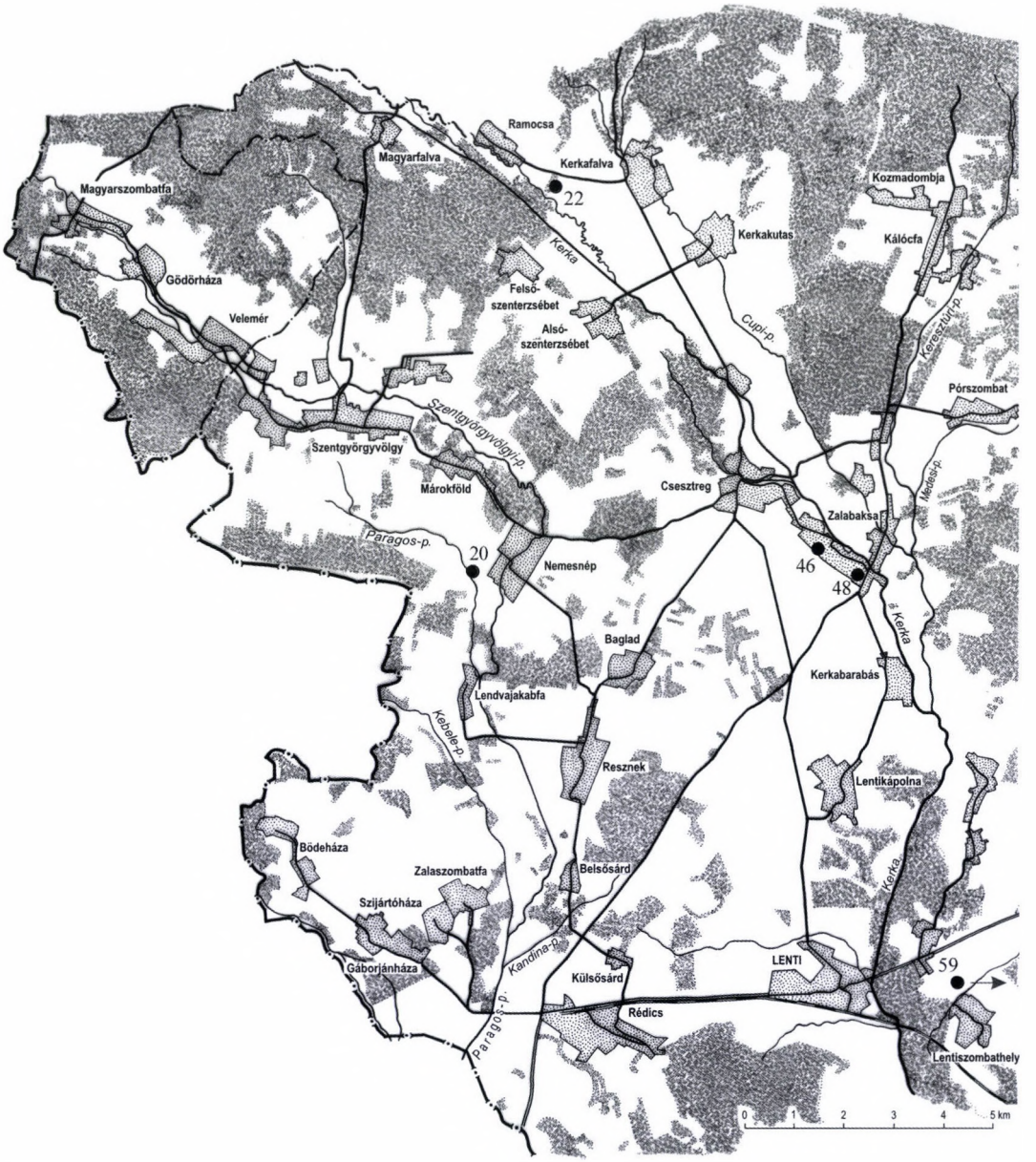

fig. 1. Bronze Age sites in the Kerka Valley

Boleráz group to the late Baden period. The sites can be found in the Keszthely area, in the Little Balaton region, in the Nagykanizsa area and in the Hahót Basin. No Baden sites have been identified in the Kerka Valley.[8]

No settlements of the Kostolac culture from the late Baden period have yet been found in County Zala. However, the presence of this population in County Zala is indicated by the single Kostolac site known to date, an urn burial from Keszthely.[9]

The determination of the earliest Bronze Age population of south-western Transdanubia was also problematic. No sites of the Makó group of the Zók culture, which was assumed to represent the initial phase of the Early Bronze Age, had been identified in this area, and neither were there any Vučedol finds. We now know that the earliest Bronze Age communities in the Nagykanizsa area and in the Hahót Basin can be identified with the Somogyvár–Vinkovci culture.[10]

[8] See Eszter Bánffy's study in this volume, pp. 13–19.

[9] *MRT 1* Site 21/30.

[10] *M. Bondár:* Eine frühbronzezeitliche Siedlung in Börzönce, Komitat Zala (Vorbericht). ZalaiMúz 5 (1994) 9–19; *Horváth 1994; Bondár 1996; Bondár 1998; Bondár 1999; Bondár 1999a.*

A total of twenty-five Somogyvár–Vinkovci sites have been identified in County Zala.[11] Most of these sites yielded no more than a handful of pottery sherds; a couple of richer settlements are known from Nagykanizsa-Sánc, Nagykanizsa-Inkey-kápolna, Letenye and Börzönce-Temetői-dűlő. A few fortified settlements are also known (Nagygörbő,[12] Oltárc-Márkihely[13] and Galambok-Öreghegy,[14] as well as Pécs-Nagyárpád, with a natural protection on three sides, in County Baranya[15]). The sites of the Somogyvár–Vinkovci culture can be equally found in the Little Balaton region, the Keszthely and Nagykanizsa area, and in the Hahót Basin. The westernmost site lies at Lenti.[16] We did not find any Early Bronze Age settlements in the Kerka Valley proper, except for an extensive settlement site with the culture's typical pottery at Kisszíget-Temetődomb on the fringes of the micro-region *(fig. 1)*.[17] The most recently identified site from this period has been reported from Muraszemenye at the Kerka–Mura confluence: this Somogyvár–Vinkovci site was investigated by Judit Kvassay in 2000.[18] Together with these two new sites, the number of Early Bronze Age sites now totals twenty-seven.

The low number of sites can in part be explained with the structure of these sites. The few excavated settlements from this period (Pécs-Nagyárpád, Szava, Zók-Várhegy, Nagykanizsa-Inkey-kápolna, Vinkovci, Börzönce) all featured pits, which usually lay 15-20 m from each other. Only in instances of archaeological luck did these pits, spaced far apart form each other, fall into smaller trenches. The situation is far worse in the case of field surveys. During the excavations it was noted that some of these pits had been empty and they could only be assigned to the Somogyvár–Vinkovci culture on the basis of their fill. It seems likely that these had been storage or clay extraction pits. The other pits, yielding a rich assortment of finds, were refuse pits filled with household debris. At Börzönce, for example, some sixty vessels were found (either in an intact condition or reconstructable from their fragments), together with an intact idol, an idol head, a wagon model, wagon wheels, a clay mould, miniature animal figurines, spindle whorls, small stone axes and silex. The pottery finds from Börzönce have enriched out knowledge of the range of vessel types used by the Somogyvár–Vinkovci communities and have enabled the elaboration of a detailed typology.[19] Each vessel type had a fairly wide range of variants. It became clear that instead of the previously known 4–5 typical vessel types, the variants make up a complete set. The validity and usefulness of the typology proposed on the basis of the Börzönce finds was tested during the evaluation of the finds from Nagykanizsa-Inkey-kápolna.[20] Most of the vessel types identified at Börzönce also occurred among the finds from this site and a few types, barely represented among the fragments in the Börzönce assemblage, could be determined more precisely on the basis of the Nagykanizsa finds. Cult finds were represented by a phallus shaped perforated clay pendant.[21]

The analysis of the known Somogyvár–Vinkovci sites suggested a settlement pattern of a few major centres surrounded by smaller settlements.[22] One of these centres apparently lay in the southern part of County Zala as shown by the central settlements at Börzönce and Nagykanizsa-Inkey-kápolna.[23] This settlement pattern does not reflect the extent to which a particular area has been investigated since in spite of the large-scale excavations conducted as part of the Little Balaton project, not one single extensive Somogyvár–Vinkovci settlement was

[11] *Bondár 1996* fig. 19; *Bondár 1998* fig. 2: Sites 3–4, 6, 10, 23, 26, 32, 38, 39–42, 57, 62, 70–72, 77, 92–93, 99, 100–101, 121–122. The distribution map was redrawn (*Bondár 1998* fig. 2), the site numbers refer to this map. For a description of the sites, cf. *Bondár 1996.*

[12] *Gy. Nováki:* A Nagygörbő-Várhegy-i korabronzkori erődített telep (The Early Bronze Age fortified settlement at Nagygörbő-Várhegy). ArchÉrt 92 (1965) 168–175.

[13] *Horváth 1994* 97.

[14] *Horváth 1994* 97.

[15] *G. Bándi:* Korai bronzkor. Somogyvár-Vinkovci kultúra [Early Bronze Age. The Somogyvár-Vinkovci Cultur], in: G. Bándi (ed.): Baranya megye története az őskortól a honfoglalásig. Baranya monográfia. Pécs 1979, 64.

[16] *Bondár 1998* fig. 2, Site 57.

[17] Cf. pp. 77–78, Site 59, in this volume.

[18] Judit Kvassay's kind personal communication.

[19] *Bondár 1996* 200–213, figs 13–18.

[20] *Bondár 1999a.*

[21] *Horváth 1984* fig. 5. 1; *Horváth 1994* fig. 8.

[22] *Bondár 1996* Pl. 3.

[23] *Bondár 1996* 234.

identified, only a few pits (the size of the investigated area at Balatonmagyaród-Hídvégpuszta was 4 ha). In other words, we can hardly claim that an extensive excavated area automatically means a large settlement, while field surveys only yield small settlements. Although the size of the excavated area at Nagykanizsa-Inkey-kápolna and Börzönce can hardly be compared to the large-scale rescue excavations preceding the motorway constructions, the intensity of the settlement features and the high number of find assemblages nonetheless indicate that these sites represented the permanent settlements of larger communities.

In view of the research results outline above we may say that in the southern and south-western parts of County Zala the initial phase of the Early Bronze Age was represented by the Somogyvár–Vinkovci culture, the Hungarian counterpart of the Vinkovci culture of Yugoslavia. In terms of relative chronology, this culture falls between the classical Vučedol culture and the Kisapostag culture. The internal chronology of the culture is still the subject of debates.[24]

Only ten sites in County Zala represent the Kisapostag culture, assigned to the last phase of the Early Bronze Age.[25] Kisapostag settlements have been found in the Keszthely area and in the Little Balaton region, for example at Balatonmagyaród-Hídvégpuszta, where a major fortified settlement was uncovered.[26] The structure of Kisapostag settlements – pits scattered over a large area – resembles the Somogyvár–Vinkovci ones. The finds from these pits can only be found accidentally during field surveys. It is generally accepted that the River Rinya marks the western boundary of the Kisapostag distribution.[27] Although the investigations in the Little Balaton region have shown that this boundary lay slightly more to the west,[28] no Kisapostag sites were found either in the Hahót Basin[29] or in the Kerka Valley. To the best of our present knowledge, sites of the Kisapostag culture have not been identified in other parts of County Zala either.[30]

The same holds true for the Encrusted Pottery culture succeeding the Kisapostag culture. Six sites were identified in the Little Balaton region:[31] one of these, Esztergályhorváti-Alsóbárándpuszta, falls into the Koszider period marking the close of the Middle Bronze Age. Sites of the Encrusted Pottery culture have not been found west of the Little Balaton region – either in the Hahót Basin, or in the Kerka Valley – and the Esztergályhorváti site remains the westernmost site of the culture.

The lack of sites of the Kisapostag and the Encrusted Pottery culture in the western and south-western parts of County Zala can no longer be explained by the lack of research. Similar observations were made in the northern part of the county, in the Zalaegerszeg area. László András Horváth and Katalin H. Simon noted that none of the over one thousand sites identified during their systematic field surveys could be assigned to the late phase of the Early Bronze Age or the Middle Bronze Age represented by these two cultures.[32]

The close of the Middle Bronze Age and the onset of the Late Bronze Age brought fundamental changes in the settlement patterns of the Carpathian Basin, as a result of major migrations. The earlier dominance of cultural influences from the Balkans and South-East Europe was replaced by cultural impacts from western Europe in the mid-2nd millennium BC. The historical background to these changes can be sought in the arrival of Tumulus groups in successive waves. Named after its distinctive burials, the Tumulus period can be broadly divided into three subperiods, even if a sharp boundary cannot be drawn between them. The less than peaceful events at the beginning of the Tumulus period are reflected in the bronze hoards buried during the Koszider period. Only one such hoard is known from County Zala: arm spirals and a mould for a spearhead were found at Zalaszentiván-Kisfaludihegy.[33]

[24] *Bondár 1999.*
[25] *Honti 1996* 53–55: Sites 113, 15, 10, 13, 7, 65, 101, 72, 75, 85.
[26] *Honti 1996* 47.
[27] *Kiss 2001* 18.
[28] Balatonmagyaród-Hídvégpuszta: cf. *Honti 1996* 47.
[29] *Szőke 1996* 23.
[30] *Horváth 1994* 97; *Kiss 2001* 18.
[31] *Honti 1996* 53–55: Sites 113, 70, 15, 3, 76, 89.
[32] *H. Simon – Horváth 1999* 202.
[33] *H. Simon – Horváth 1999* 202, with the earlier literature.

Two sites of the Middle Bronze Age–Late Bronze Age transition are known from County Zala: Esztergályhorváti-Alsóbárándpuszta, mentioned above, and Gellénháza-Budai szer II. The finds from Esztergályhorváti clearly prove that the occupants of the settlement arrived to this area from south-western Slovakia since the distinctive pottery wares of the Dolný Peter phase of the late Magyarád culture could be distinguished among the finds.[34] Katalin H. Simon and László András Horváth excavated the pit of a similar settlement at Gellénháza near Zalaegerszeg.[35] The pottery finds from the site revealed trade contacts with distant regions. Both sites can be assigned to the Koszider horizon.

The new "invaders" of the early Tumulus period probably arrived from Austria, from the Alpine region. Few sites of the period corresponding to Reinecke's Br B2–BC are known west of the River Zala. One of the major settlements of this period was excavated at Gelsesziget in the Hahót Basin, where László Horváth uncovered a 20 m long timber-framed house. The remains of the wooden posts were preserved by the waterlogged soil in two postholes. The postholes of a timber-framed pen-like structure were unearthed north of the house. Over fifty vessels could be reconstructed from the pottery finds;[36] other finds included bone tools and implements, five ornamented bronze pins[37] and two bronze daggers.[38] The other settlement from this period lies in the Nagykanizsa area.[39]

Only a single site in the Kerka Valley, Ramocsa-Két út köze, betongyűrű,[40] yielded a handful of sherds, which can perhaps be assigned to the Tumulus culture.

Many sites of the late Tumulus–early Urnfield (Br D–Ha1) period are known in the Keszthely, Nagykanizsa and Little Balaton area,[41] as well as in the Hahót Basin.[42]

One of the most important sites from this period is the settlement at Balatonmagyaród-Hídvégpuszta, spanning the Br C–D–Ha period, and the cemetery from the same period. A number of grain storage pits and various other pits of the Tumulus and Urnfield cultures were uncovered at this site, together with fifty-six burials of the late Tumulus–early Urnfield period lying some 100 m from the settlement. The cemetery itself overlies an earlier Tumulus settlement. Two periods – an earlier and a later one – could be distinguished in the cemetery, based on the typology of the finds. The Urnfield settlement was enclosed by a 2–3 m wide and 2 m deep ditch; the settlement features lay in the area enclosed by the ditch. The settlement and the cemetery was separated by a shallow ditch.[43]

Several Late Bronze Age settlements and their cemeteries have also been found in the Little Balaton region.[44]

A number of changes can be noted in the late Tumulus period. The late Tumulus development was apparently broken by a new wave of immigrants arriving to the Carpathian Basin from the north and north-east since beside the distinctive traits of the late Tumulus culture, a number of early Urnfield features can be noted among the finds. A new ethno-cultural transformation began in the area between the Alps and the Rhine, which is usually labelled Urnfield culture after the large cemeteries containing inurned burials. This transformation also affected Transdanubia. The ethnic and cultural impacts – perhaps also accompanied by the arrival of new population groups – led to the almost imperceptible transformation of the late Tumulus culture into the Urnfield culture. There followed a peaceful development lasting for several centuries, during which there emerged a rather uniform pottery and metalwork over an extensive area, reflecting a peaceful existence and trade contacts between major centres and metal workshops.[45] At the

[34] *L. Horváth:* Spätbronzezeit, in: *Müller 1989* 37–38; *Horváth 1994* 98, fig. 25; *Horváth 1996* 57.

[35] *H. Simon – Horváth 1999.*

[36] The finds from the excavation are still unpublished. For a brief description of the site and its finds, cf. *Horváth 1994* 98.

[37] *Horváth 1994* fig. 9.

[38] *Horváth 1994* fig. 9.

[39] Miklósfa-Mórichelyi halastavak: *Horváth 1994* 98.

[40] Cf. pp. 58–59, Site 22, in this volume.

[41] *Horváth 1996* 72–73, fig. 7, Sites 51, 113, 115, 121, 123, 134, 70, 155, 17, 23, 1, 15, 22, 9, 66, 67, 63, 76.

[42] *Szőke 1996* Pl. 4.

[43] *Horváth 1996* 60. The site is still unpublished; its finds will be published by the members of the team who excavated the site.

[44] Balatonmagyaród-Kiskányavár, Garabonc-Ófalu.

[45] For an overview of the different theories on the emergence of the Urnfield culture, cf. *Horváth 1994* 98–99.

close of the Late Bronze Age, a number of changes shaped the life of the Carpathian Basin. The find assemblages reflect the emergence of regional groups, while the burial of metal hoards too reflect this transformation. The break marked by the onset of the pre-Scythian period in the Great Hungarian Plain also had repercussions in Transdanubia.

Relatively many sites are known from the early phase of the Urnfield culture in the Keszthely and Little Balaton area. Only a few settlements and burials from the later phase of the culture (Ha1–HaB) have been identified west of Lake Balaton.[46] Four sites of the culture were found in the Kerka Valley: Nemesnép-Harmadik-dűlő,[47] Zalabaksa-Győrfa,[48] Zalabaksa-Belterület[49] and Kissziget-Temetődomb.[50]

Summary

The above brief outline of the Bronze Age settlement of County Zala reveals that the Kerka Valley was sparsely settled or downright uninhabited during certain periods (the Late Copper Age Baden and Kostolac periods, the Bronze Age Kisapostag and Encrusted Pottery culture periods, as well as the late Urnfield period). The lack of sites from these periods can no longer be explained with a lack of research since the territory of County Zala has been systematically investigated with various methods (field surveys, rescue excavations, systematic excavation campaigns over an extensive area) during the past few decades.

There could have been many reasons for the "empty" landscape (or marchland, as it was called in later ages): geographic factors, soil conditions, climatic factors, the lack of an optimal environment needed by an individual community etc.

How is this reflected in the Kerka Valley? The Kerka Valley covers the western part of County Zala, criss-crossed by the Kerka and its tributaries. The Kerka flows from the Silver Mts in Austria, passing through the Zala hills in a north-west to south-east direction, entering the Mura at the country's border. Its course is more or less parallel to the middle reaches of the River Zala and the Principális Stream. Flowing through the gently rolling hills and the Lenti plain, the Kerka is a not a particularly abundant stream, which only swells into a river in the rainy season. This area lies at around 200 m a.s.l. Morphologically it is a Tertiary and Quaternary hill region and, to a lesser extent, a floodplain. It is covered mostly by brown forest soil.[51] The area is covered with large tracts of forests and turf and it is not particularly suited to agricultural cultivation since there are no contiguous large areas. Larger rivers and lakes are also lacking. Neither should it be forgotten that the Palaeo-Mura flowed through the Kerka Valley[52] and that this also shaped the pedology of the region. Today, the number of sunny hours is low in this region, while the annual precipitation is rather high, although its distribution varies and does not always fall into the periods favourable for agriculture. These are all factors determining the economic conditions of this region. Unfortunately, there are no similar data for the Bronze Age, except for the well known pollen data indicating a climatic change at the Middle Bronze Age–Late Bronze Age transition, bringing a cooling (late sub-Boreal period). It is possible that this climate played a role in the emergence of a dense settlement network; the occupants of these settlements were engaged in agriculture and they also cleared large tracts of forest. In his evaluation of the plant remains from Balatonmagyaród-Hídvégpuszta, Ferenc Gyulai noted that "compared to Middle Bronze Age, the climate of the Late Bronze age became cooler and wetter. The water level of the lakes and rivers rose, as did the level of the groundwater table. Owing to the deterioration of the climate, a change can be noted in the formerly continental vegetation, together with the spread of sub-Atlantic species. Beside beech, hornbeam too became widespread."[53]

[46] *Horváth 1996* 66: Sites 10, 22 and 29.

[47] Cf. p. 53, Site 20, in this volume.

[48] Cf. p. 71, Site 46, in this volume.

[49] Cf. p. 71, Site 48, in this volume.

[50] Cf. pp. 77–78, Site 59, in this volume.

[51] *Gy. Füleky:* A talaj [The soil]. Budapest 1988, fig. 30.

[52] *Gy. Lovász:* A Dráva–Mura vízrendszer vízjárási és lefolyási viszonyai [The watercourses and drainage of the Drava–Mura catchment]. Földrajzi monográfiák. Budapest 1972, 24.

[53] *F. Gyulai:* Balatonmagyaród-Hídvégpuszta későbronzkori település növényleletei és élelmiszermaradványai (Plant findings and food remnant of the Late Bronze Age settlement at Balatonmagyaród-Hídvégpuszta). ZalaiMúz 6 (1996) 177.

The Middle Bronze Age was characterised by a dry climate, a lack of rivers abounding in water and extreme temperature fluctuations. The poor forest soil would also explain why the Kerka Valley and the Mura–Drava Interfluve (Međimurje/Muraköz, Croatia) were not occupied in certain periods. During their hunting and reconnaissance expeditions, prehistoric communities were able to choose locations for their settlement, where there was ample space for cultivation, water and good pastureland for their animals, and opportunities for fishing etc.

Topographical surveys in neighbouring Slovenia yielded more or less similar results: the presence of certain archaeological cultures could be documented through their sites, while others were absent. There were no sites from the Late Copper Age, the Early and the Middle Bronze Age, while the Late Bronze Age was amply represented.[54]

The same holds true for Styria, with its similar geographic conditions,[55] although it must in all fairness be noted that systematic investigations resembling the ones in County Zala and Slovenia have not been conducted in this region. However, the distribution of the few known archaeological sites according to various prehistoric periods more or less corresponds to the data from the Kerka Valley and the region of the Mura–Drava Interfluve.

This apparent lack, however, does not necessarily mean a genuine lack of sites. The traces of smaller and larger settlement sites can – in cases of archaeological luck – usually be identified from the surface finds collected during the field surveys of systematic archaeological investigations. Under less favourable conditions, for example in a forested area with marshland, which has few areas suitable for cultivation, such as the Kerka Valley, these larger settlements and smaller campsites might not be identified, but this does not necessarily mean that there was no human settlement during certain periods. At Balatonmogyoród-Hídvégpuszta, one of the largest sites investigated as part of the Little Balaton project, no settlement finds of the Balaton–Lasinja culture, no burials of the Baden culture, no pits of the Somogyvár–Vinkovci culture and no burials of the Kisapostag culture had been uncovered on the 18,000 m^2 large area excavated until 1985.[56] The finds of these cultures were only recovered during the later excavations conducted over a similarly large area. Other examples could also be quoted to illustrate that new results concerning settlement structure and settlement patterns can only be expected from the large-scale excavation of sites. One case in point is the investigation of the Muraszemenye-Aligvár site, where Judit Kvassay uncovered a few settlement features of the Somogyvár–Vinkovci culture in 2000 as part of the excavations preceding the construction of the M7 motorway.

It is to be hoped that the excavations conducted over extensive areas as part of the research projects preceding the motorway constructions will allow a more precise reconstruction of the settlement patterns of various periods. If these large-scale excavations too yield a "negative" result concerning the presence of a particular culture, we may safely conclude that a given culture did not settle in the investigated area.

[54] *I. Šavel:* Archeološka topografija Slovenije. Topografsko področje XX (Prekmurje). Ljubjana 1991, 28; *I. Šavel:* Kulturni vplivi v prazgodovini v pokrajini ob Mure (Cultural Influences During Prehistory in the Country on the River Mura), in: *Völker an der Mur 1996* 20.

[55] *D. Kramer:* Neue Aspekte zur älteren steirischen Siedlungsgeschichte, in: *Völker an der Mur 1996* 9.

[56] *Évezredek 1996.*

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Bálint Havasi

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THE KERKA VALLEY AND COUNTY ZALA IN THE CELTIC PERIOD

The systematic research of the Celtic heritage in County Zala was begun by László Horváth. Over one hundred late Iron Age sites have been identified in the county and in this respect County Zala can be regarded as one of the most thoroughly investigated areas in Hungary[1] *(fig. 1)*.

About three-quarters of the Celtic find assemblages can be dated to the La Tène C period, while a few sites can be assigned to 1st century BC (LT D).[2] A number of burials are known from the period marking the arrival of the Celts (LT B), primarily from the northern and western part of County Zala (Zalaegerszeg-Andráshida, Zalaszentmihály, Rezi, Keszthely-Laktanya, Cserszegtomaj, Felsőrajk),[3] while only two sites can be quoted from the southern part: a few burials in the Magyarszerdahely cemetery[4] and the settlement uncovered at Nagykanizsa-Dávid-dűlő.

On the basis of the finds from the cemeteries at Rezi, Magyarszerdahely, Miklósfa and Magyarszentmiklós, László Horváth argued that the second wave of Celtic settlers, arriving in the first third of the 3rd century BC, avoided the earlier occupied areas and that Celtic rule over the Carpathian Basin was extended in a planned, systematic manner.[5]

A total of twenty-eight houses have been excavated on fifteen sites in County Zala. The investigated sites were all open settlements; for the time being, no fortified settlements are known from this region. The houses uncovered at these sites were all sunken buildings; none of them were above ground structures.[6]

In Horváth's opinion the Celtic communities in County Zala relied on agriculture and animal husbandry for their subsistence and their pottery manufacture and metalworking remained on the craft industry level. They did not participate in the monetary economy of the period and they did not mint coins.[7]

In the lack of written sources, it is impossible to ascertain which tribes settled in County Zala in the 1st century BC, before the Roman conquest. We know that the territory to the north was controlled by the Boii and the areas to the southwest by the Taurisci.[8]

The majority of the sites are concentrated in the southern and western part of County Zala.[9] This can in part be explained by the intensity of research in different parts of the county,[10] although it must also be borne in mind that no traces of a major settlement were found during the field surveys conducted in the Kerka Valley.

Only at two sites were late Iron Age pottery finds collected (pottery sherds at Felsőszenterzsébet-Alsó nyároska and a stamped pottery fragment at Kerkabarabás-Ótelki-dűlő). These finds can be assigned to the LT C period.[11]

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[1] *Horváth 2001* 15.

[2] *Horváth 1998* 83, fig. 1.

[3] *L. Horváth:* The surroundings of Keszthely, in: T. Kovács – É. F. Petres – M. Szabó (eds): Corpus of Celtic Finds in Hungary I. Transdanubia 1. Budapest 1987, 63–178.

[4] *L. Horváth:* A magyarszerdahelyi kelta és római temető [The Celtic and Roman cemetery at Magyarszerdahely]. ZGy 14 (1979) 5–67.

[5] *Horváth 2001* 15.

[6] *L. Horváth:* Késővaskori ház- és településtípusok Dél-Zalában [Late Iron Age house and settlement types in southern County Zala]. ZalaiMúz 1 (1987) 59–80.

[7] *Horváth 1998* 87–88.

[8] *A. Mócsy:* Pannonia. Realencyclopedie der classischen Altertumswissenschaft. Supplementum IX. Stuttgart 1962, 530–537, and fig. 2.

[9] *L. Horváth:* Die Kelten im Komitat Zala, in: Die Zeit der Kelten. Schild von Steier. Beiträge zur steirischen Vor- und Frühgeschichte und Münzkunde, Kleine Schriften 18. Graz 1998, 82, fig. 1.

[10] The southern part of County Zala is one of the most thoroughly investigated areas of Hungary as regards the late Iron Age; the Keszthely area falls within the activity area of one of the county's oldest museums.

[11] *E. Bánffy:* A Kerka-völgyi mikrorégiós kutatási program első eredményei (Die ersten Ergebnisse des mikroregionalen Forschungsprogrammes im Kerkatal), in: *Völker an der Mur 1998* 12.

One of the main results of the micro-region research project was that archaeological investigations were conducted in an area that was a "blank spot" in the county and little was known about its history. The field surveys have shown that the Kerka Valley, the Hetés was a sparsely inhabited area during the late Iron Age and that it probably lay on the fringes of the Celtic settlement territory.

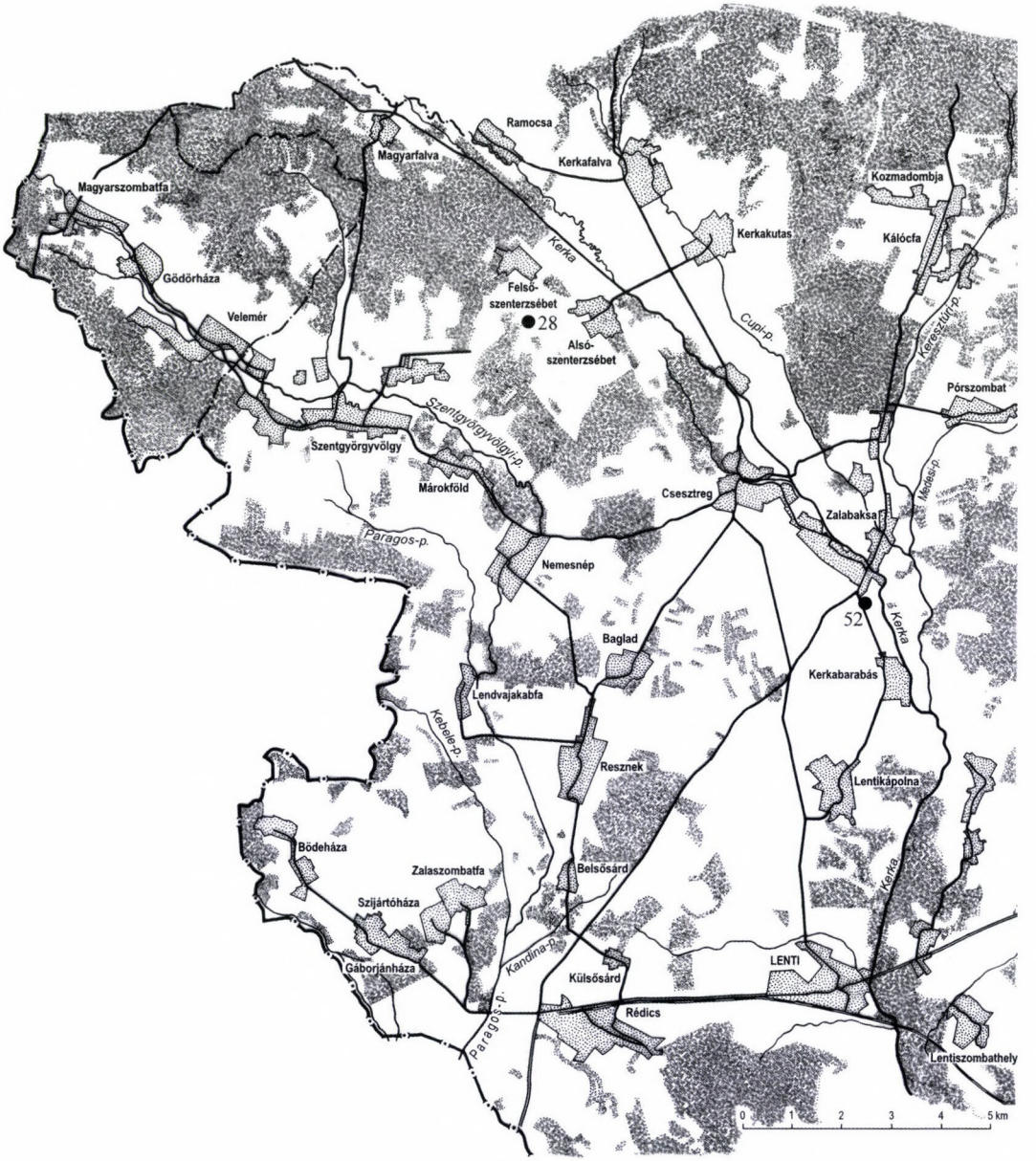

fig. 1. Celtic period sites in the Kerka Valley

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Ferenc Redő

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THE KERKA VALLEY IN THE ROMAN AGE

The single most important factor determining the Roman settlement history of the Kerka Valley was that a section of the Amber Route passed through this region and that the southern and south-western part of the *territorium* of Salla too lay here. The area surveyed as part of the research project is the section of County Zala lying west of Road 86 and the settlements along the road *(fig. 1)*. The south-western areas of County Vas (up to the Körmend area) are also included in order to set the region in a broader perspective.

Written sources and the archaeological record

The written sources on this area are essentially made up of the various *itinerarii.* Although their number is not particularly large, certain passages can be associated with this rather small

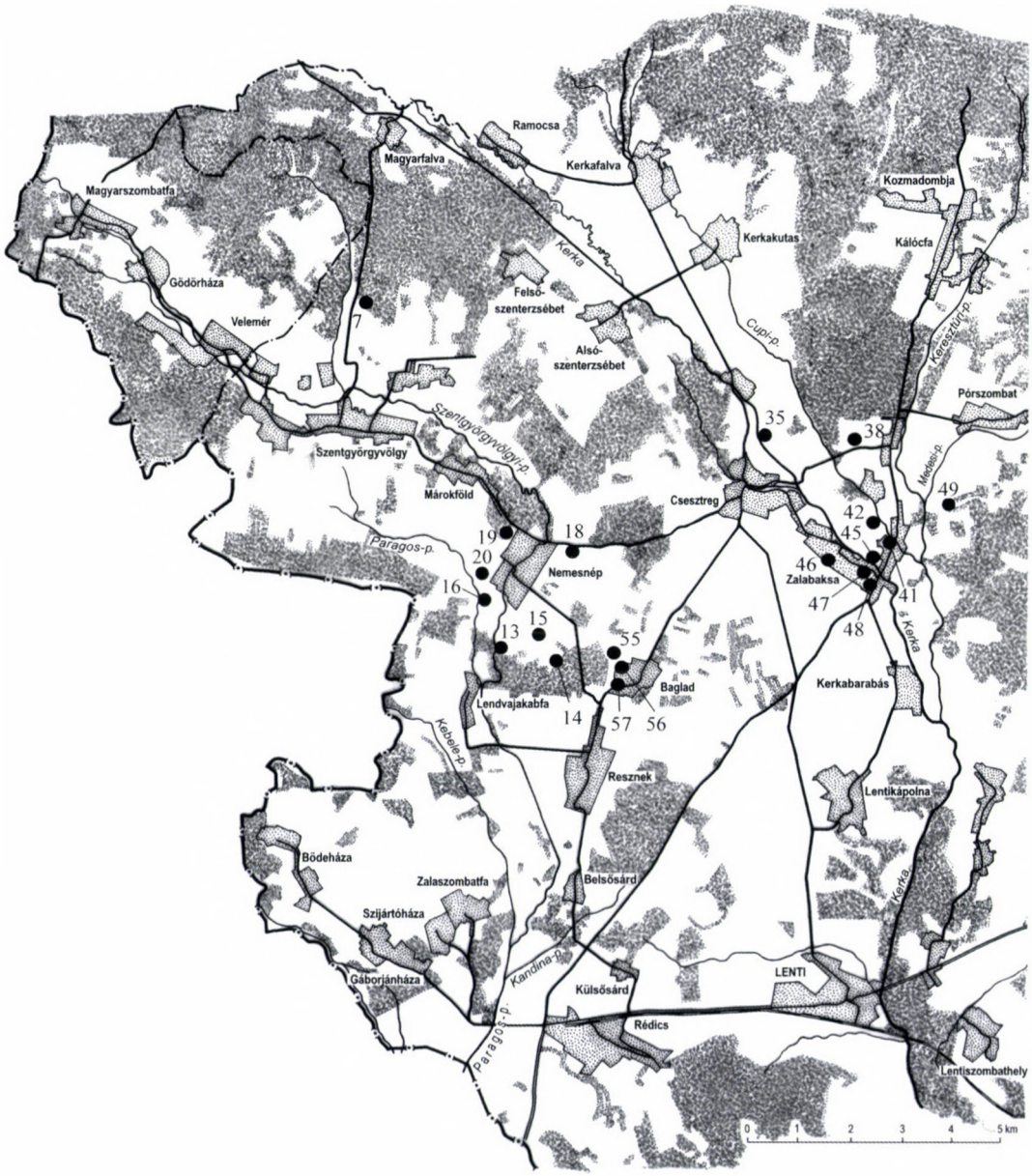

fig. 1. Roman Age sites in the Kerka Valley

territory and they are therefore invaluable. There is little in the way of epigraphic material from the Kerka Valley.[1] A few inscriptions from Zalalövő and Zalabaksa will be quoted in connection with the Roman Age settlement patterns.

The archaeological evidence from this region can be divided into three main categories. The first of these is made up of reports by enthusiastic antiquarians. Some of these reports are rather old, although this does not mean that they are useless since in many cases they contain data that has since been confirmed by archaeological research. The second category is made up of the information gained from field surveys.[2] These are more reliable than the former, even though they are observations made without excavation. The third consists of the sites on which an excavation has also been conducted in addition to the field survey.

The natural environment

This area was covered by sea during the Mesozoic, whose clayey, sandy sediment lies a few meters under the current surface in the Zala Valley.[3] Alpine orogeny began at the close of the Mesozoic, as a result of which the sea retreated towards the south and south-west, becoming first landlocked and, later, a freshwater lake. Fast rivers, flowing from the emerging mountains west and north of the surveyed area, deposited their load on the gently sloping littoral-like area, creating marly, sandy, pebbly alluvial cones over the sediments of the one-time seabed. The alluvial cones deposited by the palaeo-rivers (the palaeo-Rába and the palaeo-Mura) form the basis of the Göcsej and Őrség Hills, which rarely rise over 300 m a.s.l. They are made up of sand and marl under the present brown soil; both are easily permeated by water down to the base of the hill. Pebble layers cemented with limonitic clay can also be noted in some spots – these represent the remains of Upper Pliocene and Lower Pleistocene watercourses. However, they never form a larger, contiguous layer. This material (sometimes incorrectly called bog iron) is the single rock-like formation in the region.

The alluvial cones deposited directly onto the sediments of the one-time seabed can be observed a few decimetres under the present surface. The several hundred meters thick sand layer of the so-called "Pannonian sediment", covered by a thin yellow clay layer and interrupted by the occasional bluish-grey clay layer, lies under the present brown soil. These make the soil impermeable on the level of the one-time seabed. This soil structure is the reason that springs only issue above the first impermeable clay layer under the sandy, marly, pebbly layer in the lower third of the hill slopes. These are the spots best suited to human settlement.

The vegetation was influenced by the above-described pedologic, hydrologic and climatic factors. Gallery woods and fenwoods thrived in the river valleys, the hillsides were covered with hornbeam and oak forests, the higher elevations with mixed deciduous and pine forests and with pine forests higher up. It would appear that the current pine forests had been preceded by oak woods before the appearance and expansion of the intensive farming cultures since the clearing of these woods yielded more fertile soils. Once cultivation ceased, however, the areas left fallow were recolonised by pine forests.

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[1] The epigraphic material from the *territorium* of Salla has been published in *RIU 2*. The enlargement of this volume with the new insciptions is currently being prepared by Péter Kovács.

[2] László Tábori had earlier surveyed this area; Vajk Cserményi and Endre Tóth surveyed the roads; Eszter Bánffy, Mária Bondár, Tibor Frankovics, Bálint Havasi, Judit Kvassay, Sándor Siraki, László Vándor and the present author conducted field surveys as part of the Kerka Valley Micro-Region Project.

[3] This section is based on the following works: *J. Miholics:* Völgyfejlődés vizsgálata az Őrségben és a Vendvidéken (Untersuchung der Talenentwicklung im Őrség und in der Wendgegend, SW-Ungarn). FrÉ XVII: 1 (1968) 47–59; *R. Müller:* A zalalövői császárkori tumulusok (Die Hügelgräber aus der Kaiserzeit in Zalalövő). ArchÉrt 98 (1971) 10–12; *Á. Juhász:* Évmilliók emlékei. Magyarország földtörténete és ásványkincsei [Relics of millennia. The geohistory and minerals of Hungary]. Budapest 1983, 287–290; *F. Cseke:* Nagykanizsa és környékének természeti viszonyai (Natural conditions of Nagykanizsa and its environs) and *F. Gyulai:* Dél-Zala növényvilága (Flora of South Zala), in: *Nagykanizsa 1994* 13–17 and 43–57.

Early history

The largest, most powerful tribe in this area during the first decades of the 1st century BC was that of the Celtic Boii. When they were defeated during their clashes with the Dacians, sometime between 6 and 5 BC, their power waned and they were forced to withdraw to the north, to the Little Hungarian Plain.

One of the sources from the age of Augustus describing the *civitates* of the indigenous Pannonian tribes mentions the *Arabiates* and *Serretes* tribes in this area. The *Serretes* lived along the upper reaches of the Drava; their neighbours were the *Serapilli* inhabiting the *territorium* of Poetovio. It has been suggested that Halicanum was perhaps based on this *civitas*. The *Arabiates* can probably be sought along the upper reaches of the River Rába since the *civitates* along the river near its mouth are quite well known. Together with a few other Pannonian *civitates,* this name too can be assigned to the group created from toponyms according to Latin word formation; the name means no more than "the inhabitants along the Arabo" and can hardly be regarded as an ethnonym of Celtic origin.

Together with the *Serapilli* and the *Catari,* these ethnonyms are part of the group mentioned by Pliny, based on records from the Augustan age; they do not crop up in the works of Ptolemy, active in the mid-2nd century AD. These *civitates* all lay in south-western and western Pannonia. It would appear that the name of the *civitas* derived from the ethnonym disappeared in the areas, which were urbanised first (Emona–*Catari,* Poetovio–*Serapilli*) and, also, that the territory originally controlled by the Boii was later populated by insignificant Celtic and other groups, whose name did not survive after the withdrawal of this Celtic tribe.[4] András Mócsy's observations have been confirmed by the field surveys and the excavations conducted in the area. We know that the area around the crossing places was inhabited prior to the Roman conquest; ample evidence has been furnished by the excavations at Zalalövő, as well as the by field surveys in the Zalacséb area (by the River Zala), in the Zalabaksa area and in the Felsőszenterzsébet area (both by the Kerka Stream). These settlement traces, however, cannot be regarded as indicating major Celtic settlements or as Celtic communities on which a *civitas peregrina* could have been based in the Roman Age.

Roads

The analysis of the data contained in the *itinerarii* is essential to any study of Roman roads and the Roman road network since they contain a wealth of data on place-names and distances. The most often encountered problem is one of identification. Roads can also be assumed along chains of sites and settlements or specific settlement concentrations. The most reliable information is provided by field surveys and sounding excavations since in many cases these allow the identification and mapping of certain road sections.

The Roman roads traversing the area were probably older than can be assumed from the Roman sources. Roads are very conservative elements of the settlement pattern of a given area. The amount of traffic on these roads, the extent to which they were used (or perhaps forgotten) varied in different historical periods.

The most important road in this area during the Roman Age was the Amber Road, connecting the Adriatic with the Baltic. The section between Poetovio and Savaria led through the Kerka Valley. Although the route itself evolved well before the Roman conquest (and today an international road runs along the same track), its importance varied during the Roman Age. The Hungarian section of the Amber Road was surveyed and described by Endre Tóth and Vajk Cserményi.[5]

There are many passages in classical sources describing the Hungarian section of the Amber Road. The first of these is the work of Pliny the Elder (23–79 AD), mentioning the *colonia* of Savaria and Scarbantia as lying directly by Noricum (*NatHist* III. 147). Ptolemy

[4] *A. Mócsy:* Igazgatás. A civitas peregrinák [Administration. The civitates peregrinae], in: A. Mócsy – J. Fitz (eds): Pannonia régészeti kézikönyve. Budapest 1990, 59–61.

[5] *V. Cserményi – E. Tóth:* Eine römische Strassenstation und die Strassenstrecke zwischen Salla und Arrabona. Savaria 13–14 (1979–1980) [1980] 171–202.

of Alexandria (90–168) also mentions Salla (present-day Zalalövő) in his work. In his *Geographike* (2. 14), the settlement is listed among the towns (Emona, Poetovio, Savaria) along the Amber Road.

The *Itinerarium Antonini,* compiled at the close of the 3rd century AD, describes this road section twice, in a slightly different manner. It would appear that the compilator of the *itinerarium* used several independent sources.

ItAnt. 261, 6–11: Poetovione mp XXXI (45.81 km) – Alicano mp XL (59.12 km) – Arrabone mp XX (29.56 km) – Savaria mp XXXIIII (50.25 km) Scarbantia.

ItAnt 262, 3–7: Poetovione mp XXXI (45.81 km) – Halicano mp XXX (44.34 km) – Salle mp XXXI (45.81 km) – Savaria mp XXXIIII (50.25 km) Scarbantia.

The Ravenna Cosmography, a road map compiled by an unknown monk, is usually dated to the 7th century. The toponyms in this itinerary appear in a corrupted form and a few new settlements are also listed; however, this source does not include the distances between individual settlements: Petaviona – Vincensimo – Ligano – Salla – Aravona – Savaria (IV. 19).

The *Tabula Peutingeriana* is one of the most valuable sources in this respect. Although the so-called Castorius Map is known only from a 16th century copy, the data contained in it are undoubtedly based on classical sources. The Amber Road is described as follows: Poetovione mp XX (29.56 km) – Ad Vicesimum mp XLIII (63.55 km) – Arrabone mp XX (29.56 km) – Savaria mp XXXIII (48.77 km) – Scarbantia *(fig. 2).*

The sites identified at Körmend, Katafa, Nádasd, Zalalalövő, Kozmadombja, Kálócfa, Zalabaksa, Belsősárd and Rédics correspond to the data of the *Itinerarium Antonini* 262, proceeding from north to south. Of these, Katafa was a road station protected by the military, Zalalövő was a *municipium,* while Zalabaksa was a villa farm. Traces of a civilian settlement have been discovered at Körmend. A section was cut through the road at Nádasd, while the surviving traces of the road have been identified during field surveys at Kozmadombja and Kálócfa. Tumulus burials have been reported from Hegyháthodász and Kerkabarabás. The road continued to Slovenia through Dolga Vas–Kot to Sveti Martin na Muri, believed to be identical with Halicanum,[6] and – crossing the Drava – to Poetovio.

The *Itinerarium Antonini* 261 essentially describes the same route, although Salla is not mentioned and the relevant passage mentions that Poetovio could be reached from Halicanum through Curta.[7] Curta can probably be identified with Ormož on the Drava, near the point where the Aquileia–Poetovio road branched off towards Siscia and Sirmium.[8]

The *Tabula Peutingeriana* describes the Poetovio–Savaria road as being 12 km shorter than the description in the *Itinerarium Antonini* 262 and neither does it mention Halicanum and Salla. It was therefore suggested that there was perhaps a road between the Mura (Ad Vicesimum–Veržej)[9] and the Rába (Arrabona–Katafa) running slightly to west of the Amber Road since any other course would have meant a detour, rather than a shortcut. A few sites in the surveyed area seem to support this possibility. These include the tumulus burials at Szentgyörgyvölgy-Töröktemetés and Szentgyörgyvölgy-Farkasi erdők, and the settlement remains identified at Szentgyörgyvölgy-Cilinkó and Felsőszenterzsébet. Although the number of these sites is not particularly high, they do form a distinct group west of the Amber Road.[10] During their rescue excavation preceding the construction of a Slovenian–Hungarian railway line at Pankasz, Gábor Ilon and Ottó Sosztarits found a Roman road running north to south, which crosses the Zala.[11]

[6] *B. Kerman:* Halicanum-Lindolverschirichun ali Lendava? in: L. Göncz (ed.): Lendava – Lendva 1192–1992. Studie o zgodovini Lendave – Tanulmányok Lendva történelméből. Lendavsi zvezki – Lendvai Füzetek. Lendava 1994, 54–57.

[7] *Šašel 1975* 91.

[8] Ormož, cf. *S. Pahič:* Ptuj. Ormož, in: *ANSl 1975* 320. Tabelarični imenik najdišč (Index of sites) 334–416, Ormož: 380.

[9] *Šašel 1975* 89.

[10] *E. Bánffy:* A Kerka-völgyi mikrorégiós kutatási program első eredményei (Die ersten Ergebnisse des Mikroregionalen Forschungsprogrammes im Kerkatal), in: *Völker an der Mur 1998* 9–17.

[11] I would here like to thank them all for kindly permitting me to quote the documentation of their excavation.

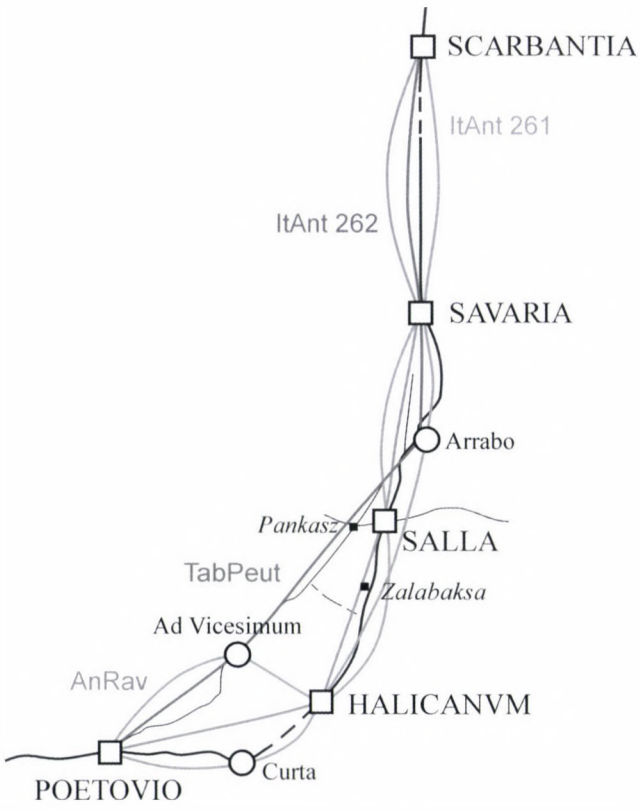

fig. 2. The data contained in the itineraries

The entry for June 22–23 in their excavation diary contains the following information: "We completed the excavation of the cambered gravel layer (which we interpreted as a Roman road). A roughly 13 m long section of the 400–410 cm wide road was investigated. A trough shaped ditch with a mixed fill of clay, gravelly and brick debris flanks the road on its western side, following its line when it takes a slight S bend. No ditch was observed on the road's eastern side, and neither did we observe any other feature. The slight bend and the infilling of the ditch can perhaps be attributed to erosion, as a result of which the gravel slipped into the ditch" *(fig. 3).*[12] Gábor Ilon and Ottó Sosztarits's investigation showed that the road had one single level of gravel surfacing with a thickness of 30–45 cm. No finds were recovered from the ditch, suggesting that there was no settlement along this section of the road.

A section of this road was found in the Slovenian Prekmurje region between Veržej and Szentgyörgyvölgy, where the majority of the Roman period sites lies north-west of the Amber Road section running through Sveti Martin na Muri–Kot–Dolga Vas–Rédics.[13] Irena Šavel also identified a number of side-roads in several settlements. The topographical data on the Roman roads in the Prekmurje region allow the reconstruction of roads running in other directions too (such as a side-road on the left bank of the River Mura), and also the reconstruction of a shorter alternative to the Amber Road (the crossing places at Dokležovje and Ižakovci, as well as Gančani and Gomilica, pointing towards the concentration of Roman sites lying north-east of the assumed crossing places).

Stanko Pahič's topographical study summarises the above data and reconstructs the Roman road along the settlement concentration mentioned above.[14] There was no apparent

[12] I would here like to thank them for kindly permitting me to quote from the documentation of their excavation.

[13] *I. Šavel:* Arheološka topografija Slovenije. Topografsko področje XX (Prekmurje). Ljubljana 1991, 17–21.

[14] Veržej. Cf. *S. Pahič:* Ljutomer. Veržej, in: *ANSl 1975* 333. Tabelarični imenik najdišč (Index of sites) 334–416: Veržej 408.

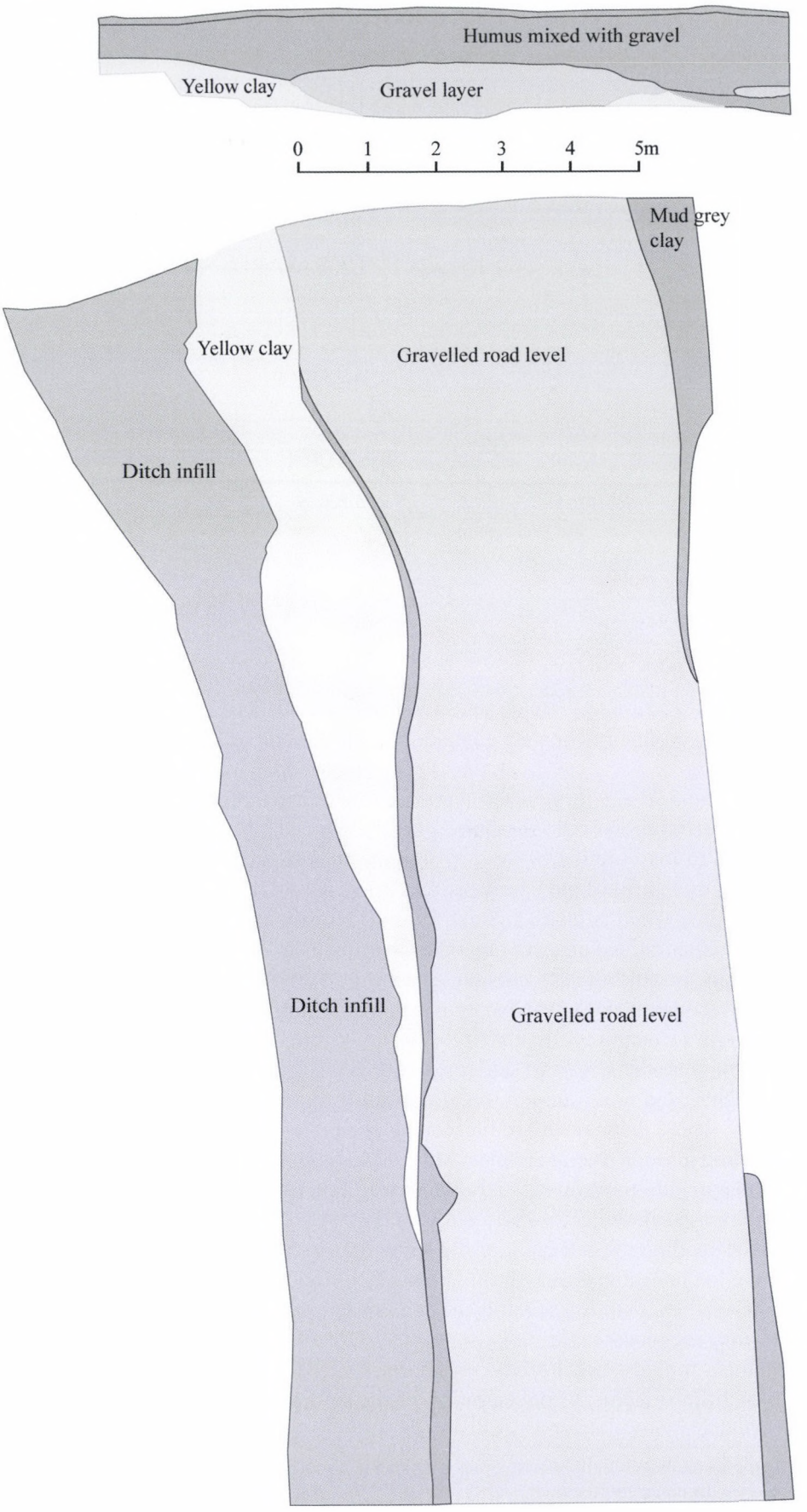

fig. 3. View and cross-section of the Roman road at Pankasz (after Gábor Ilon and Ottó Sosztarits)

continuation of the road assumed by him north of the Slovenian border since Hungarian research was more familiar with the traditional course of the Amber Road. However, the field surveys in the Kerka Valley have revealed that the assumed road did have a continuation. All three categories of evidence – Pahič's data, the findings of the micro-region research project in the Kerka Valley, the research results in County Vas – indicate that the Poetovio–Savaria road had an alternative course running west of the Amber Road, bypassing Halicanum, Salla and the settlements between them.

The Ravenna Cosmography does not contain additional data since it probably drew from second- and third-hand sources. The route given by this source is slightly more winding, approaching Halicanum from Poetovio through Ad Vicesimum, suggesting that this description was not based on a personal knowledge of this route, but rather drawn from other works on the roads and settlements in the area. Still, the fact that Halicanum and Salla are mentioned implies that these towns had revived to some extent in the late Roman period (we know that in the case of Salla this can be dated to the 4th century), explaining how their memory survived until the early Middle Ages.

The two roads were probably connected by access roads at the time, when settlements still flourished along the traditional route and the new route emerged slightly to their west. The remains of such an access road were identified between Nemesnép and Márokföld. The existence of the road is also indicated by the sites at Nemesnép, Lendvajakabfa and Baglad. This road and other similar ones evolved naturally in this north-east–south-west oriented section of the stream valley.

There is a chronological difference between the two roads. Ptolemy, who lived under the Antonine dynasty, mentions Salla among the most important western Pannonian towns. It is mentioned in *Itinerarium Antonini* 262 from the late 3rd century, but not in *Itinerarium Antonini* 261, an interesting feature since this passage mentions Halicanum and Savaria and we know that it is highly unlikely that a traveller passing through these two towns would not have passed by Salla. It would appear that there was a period in Salla's life, when the town was depopulated to the extent that it was not worth including in an itinerary. This period fell into the later 3rd century. It would seem that *Itinerarium Antonini* 262 reflects an earlier state of affairs (the one known also to Ptolemy), while *Itinerarium Antonini* 261 records the actual situation. The description in the *Tabula Peutingeriana* comes next, containing a report of the modified route corresponding to the new settlement pattern – the route recorded here led from Poetovio to Savaria through Ad Vicesimum and Arrabo, bypassing Halicanum and Salla. It is possible that this route began to be used from the Severan period.

We may therefore conclude that the Roman Age settlement network was denser in the 2nd–3rd centuries than in the period from Augustus to Domitian. In the early period, the military and strategic use of the route predominated, no doubt as part of the province's Romanisation, this being the reason that it was constructed, properly maintained and included in the itineraries. During this period, however, the road was hardly characterised by a density of settlements along it – the presence of settlements can only be demonstrated at points with a relevance for the military occupation. From the turn of the 2nd century, this region was characterised by a peaceful civilian development, as a result of which there emerged a number of smaller and larger settlements along the road and in its broader area. A part of these settlements lay farther from the original road, corresponding to the information contained in the *Tabula Peutingeriana,* and even an access road could be identified between the two roads. This would suggest that traffic was diverted to the shorter route between Poetovio and Savaria, the two major towns, and that only the more important crossing places between the two were mentioned (Ad Vicesimum on the River Mura and Arrabo on the River Rába).

The shift in the course of the main roads does not necessarily mean a new, large-scale road construction, but rather that an earlier road began to be used again and that the two roads were used alternately. Major trade routes, such as the Amber Road, rarely meant a single road, but rather a system of roads, whose starting point and terminus was identical. Endre Tóth and Vajk Cserményi have identified a number of side-branches and parallel sections during their

survey of the Pannonian section of the Amber Road. A road section running roughly 100 m east and parallel to Road 86 can still be seen south of the Csömöc Stream in the Rába Valley, where the road station Arrabo (or ad Arrabonem) – mentioned in both sources – should be sought. The sentry tower at Katafa, also on the Amber Road, lay several kilometres to the east. It seems likely that the two branches met somewhere beyond the Rába.

Another less important road can be reconstructed in the upper, west–east section of the Zala Valley. Although this road did not play such a significant role in long-distance trade as the above-mentioned roads, it connected the region with the eastern part of the province. Róbert Müller's field surveys have proven the existence of this road up to the Zala bend towards the east.[15] Nagyrákos,[16] Őriszentpéter,[17] Szalafő,[18] Farkasfa[19] and perhaps Kétvölgy[20] were stations along this road in the area surveyed by us. This area is not particularly well researched; however, a number of rescue excavations have been conducted along the track of the new Slovenian railway line. Pankasz has already been mentioned as the place, where the Amber Road crossed the river in the Zala Valley in the 3rd century. Recent research has identified the remains of Roman villas at Zalamindszent[21] and Zalacséb.[22]

In addition to sporadic settlement traces, tumulus burials have been identified and investigated at Szalafő and Farkasfa, again an indication that the valley was inhabited at this time.

Once we know more about this road running in the Zala Valley, we will perhaps also receive an answer to the question of its significance in the early period (the earlier 1st century) as regards connections with Noricum. This is important for the early history of Pannonia, when Noricum, and especially its south-eastern territory, acted as the base for the occupation of Pannonia. In his study on early grave stelae, Erwin Pochmarski has pointed out a number of interesting parallels.[23] These stelae indicate that during the 1st century, Pannonian stone-carving was influenced not only by cultural impacts from the south, from Poetovio, but also by ones from the west, from Flavia Solva. The connections with Noricum later became looser since military movements and trade were conducted along different trajectories, this being the most likely reason that later itineraries make no mention of this road.

Another road can also be assumed in the Rába Valley, marked by the sites at Iváncs,[24] Rábagyarmat[25] and Rátót.[26] A group of tumulus burials has been excavated at Iváncs, while a superb, early grave stele is known from Rábagyarmat *(fig. 4)*.

Tumulus burials

Tumulus burials and settlements can be found along all of the roads described in the above. Tumulus burials were typical for this region in the early centuries of Roman rule. In a recent

[15] *R. Müller:* Római kori leletek Zalaszentgrótról (Funde aus der Römerzeit in Zalaszentgrót). ZGy 6 (1976) 65–66.

[16] *Iványi 1935* No. 4264.

[17] *A. Vende:* Vasvármegye községei [Settlements of County Vas], in: J. Sziklay – S. Borovszky (eds): Magyarország vármegyéi és városai. Budapest 1898, 98; *É. Bónis:* Die kaiserzeitliche Keramik von Pannonien. DissPann II: 20. Budapest 1942, 186, 188.

[18] *Lipp 1875* 114; *A. Mócsy:* Archäologische Forschungen im Jahre 1956. ArchÉrt 85 (1958) 86.

[19] *F. Rómer:* Les tumuli, in: Compte-Rendu de la huitième session à Budapest. Budapest 1878, 101–159; *Kárpáti 1898* 162; *Sági 1943* 122.

[20] *Lipp 1875* 123–124; *Kárpáti 1898* 162.

[21] The villa was excavated by Katalin H. Simon and László András Horváth in 1997–1998, during the construction of the railway line. I am grateful to both of them for kindly permitting me to publish the finds.

[22] Field survey in 2000 and sounding excavation in 2001, both conducted by the present author.

[23] *E. Pochmarski:* Römische Grabstelen aus den Munizipien Salla, Poetovio, Savaria und Flavia Solva – ein Vergleich, in: *Völker an der Mur 1998* 41–47.

[24] *Sági 1943* 123–124; *É. Bónis:* Császárkori halomsíros temetkezés Iváncon (Kaiserzeitliche Hügelgräber von Iváncs). FolArch 9 (1957) 67–80; *É. Bónis:* Badania nad ceramik rzymsk no Wegrech. Archeologia Polski 1959–60 (1961) 238–241; *R. Müller:* A mezőgazdasági vaseszközök fejlődése Magyarországon a késővaskortól a törökkor végéig (Die Entwicklung der eisernen Agrargeräte in Ungarn von der Späteisenzeit bis Ende der Türkenherrschaft), vols 1–2. ZGy 19 (1982), vol. 1, 343.

[25] *G. Kiss:* Horváth Tibor Antal: Vasvármegye régészeti leletei és lelőhelyei (1926. okt. 20. – 1936. jún.) (Tagebuch des Archäologen T. Antal Horváth). VSz 41 (1987) 416–436, 454.

[26] *Iványi 1935* Nos 3015, 3250–3251, 3979.

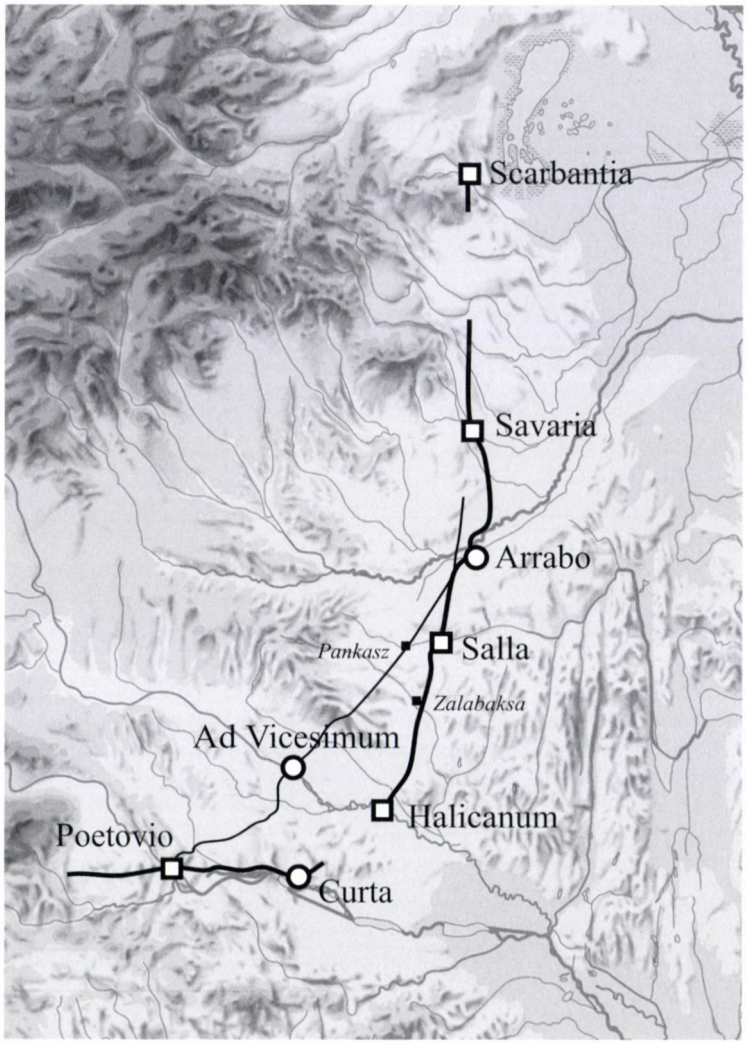

fig. 4. The Amber Road and its side-roads

summary, László Horváth pointed out that even though tumulus burials have also been found in other parts of the province, this burial mode was the most widespread in Noricum.[27] The eastern boundary of the distribution of this rite lay in western County Zala.

Tumulus burials were quite common in the Kerka Valley and in the broader area of the Amber Road. Many tumulus groups are known from this forested area. We surveyed these sites on the basis of László Tábori's unpublished report; in the case of some sites, we collected new evidence. Unfortunately, many sites have been destroyed by agricultural cultivation, erosion and grave robbers, and are known only from earlier descriptions. The field surveys and the research data indicate that the largest tumulus groups lay in Zalalövő. In the 19th century, Eduard von Sacken, an Austrian engineer, documented several hundred tumulus burials, forming two major clusters.

This is the largest such burial ground in the surveyed area. Some sixty tumulus burials have been reported from the Rédics Woods, an impressive number by all accounts. A systematic study of the known sites and the number of tumulus burials at each site shows a certain patterning of these burials, outlining smaller groups. The number of tumuli within a group is fairly consistent at a site (six, seven, eight, nine etc. tumuli), but there is a difference of magnitude between the groups (six to fourteen tumuli, nineteen to twenty-two tumuli, twenty-eight to thirty-two tumuli etc.). The boundaries between these groups are blurred, especially in the case of groups with a smaller number of tumuli, while they are

[27] *L. Horváth:* Római halomsírok Zalában (Römische Tumuli im Komitat Zala), in: *Völker an der Mur 1998* 33, with the earlier literature. The description and interpretation of the "flat" tumuli and the Söjtör burial ground are based on this study.

more perceptible in the case of groups with a higher number of tumuli. This can probably be associated with the size of the community or the number of successive generations using the burial ground.

Even though the analysis of these tumulus cemeteries, based on the data collected during field surveys, is quite instructive, it must be borne in mind that a better understanding of the communities using these cemeteries can only be gained from excavated sites. There were quite many so-called "flat tumuli", burials outside tumuli. At Söjtör, for example, there were twenty-seven burials under the twenty-one tumuli. According to the excavator, this was a family burial ground used over some 150 years. It can be regarded as the cemetery of a smaller, stable family villa farm *(villa rustica)*. Larger tumulus cemeteries were probably used by a larger community, while the smaller ones were most likely used for a briefer period of time. Solitary tumuli are exceptions. These were solitary burials because the individual buried under them was no doubt a privileged member of the community. This is also indicated by the fact that the diameter of these solitary tumuli is usually twice as large as that of the other tumuli *(fig. 5)*.

If we try to draw any conclusions concerning settlement history and settlement patterns from the number and distribution of the known tumulus groups, we find that the single settlement of municipal rank and size lay at Zalalövő, Roman Salla. The cemeteries lay along the roads leading north and west from the town. It seems likely that a settlement can be assumed near the other tumulus burials too. It is an irony of archaeological fieldwork that in areas such as forests, where tumuli can be more easily recognised owing to the lack of agricultural cultivation, settlement remains can be detected only with difficulty. The opposite is also true: settlement remains can be most easily identified in ploughed fields, where most of the tumuli have been ploughed away. The largest groups of tumuli, aside from Salla, suggest settlements which were considerably smaller. These settlements included Zalabaksa (thirty tumuli at Kerkabarabás and four at Zalabaksa) along the traditional course of the Amber Road and the Szilvágy area (with twenty-nine, thirty-two and thirty-five tumuli resp.), lying slightly east of the road. These probably marked more significant villas and road stations. The one-time presence of smaller or more briefly occupied *villae rusticae* and hamlet-like settlements is indicated by the tumuli at Pórszombat (7) and Pusztaapáti (8) east of the Amber Road, and the ones at Kerkakutas (11), Szentgyörgyvölgy (9), Márokföld (4), Nemesnép (4) Szíjártóháza (10) and Resznek (4) west of the road.[28]

New information on these settlements has only been gained in the case of Zalabaksa. We know that there was a significant villa here, whose industrial and trade activity spanned the time from the Domitian's reign to the end of the Severan period.[29]

Settlements: Municipium Aelium Salla (Zalalövő)[30]

The Zalalövő site has been known to Roman period research since the 19th century. The tumulus cemeteries at the two ends of the settlement were first surveyed by Eduard von Sacken; nineteen of the tumuli at the southern end were excavated by Róbert Müller. András Mócsy first conducted a rescue excavation and later began the systematic investigation of the site. This work was continued between 1976 and 1989 by the present author. We may say that the chronology of the site has been satisfactorily clarified.

Although we do not know of any major Celtic settlements in the Zalalövő area, it seems quite certain that the area had been inhabited prior to the Romans' arrival. This is indicated by the prehistoric, mostly Neolithic finds. A few traces of Celtic occupation have also been identified: the wall and house remains, which cannot be fitted into the street system created by the Romans, whose stratigraphic position too indicates that they predate the Roman period

[28] The data are quoted from László Tábori's report on his field survey. Archives of the Göcseji Museum, Zalaegerszeg. I excavated one of the tumuli at Nemesnép-Tatárdomb in 1998. The tumulus was the pair of another one of roughly the same size. Both tumuli had been robbed in antiquity.

[29] See the author's study in this volume pp. 285–306.

[30] For the literature on Zalalövő, cf. *F. Redő:* Zalalövő története az ókorban [History of Zalalövő in antiquity], in: A. Molnár (ed.): Zalalövő története. Zalalövő 1998, note 25, and *F. Redő:* Das Stadtgebiet von Salla/Zalalövő, Einleitung, in: *CSIR U* VIII, 29–36, a brief summary in German.

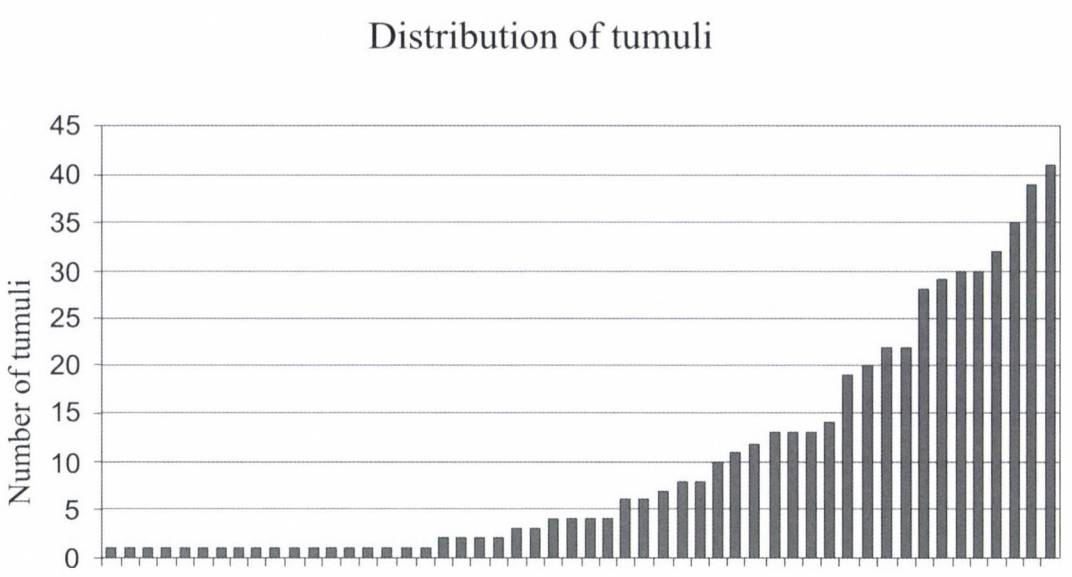

fig. 5. Distribution of Roman tumuli in western Pannonia

remains. The artefactual evidence is less unequivocal since most of the finds have a distinctly Celtic flavour during the Roman period too.

The Roman occupation transformed the trade route into a military one for some time.

The nature of the buildings (ditch, large barracks with a timber foundation) and the appearance of finds indicating Romanisation (early sigillata wares) from the early building phase suggest that there was a military camp here. This phase can be dated to the end of Augustus' reign and Tiberius' rule; the camp initially functioned as a marching camp for the mobile, marching troops. The section of the Amber Road leading through the camp was not paved at this time.

It would appear that the camp had a permanent garrison from the second phase, beginning with Claudius' reign. Although the names of the auxiliary troops stationed here are not known, certain auxiliary troops were probably stationed in western Pannonia during this period. The public utilities, a few stone buildings and the high proportion of Italian import wares reflecting Romanisation too indicate a permanent garrison.

The *floruit* of Salla falls into the few decades following the departure of the military in 85. The settlement had grown to such an extent by the turn of the century that Hadrian granted it urban rank. Its rank *(municipium)* and the identity of the donor are indicated by an inscription on the base of a statue of Minerva Medica found at Varaždinske Toplice (Varasdteplice).[31] Aside from this inscription, an altar dedicated to Iupiter[32] bears the abbreviation X^{V} M SAL, which can be read as DECEMVIR MVNICIPII SALLAE.[33] The town's size increased, and living standards and the quality of life also improved as shown by the stone houses, the street system, the public utilities and the dynamism of economic life, exceeding by far the Pannonian average. The boundaries of the town's *territorium* are only partly known. It seems that the River Rába acted as the boundary between the territoria of Salla and Savaria,[34] while the Lendva or the Mura separated it from the *territorium* of the next town towards the south.

[31] For the statue, cf. *M. Gorenc – B. Vikič:* Varaždinske Toplice – Aquae Iasae u antičko doba. Varaždinske Toplice 1980, 32–33, figs 19. 36, 20. 14, 9; *M. Gorenc:* Minerva iz Varaždinskih Toplica i njen majstor. VAMZ 3 ser. sv. XVI–XVII (1983–1984) [1984] 95–108, T. 1–8; for the inscription, cf. *A. Mócsy:* Municipia Salla, Mogentiana, Mursella, in RIU 2, 13; *A. Mócsy:* Der Decurio von Salla. Savaria 16 (1982) 309–312; *D. Rendić-Miočević:* O akvejasejskoj epigrafskoj baštini i o posebnostima njenih kultnih dedikacija. VAMZ 3, ser. sv. XXIV–XXV (1991–1992), 76; *D. Rendić-Miočević – M. Šegvić:* Religions and Cults in South Pannonian Regions, in: J. Fitz (ed.): Religions and Cults in Pannonia. IKMK Ser. A No. 33. Székesfehérvár 1998, 7, and fig. 2.

[32] *CSIR U* VIII, 38, T. 3, 1.1–1.3.

[33] Jenő Fitz's kind personal communication.

[34] *RIU* 2, 13.

In the west, the border with Noricum determined the extent of the *territorium*.[35] The other important road traversing Salla from east to west and linking the town with other settlements in the Zala Valley, with the villa farms in the Balaton Uplands and the Roman towns in the Little Hungarian Plain, was constructed at this time.

Between 118 and the outbreak of the Marcomannic wars, there were no major troop movements in the province. Domitian and Trajan's campaigns stabilised the borders of the empire; Transdanubia was gradually Romanised, a chain of military forts was constructed along the Danubian *limes* and even the easternmost Pannonian settlements began to flourish. This period marked a peaceful period of development throughout the province.

Salla's development reflects an entirely different process. The settlement had barely been elevated to the rank of *municipium,* when a slow decline began. This decline can be felt from the end of Hadrian's reign and in the mid-3rd century, and it is also reflected in the coin circulation.

The occupation of Pannonia increased the importance of the Danubian *limes* section bordering on the Sarmatian Barbaricum. A chain of military forts was built along the Danube. In 106, Pannonia was divided into two parts: the eastern part was reorganised as Pannonia Inferior, with Aquincum as the governor's seat. This change also affected the province's road network. The section of the Amber Road falling north of the Drava crossing point, which also led through Salla, became a side road compared to the Via Postumia leading to the north-east since this was the road linking Aquincum, the new seat, with the empire's heartland.

A similar shift can be assumed as regards the Amber Road and the *limes* road along the east–west Danube section. The Amber Road acted as the main route for the deployment of Roman troops and their supplies during the occupation of the province, while the *limes* was no more than an emerging, militarily little organised, geographical boundary. This situation changed following the division of the province: the areas along the Amber Road became protected inland areas of the province, while the *limes* road connecting the forts and watchtowers became the perhaps most significant feature of the frontier defence system. In sum we may say that during the first decades of the 2nd century, the importance of the Amber Road's section between the Drava and the Danube declined and became restricted to connecting two new, more important roads.

The earlier dynamism could still be felt in the town's life during the later 2nd century. This peaceful life was shattered by the Marcomannic–Quadic incursion. The Barbarians advanced as far as Aquileia along the Amber Road, burning and devastating everything in their path. Since there was no garrison stationed in Salla, it played no role in resolving the military conflict and therefore the town did not receive any share from the rewards. Although the town's occupants returned after the war, the settlement was unable to recover and became practically uninhabited by the first third of the 3rd century.

In the 4th century, the provincial seats lost their former administrative function. The seat was transferred from Aquincum, lying on the frontier in the province of Valeria, to Sopianae, situated much farther from the *limes* in the province's interior; the seat of Pannonia Prima was transferred from Carnuntum, also on the Danube, to Savaria. For Salla this meant that from 311 the neighbouring *territorium* became the *territorium* of the province's seat, lying no farther than a day's journey from the town.

This geopolitical situation is one of the explanations of why a revival can be noted in Salla in the early 4th century. It must also be borne in mind that the new administrative framework with its new provincial seats led to shifts in the road network and the course of a few roads. The section of the Amber Road passing through Salla was rebuilt in the early decades of the 4th century and the road leading through the Zala Valley was surfaced with basalt. A *villa publica* was built at the junction of the roads; the building's large size in itself

[35] *E. Hudeczek:* Flavia Solva, in: H. Temporini (hrsg.): Aufstieg und Niedergang der Römischen Welt, II: 6. Berlin – New York 1977, 416, Abb. 1; *E. Hudeczek:* Flavia Solva, in: Chr. von Gert (hrsg.): Leibnitz 75 Jahre Stadt. Festschrift zum Jubiläum der Stadterhebung am 27. April 1913. Leibnitz 1988, 23–24.

suggests the presence of a considerable number of service personnel in the spatially smaller, but nonetheless revived settlement. The *villa publica* was surrounded by other buildings.

Pannonia underwent a second period of prosperity under Constantine, who emerged victorious from the inner warrings of the third tetrarchy, and his successors. Salla probably also benefited from this prosperity since we know that emperors often travelled through this area. The town lay too far from the frontiers to be affected by the Sarmatian, Quadic and Gothic incursions. Only in the last decades of the century did urban life cease in the town, at roughly the same time as in Savaria and Carnuntum, the administrative centres in the north.

The town's inhabitants and the personnel of the *villa publica* had a tradition of no more than two generations since Salla was repopulated in the early 4th century. This was too brief a period for fortifying the settlement. The occupants had two choices: either to return to their ancestral homeland (in Italy or elsewhere), or to move to a nearby fort, such as Fenékpuszta. Salla was evacuated shortly before the turn of the century – the occupants took their belongings with them and surrendered the area to the peoples of the Migration period.

Settlements: Zalabaksa

This site has also long been known to scholars of this period. The site first attracted scholarly attention in 1952, when a beautiful gravestone of Styrian marble was brought to light during the construction of the Kerka bridge.[36] The elaborately carved stone can be dated to the late 1st century or earlier 2nd century on the basis of its stylistic traits. It was erected by a *libertus,* a freedman by the name of Publius Naevius Apollonius. His *gentilicium,* referring to his one-time owner, is an Italic name.[37] One-half of the documented occurrences of this name come from Italy, while 82 per cent from Italy and Dalmatia. His *cognomen,* indicating his own origins, is Greek.[38] Even though this name too occurs most frequently in Italy (27 per cent), in two instances there is also evidence for the bearer's origins *(natione Surus; domo Antiochia)* indicating an eastern, Greek linguistic environment. It seems likely that after he was freed by his northern Italian merchant-craftsman owner, the *libertus* was sent to the freshly Romanised province where, to all appearances, he managed to establish his own business.

We identified and surveyed the area of the settlement, from where the gravestone presumably originated. This area was a section of the Amber Road bordered by the Kerka and the Cupi streams. Although we have not found any stone buildings yet, we have uncovered the western edge of the road, the ditches along the road and the remains of burnt, wooden houses and pottery workshops. The site's stratigraphy indicates two well distinguishable periods. The two periods can be dated on the basis of the coin finds, the terra sigillata, oil lamp and other pottery fragments. The first phase spans the period from the late 1st century to the mid-2nd century. The second phase began after the Marcomannic incursions and lasted until Severus Alexander's reign in the first third of the 3rd century.

The settlement was not military in nature. It remained insignificant at the time, when the military reigned supreme in this region. Only after civilian urban development began in Salla did this settlement prosper. The rich find material recovered from the site includes a relatively high number of graffiti, inscriptions incised onto vessels referring to their owner. Some of these inscriptions are Greek. These inscriptions indicate a household larger than the average family one, whose members included individuals not bound by family ties since inscriptions relating to the ownership of vessels would be senseless in a small family circle.

The other finds too suggest that there was a villa farm or perhaps a trade depot here, active until urban life remained possible. Following the abandonment of Salla, this area too became unpopulated and apparently remained so in the 4th century.

[36] For the inscription, cf. *RIU 2,* No. 285; for the carving, cf. *CSIR U* VIII, No. 17, Taf. 14.

[37] *A. Mócsy – R. Feldmann – E. Marton – M. Szilágyi (eds):* Nomenclator provinciarum Europae Latinarum et Galliae Cisalpinae com indice inverso. DissPann Ser III. Vol. 1. Budapest 1983, 197.

[38] *B. Lőrincz – F. Redő (eds):* Onomasticon provinciarum Europae Latinarum. I. Aba – Bysanus. Budapest 1994, 146.

Summary

The westernmost part of Pannonia, where the Kerka Valley lies, was inhabited by Celtic tribes in the century preceding the Roman conquest. The most important tribe was that of the Boii. After the defeat suffered from the Dacians, the Boii withdrew northward; the Celtic groups remaining in this region were insignificant – their name was not recorded and their social organisation was not preserved. Roman reports simply call them "the people by the Rába" or do not mention them at all. The Romans did not have to base the administration of the newly conquered territory on a *civitas peregrina.*

The actual process of the Roman conquest is fairly well known. The first phase involved the occupation of the territories between the Drava and the Sava. Once they had gained a foothold, the Romans began to expand into Transdanubia, lying north of the Drava. The base for this expansion was the Amber Road, which was probably part of Noricum in the first decades of the 1st century AD. Legionary forts were built in Poetovio and Carnuntum. Auxiliary troops were stationed in Salla. The products of Roman industry appeared together with the army. As a result of Romanisation, a process spanning some six decades, Roman rule over Pannonia was consolidated by the end of the Flavian period. By the time of Domitian's Danubian wars, there was no need for the military securing of the Zala region, which had by that time become an "inner" Pannonian area; the troops were transferred to other garrisons, opening the way for civilian development.

The basis of this development was the *vicus* around the military camp of Zalalövő, the sudden growth of the settlement and the beginning of civilian life in the area. The villa farms at Zalabaksa and Alsórajk were also established at this time. The earliest tumulus burials date to the close of the 1st century.

This development reached its apogee when Hadrian ascended the throne. The former *tribunus laticlavius* of Aquincum, who later rose to the rank of Pannonian governor, granted urban rank to half a dozen Pannonian settlements, including Salla, when he became emperor. The ensuing peaceful development could, in theory, have remained unbroken in this region too; however, the initial dynamism appears to have halted in the middle third of the 2nd century in the Kerka Valley, even though life continued on the settlements. The main reason for this was that the construction of the Danubian *limes* and of the road linking the legionary forts and auxiliary camps, as well as the emergence of civilian settlements beside these forts and the use of the so-called diagonal road linking Poetovio with Aquincum, led to a shift in the communications and military priorities in the reorganised province. The section of the Amber Road passing through the Kerka and the Zala valleys, originally a military deployment route and, later, a major artery of communication, became of secondary importance – this did not stifle Roman culture in this region, but it did slow down its development.

The real tragedy came with the incursion of the Marcomannic tribes in 169. The Barbarians advancing from the Danube to the Adriatic devastated the settlements in their path. They torched Salla and also destroyed the other settlements in the area. They did not pause for long in these towns and villas, for the more prosperous towns in the south, such as Aquileia, were more attractive targets than this Pannonian region. There was no trace of any devastation by the Marcomanns in the villa at Alsórajk, lying no more than a day's journey to the east, but approachable only through difficult terrain abounding in lakes. Since the Barbarians did not meet with any resistance, it seems likely that the toll on human life was not too great. The Romanised population probably fled to the nearby woods to tide over the incursion. In 171, Marcus Aurelius drove the Marcomanns from the empire and his subsequent campaigns were conducted beyond the province's frontier. The inhabitants of the Kerka and Zala valleys returned to their plundered homes and rebuilt them as far as possible. Administration ceased in Salla after the Marcomannic war; the urban infrastructure broke down and people began building their homes on the public streets. The beginning of the second phase of the Zalabaksa *villa* can also be dated to this period.

The Marcomannic incursions had a serious impact on political events. The Danubian *limes* was fortified and a great military power was concentrated in Pannonia compared to

the province's size. This military power became a political one when Septimius Severus, commander of the troops stationed in Carnuntum, was proclaimed emperor. Similarly to Hadrian, Septimius Severus gave every support to the military protecting the province and its frontier, perhaps even more openly than his predecessor. The greatest prosperity along the *limes* section from Vindobona to Singidunum can be noted during the Severan period.

The flourishing along the *limes* siphoned off the last resources of the smaller inner Pannonian settlements along the Amber Road. The *Tabula Peutingeriana* makes no mention of Halicanum and Salla, and neither would the villa at Zalabaksa have been included, had it had a name. The course of the main road shifted a few miles west, and the site clusters described in the above emerged along this new road. The tumulus groups found along this road were smaller than the ones along the traditional road, in part owing to the later commencement of the burials – fewer generations were buried under these mounds. The relatively larger tumulus groups at Szentgyörgyvölgy and Kerkakutas point towards Pankasz, where the new road crossed the River Zala. The earlier settlements were not abandoned. The Severan period has been documented both at Salla and the Zalabaksa villa. However, neither survived after the mid-3rd century, marking the end of the second phase. None of the datable tumulus burials extend beyond this date. A certain continuity can only be demonstrated in the use of the roads.

There are few signs of life from the later 3rd century in this region. A few stray coins are known from Salla. Only in the early decades of the 4th century was life resumed in the once prosperous *municipium.* By this time, the archaeological record is silent about the Roman period in the Kerka Valley. The Zalabaksa villa was abandoned in the mid-3rd century and the last tumulus burials too date to this period. The 4th century cemeteries have an entirely different character. No such cemetery has yet been found at Zalalövő. It seems likely that life continued since the *villa publica* in Salla served some public function. Traces of this survival could no doubt be demonstrated on the settlements, but no research of this type has yet been conducted in the Kerka Valley.

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BORDERS, BORDER DEFENCES AND BORDER GUARDS IN THE EARLY MIDDLE AGES

The Kerka Valley in the Migration period and in the Early Middle Ages

The intensive surveys and the sounding excavations in the Kerka Valley have confirmed earlier impressions that this region was uninhabited during the roughly six centuries between the late Roman Age and the early Árpádian Age (from c. 400 to around 1100).[1]

Citing the natural conditions of the region as unsuitable for agriculture, the weak, clayey soil, the marshy areas with high water-level and the woodlands would be a far too simple explanation for the lack of settlements since we know that the region was inhabited both in the preceding and subsequent periods. There were quite a few towns and villa economies in the preceding Roman Age and the settlement network during the early Middle Ages and the postmedieval period was relatively dense, indicating that the region could decently sustain its inhabitants. The Amber Road leading through this region most certainly enhanced the attraction of the region (trade along this major road peaked between 70 and 166).[2] The well-built and carefully maintained road had its disadvantages, as the occupants of the region learnt in times of war.

Arriving from the north, the barbarian peoples easily advanced as far as Italy along the Amber Road in 160–180, during the Marcomannic–Quadic–Sarmatian wars. The walled towns, such as Savaria (Szombathely) and Scarbantia (Sopron), provided a safe refuge, while the smaller settlements, such as the *municipium* of Aelium Salla (Zalalövő),[3] which functioned as a road-station *(mansio)* by the 4th century, and the villa economies along the road[4] were totally plundered by the close of the Roman Age. The Aquileia–Aquincum road became the main artery of trade.[5]

The Gothic–Alanic–Hun alliance led by Alatheus and Saphrax in the late 4th and early 5th century had a major impact on the settlement patterns in the region (cf. the family burial ground uncovered at Kilimán[6]), while the Gothic tribes arriving in their wake and, later, Attila's Huns and their German allies redrew the entire political map of

[1] *B. M. Szőke:* A Kerka völgye a Krisztus utáni első évezredben. Csesztreg és környékének településtörténeti kérdései a római megszállástól a magyar államalapításig [The Kerka Valley in the 1st millennium AD. Settlement history of the Csesztreg area from the Roman occupation to the foundation of the Hungarian State], in: *Csesztreg 1996* 21–32.

[2] This ancient trade route played a major role in the conquest of Pannonia. When the province was divided into two parts in the early 2nd century, the governor of Pannonia Superior chose Carnuntum (Petronell) lying by the Danubian crossing place of the Amber Road as the centre of the military administration and the province's seat, while the town of Savaria, established at the junction of major inland roads, became the seat of the civilian administration. Following Diocletian's reforms in the early 4th century, Savaria again played an important role in the province's administration; the emperor visited the town on several occasions. *J. Wielowiejski:* Die Bernsteinstrasse Adria–Ostsee in archäologischer und touristischer Sicht, in: *Gömöri 1999* 135–137; *Mócsy – Fitz 1990* 189.

[3] *A. Mócsy:* Römische Forschungen in Zalalövő. ActaArchHung 27 (1975) 163–203; ActaArchHung 28 (1976) 147–196; ActaArchHung 19 (1977) 209–279; *F. Redő:* Römische Forschungen in Zalalövő. ActaArchHung 30 (1978) 349–430; ActaArchHung 31 (1979) 357–390; ActaArchHung 33 (1981) 273–346; ActaArchHung 34 (1982) 323–362; ActaArchHung 41 (1989) 349–430.

[4] Such as the one at Alsórajk. *F. Redő:* Roman villa at Alsórajk-Kastélydomb 1987–93, in: *Hahót Basin 1995* 269–305.

[5] For the importance of the Amber Road and the Aquileia–Aquincum road and the relation between the two, cf. *K. Póczy:* A „via Postumia" meghosszabbítása a dunai átkelőhelyekig (Die Verlängerung der „Via Postumia" bis zur Donau), in: *Gömöri 1999* 49–56.

[6] *B. M. Szőke:* Das völkerwanderungszeitliche Gräberfeld von Kilimán-Felső major, Kom. Zala (SW-Ungarn). ZalaiMúz 6 (1996) 35–45; *B. M. Szőke:* Das völkerwanderungszeitliche Gräberfeld von Kilimán-Felső major, in: *Hahót Basin 1996* 29–59.

Europe.[7] The earthquake on September 7, 456, destroyed not only the buildings in Savaria,[8] but – figuratively speaking – the entire province, which was soon lost to the Roman Empire. The remnants of the provincial population fled to the inland provinces of the empire and to safer regions in the Alps and the Karst Mts., establishing well-defendable hilltop settlements in Carinthia and the Krain, in the Styrian and Julian Alps. The late Roman population preserved many elements of the late antique–Christian culture, reflected for example in the surviving monuments of ecclesiastic architecture.[9] The Kerka Valley lay beyond the settlement territory of the German tribes – Goths, Suebians and Langobards – settling in Transdanubia, although they undoubtedly used the Amber Road, one of the major trade and military roads leading to Italy, meaning that they often passed through this region.[10]

Uniting the entire Carpathian Basin in a coherent political framework, the Avar Kaganate ruled the region for several centuries (568–811). The Avars' final settlement territory was established after the end of their military expeditions. At the close of the 7th century, the borders of this settlement territory were protected against unexpected attacks with wide, uninhabited zones. The roads connecting the Kaganate with the Langobard Kingdom of Italy and the Alpine Slavs (Karantani) in the south and south-east were from the early 7th century controlled by a mixed Avar–Slav population, whose ranks included a high number of mounted Avar warriors (the so-called Pókaszepetk–Zalakomár group) who had settled in the Zala Valley.[11]

When Pepin, Charlemagne's son marched against the Avars from northern Italy and Friaul through the Drava–Mura Valley in 796, he encountered Christian population groups on his journey. Although it has been suggested that these groups lived in the Avar Kaganate[12] and that some of them can be perhaps be regarded as the late descendants of the Keszthely group,[13] it seems more likely that these Christian groups lived either on the fringes of the Kaganate or outside it.[14] No Christian elements can be demonstrated in the archaeological heritage of the Avar–Slav population living in the south-western borderland of the kaganate, in the Drava–Sava Interfluve, in the region of Mura–Drava Interfluve (Međimurje/Muraköz) and in south-western Transdanubia;[15] in contrast, the late antique population, who retreated to the fortified upland settlements of the Styrian and Julian Alps, still led an active religious life in the 7th century, building churches and monasteries. When the bishops of Salzburg, Passau and Aquileia held an ecclesiastic conference *Ad ripas Danubii* after their return from the 796

[7] *Wolfram 1990³; I. Bóna:* Das Hunnenreich. Budapest 1991.

[8] *E. Tóth:* Adatok Savaria történetéhez (A review of the history of Savaria), in: *Gömöri 1999* 62–81.

[9] *P. Petru – T. Ulbert:* Vranje bei Sevnica, frühchristliche Kirchenanlagen auf dem Ajdovski gradec. Ljubljana 1975; *S. Ciglenečki:* Höhenbefestigungen aus der Zeit vom 3. bis 6. Jh. im Ostalpenraum. Ljubljana 1987; *F. Glaser:* Das frühchristliche Pilgerheiligtum auf dem Hemmaberg. Klagenfurt 1991.

[10] Cf. *Szőke 1994a* 145–214.

[11] *Szőke 1994b; Á. Cs. Sós – Á. Salamon:* Cemeteries of the Early Middle Ages (6th–9th c.) at Pókaszepetk. Budapest 1995; *B. M. Szőke:* Das archäologische Bild der Slawen in Südwestungarn, in: *Bratož 2000* Bd. I, 477–505.

[12] The archaeological record and the written sources do not confirm the rather extreme claim that "it seem quite certain that there were Christian masses living on the territory of the former province [of Pannonia] in 796" (*E. Tóth:* Szent Adorján és Zalavár [Saint Adrian and Zalavár]. Századok 133 [1999] 3). In the 8th century, the Salzburg bishopric regarded the conversion of the Karantan Principality as one of its main tasks. The biographers of the saints of the Bavarian church (St. Rupert, St. Emmeram) active in the late 7th–early 8th century mention the plans of a mission in the land of the Avars (which, however, were never actually realised). Later, however, the idea of converting the Avars was not even considered. Cf. *H.-D. Kahl:* Aquileja und Salzburg. Beobachtungen und Thesen zur Frage romanischen Restchristentums im nachvölkerwanderungszeitlichen Binnennorikum (7.–8. Jh.), in: H. Wolfram – F. Daim (hrsg.): Die Völker an der mittleren und unteren Donau im 5. und 6. Jahrhundert. Wien 1980, 33–81; *B. Wavra:* Salzburg und Hamburg, Erzbistumsgründung und Missionspolitik in karolingischer Zeit. Berlin 1991, passim.

[13] *R. Müller:* Der Untergang der Antike und ihr Nachleben im nördlichen Pannonien (Transdanubien), in: *Bratož 2000* Bd. I. 249.

[14] *F. Zagiba:* Das Geistesleben der Slawen im frühen Mittelalter. Annales Instituti Slavici 7. Wien – Köln – Graz 1971, 61–64; *R. Bratož:* La cristianizzazione degli slavi negli atti del convegno "Ad ripas Danubii" e del concilio di Cividale, in: XII Centenario del concilio di Cividale (796–1996) convegno storici-teologici-Atti. Udine 1998, 176–178.

[15] *Szőke 1994b.*

campaign to determine the evangelisation districts of Pannonia, the methods of missionary activity and the means to be employed, they were discussing the fate of a mixed, pagan Avar population following a variety of beliefs, but essentially untouched by the teachings of Christianity.

A series of vassal states depending directly or indirectly on the Carolingian Empire emerged on the ruins of the Avar Kaganate in the earlier 9th century. From the 840s, one of the Carolingian *comitatus* created by the River Zala and Lake Balaton (with Mosaburg/Zalavár as its centre) was headed by Priwina, who had been driven away from Nitra and, later, by his son Chezil; the *comitatus* of Ratpod and Rihharius lay to its north-west, extending from the Danube to the Rába and the Savaria area. Manor houses and churches were built in the centres and on the estates of the nobles in the counts' retinue; the missionary monks, the soldiers, the craftsmen and the peasants arriving from other parts of the Carolingian Empire introduced an early feudal economy and its lifeways. Although there was nothing to limit the expansion of the Mosaburg *comitatus,* the distribution of archaeological sites indicates that the noblemens' manor houses and the settlements of the servicing peoples in part lay in the Zala Valley north of the Mosaburg/Zalavár centre, extending to the river bend at Zalabér (cf. Salapiugin's efforts to identify these), in part along the western shores of Lake Balaton up to the Keszthely-Fenékpuszta area,[16] and in part on the southern Zala plainland up to the Nagykanizsa-Letenye line.[17] In contrast, only one single site is known from the valley of the Széviz-Kanizsa streams, running parallel to the Zala Valley (the Hahót Basin): the biritual family graveyard uncovered at Alsórajk, at the end of the western road leading to Zalavár. No other sites are known west of this burial ground.[18] The pagan burial rite and the cremation of the dead in the Alsórajk graveyard suggest that control over this area was fairly weak and unstable, indicating that the site lay on the periphery.

The arrival of the ancient Hungarians brought an end to the life of the Mosaburg *comitatus.* A part of the servicing peoples departed together with the secular and ecclesiastic dignitaries, another part settled in the new centres, while some remained in the Mosaburg centre and its immediate area. The area again became a marchland, even though the Zala Valley and its dense network of the servicing peoples' villages are often mentioned in the early charters.[19]

The examination of how the Kerka region was depopulated and its transformation into a marchland in the early Middle Ages in a broader context seems most instructive both as regards the process itself and the gradual change in the concept of "border" since this allows a few more general conclusions.

From the Roman limes to the emergence of the foederati system

The border defence of the Roman Empire was based on the chain of fortresses along the Danube, the *limes* extending along the Danube between Vindobona and Singidinum, and the defensive structures in the regions beyond it. We know that the troops stationed along the *limes* could never effectively repel the barbarian peoples' attacks and the fact that the Roman army was stationed unevenly between the camps meant that the inland areas of the empire remained unprotected. Since there was no internal defence system to check the barbarian armies crossing the Danube, they could advance unhindered to the Adriatic and even farther, to Italy. It is therefore still unresolved to what extent the chain of forts and the smaller *burgi* built at a later date served defensive purposes and to what extent their role was political, military or purely

[16] For a register of the 9th century sites and their distribution, cf. *B. M. Szőke:* Die landschaftsgeschichtlichen Verhältnisse im unteren Zalatal, in: *Szőke 1992* 33–39, Abb. 1.

[17] *E. H. Kerecsényi:* IX. századi sírok Letenyén (Gräber aus dem 9. Jahrhundert in Letenye). FolArch 24 (1973) 135–151; *B. M. Szőke:* 7. és 9. századi településmaradványok Nagykanizsán (Siedlungsreste aus dem 7. und 9. Jahrhundert in Nagykanizsa, SW-Ungarn). ZalaiMúz 4 (1992) 129–167; *Szőke 1994a* 189–193.

[18] *Szőke 1996.*

[19] *H. Göckenjan:* Hilfsvölker und Grenzwächter im mittelalterlichen Ungarn. Quellen und Studien zur Geschichte des östlichen Europa Bd. 5. Wiesbaden 1972; *B. M. Szőke – L. Vándor:* Pusztaszentlászló Árpád-kori temetője (Arpadenzeitliches Gräberfeld von Pusztaszentlászló). FontArchHung. Budapest 1987, 83–85.

administrative.[20] It would appear that the Romans regarded the Danube as an administrative border, as a fortified supply line that was part of the *limes,* but not the frontier itself, the idea of the frontier being a broader and considerably more complex concept. The final collapse of these frontiers can be attributed to the internal political instability of the empire, rather than to external military pressure.

The first report on the forts on the left bank of the Danube, constructed in the Great Hungarian Plain between the Danube and the Tisza, dates from 294.[21] The most spectacular construction beyond the *limes* was the Devil's Dyke,[22] a 700 km long rampart, which ringed the Sarmatians' settlement territory from Aquincum to Viminacium. The archaeological evidence indicates that the *limes Sarmatiae* was established sometime in the late 3rd–early 4th century or in 322 at the latest, after the Sarmatian campaign.[23] (Another ditch system, the so-called "Brazda lui Novac", extending for some 300 km from the Iron Gates to the Carpathian piedmont, also functioned as a kind of border.) There is no reason to assume that the *limes Sarmatiae* was patrolled by Roman troops or that a direct association should be posited between this rampart system and various late Roman forts, such as the one at Hatvan-Gombospuszta and Felsőgöd, both of which lay near the rampart.[24] The ditch and rampart system apparently marked a political boundary; it was a sign of Roman military control, which distinguished the Sarmatians, the Romans' clients (Amm. Marc. XVII. 12.15) from the Vandals, Taifals, Gepids and Goths to their north.[25] Typically enough, when the Goths and the Gepids began to harass the Sarmatians, the *limes Sarmaticae* played no military role whatsoever in the armed conflict; at the same time, the *limes* section south of Aquincum was reinforced with watchtowers and forts. Simultaneously with the reconstruction of the *limes* forts and the establishment of new forts or the rebuilding of already existing ones in the province's inland areas, a number of *burgi* were constructed in the Danube Bend, in the area where the Sarmatians' and Quads' settlement territory overlapped, towards the end of Aurelian I's rule.[26]

The relation between the *limes* and the *Limesvorland* is reflected in the villas built in the Roman style, often equipped with a bath, which yielded a wide range of Roman products. These villas were built along the rivers flowing into the Danube in southern Moravia and Slovakia, where the one-time settlement territory of the Marcomanns and the

[20] *C. R. Whittaker:* Frontiers of the Roman Empire. A Social and Economic Study. Baltimore–London 1994, 175.

[21] *A. Mócsy:* Ein spätantiker Festigungstyp am linken Donau, in: D. M. Pippidi (ed.): Actes du IXe congrès international d'études sur les frontières romaines. Mamaia 1972. Bucureşti – Köln – Wien 1974, 191–196; *A. Mócsy – D. Gabler:* Alte und neue Probleme am Limes von Pannonien, in: Studien zu den Militärgrenzen Roms III. Vorträge des 13. Internationalen Limeskongresses, Aalen 1983. Forschungen und Berichte zur Vor- und Frühgeschichte in Baden-Württemberg 20. Stuttgart 1986, 369–376.

[22] *V. Balás:* Die Erdwälle der Ungarischen Tiefebene. ActaArchHung 15 (1963) 309–336; *S. Soproni:* Limes Sarmatiae. ArchÉrt 96 (1969) 43–52; *U. Fiedler:* Zur Datierung der Langwälle an der mittleren und unteren Donau. AKorr 16 (1986) 457–465.

[23] *K. Horedt:* Die siebenbürgische Limesstrecke Dakiens, in: Studien zu den Militärgrenzen Roms II. Vorträge des 10. Internationalen Limeskongresses in der Germania Inferior, Köln 1974. Beihefte Bonner Jahrbücher Bd. 38. Bonn 1977, 331–338; *S. Soproni:* Eine spätrömische Militärstation in sarmatischen Gebiet, in: E. Birley – B. Dobson – M. Jarrett (eds): Roman frontier studies, 1969. Eighth International Congress of Limesforschung. Cardiff 1974, 197–203; *S. Soproni:* Contra Acinco e Bononia: Bemerkungen zu den Fasti des Hydatius, in: Studien zu den Militärgrenzen Roms II. Vorträge des 10. internationalen Limeskongresses in der Germania Inferior, Köln 1974. Beihefte Bonner Jahrbücher Bd. 38. Bonn 1977, 393–397.

[24] *T. Nagy:* Drei Jahre Limesforschungen in Ungarn, in: D. M. Pippidi (ed.): Actes du IXe congrès international d'études sur les frontières romaines, Mamaia 1972. Bucureşti – Köln – Wien 1974, 27–37.

[25] *Mócsy 1974* 271.

[26] For the function and the dating of the inland forts, cf. *E. Tóth:* Zur Chronologie der militärischen Bautätigkeiten des 4. Jahrhunderts in Pannonien. MittArchInst 14 (1985) 121–136; *E. Tóth:* Az alsóhetényi 4. századi erőd és temető kutatása 1981–1986. Eredmények és vitás kérdések (Vorbericht über die Ausgrabung der Festung und des Gräberfeldes von Alsóhetény 1981–1986. – Ergebnisse und umstrittene Fragen). ArchÉrt 114–115 (1987–1988) 22–61.

Quads lay.[27] The earliest villas were built after the Marcomannic wars in the 2nd century, during Commodus' reign, and many of them were still in use in the 3rd–4th centuries. The ones lying along the Amber Road were most likely occupied by Roman merchants, while others functioned as the house or fortlet of Roman military commissioners, such as the building uncovered at Mušov in which Roman weapons were found, or as the seats of local princes, such as the one at Cífer-Pác. The Roman buildings and the high number of Roman products reflect the close and usually peaceful relations with the Romans, as does the fact that Quadic, Sarmatian and Jazygian troops served as regular ethnic units in the Roman army. The Roman policy of controlling the *Limesvorland* proved successful for a fairly long period of time, even if it eventually collapsed under pressure from the Suebians, Vandals and Goths.

The role of the foederati in the frontier defence

The imperial edict of 376, allowing the settlement of large masses of armed Goths, who had been granted the status of allies without *receptio,* in the Balkans and the catastrophic defeat suffered at Hadrianopolis in 378 (in part the result of the settlement of the Goths) opened a new chapter in the relations between the Roman Empire and the barbarian tribes assaulting its frontiers.[28] The Greutung Gothic–Hun–Alan group led by Alatheus and Saphrax, which played a key role in the Battle of Hadrianopolis, repeatedly raided Pannonia from 379 and advanced as far as present-day Burgenland and Styria. After eliciting the conclusion of the *foedus* from Gratian, they most probably settled in Transdanubia (cf. Bishop Amantius' tombstone[29]), although the exact location of their territory is not known. In 402, the Visigoths led by Alarich – who was by then *magister militum per Illyricum* – settled in southern Pannonia, while another Gothic group under his brother-in-law Athaulf settled in western Pannonia. In 405, Radagasius and his mixed barbarian army marched against Italy through Pannonia. Although the Visigoths left for Italy in 408, the province could no longer restore its former organisations, not only in terms of its military defence, but also as regards its administration.[30] In 433, Pannonia Prima came under direct Hun control; the Emperor Avitus tried unsuccessfully to wrest back the province after Attila's death in 455.

The events of the later 4th and the early 5th century clearly showed that the static Danubian *limes* was no longer suitable for controlling the barbarian tribes, leading to a shift in the defence policy towards a more flexible defence system, involving the construction of a series

[27] *T. Kolník:* Villa rusticae in nordpannonischen Limesvorland? in: H. Vetters – M. Kandler (hrsg.): Akten des 14. Internationalen Limeskongressus in Bad Deutsch-Altenburg/Carnuntum 1986. Wien 1990, 779–787; *T. Kolník:* Römer und Barbaren im nördlichen Mitteldonaugebiet, in: Roman Frontier Studies, 1989. 15th International Congress of Roman Frontier Studies. Exeter 1991, 432–434; *L. F. Pitts:* Relations between Rome and German kings on the middle Danube in the first to fourth centuries A.D. JRS 7 (1989) 45–58.

[28] *L. Várady:* Késő római hadügyek és társadalmi alapjaik. A római birodalom utolsó évszázada (376–476) [Late Roman military affairs and their social background. The last centuries of the Roman Empire, 376–476]. Budapest 1961, 40–41.

[29] *Corpus Inscriptorum Latinarum* 5. 1623; *Wolfram 1990*[3] 252–257. The historical data suggest a settlement in the Drava–Sava interfluve, while the archaeological record indicates a settlement in eastern Transdanubia. The distribution of the pottery finds reveals that the centres of their settlement territory lay in Valeria and Pannonia Prima. Cf. *S. Soproni:* Die letzten Jahrzehnte des pannonischen Limes. MBV 38. München 1985, 86.

[30] *Mócsy 1974* 353–354, dates the first and most large-scale migration of the Roman population to 408. The groups fleeing the barbarians' advance took with them the relics of their martyrs in the hope that these would protect them during their long journey and in their new homeland. The Christians of Savaria (mistakenly referred to as Scarbantia by *Mócsy 1974* 353) took with them the relics of St. Quirinus, Bishop of Siscia (Sisak/Sziszek), martyred in Savaria in 303 or 308. After arriving to Rome, they found a final resting place on the Via Appia, in the basilica dedicated to the Apostles Peter and Paul, where St. Sebastian was also laid to rest. The relics of the martyr Demetrius were taken to Salonica, the Bishop Amantius (or perhaps his body by way of *translatio*) to Aquileia. Cf. *A. Alföldi:* A kereszténység nyomai Pannoniában a népvándorlás korában [Relics of Christianity in Pannonia during the Migration period], in: J. Serédi (ed.): Szent István Emlékkönyv I. Budapest 1938, 162–163; *T. Nagy:* A pannoniai kereszténység története a római védőrendszer összeomlásáig [History of Christianity in Pannonia until the collapse of the Roman defence system]. DissPann Ser. II. 12. Budapest 1939, 68 ff.

of inland forts and by entrusting the defence of a particular territory to the allied barbarian groups occupying it in accordance with the terms of the treaties concluded with them. The dwindling Romanised population practically retreated to the walled towns and the inland forts, while the protection of arable land and rural economies became the task of the armed *foederati* barbarian groups. This new defence strategy is also reflected in the new fortifications erected in the corners of the earlier military forts (as at Carnuntum), most of which were constructed after the shift from the regular *limitaneus* units to the *comitatenses* and allied troops.[31]

The exact status of the *foederati* cannot be easily determined. The direct military and political interests of the empire were fairly obvious: Rome needed armed masses, who could be deployed in any part of the empire, whose ranks could no longer be replenished either from the veterans' families, who were encouraged to provide soldiers with various incentives, or by the forced recruitment from the barbarian tribes along the frontier. The relation between the allied enclaves and the frontier they had to defend and protect is unclear, and neither do we know the exact extent of the frontier sections they controlled. It is similarly uncertain when they were part of the regular army and when they were recruited as irregular troops for special campaigns.

Following the Hun–Gothic period, the relation between Pannonia and the empire became virtual in the late 5th and early 6th century. The alliance binding the Langobards and the Gepids – last tribes of the Germanic migrations – to the East Roman Empire was more of a licence to take possession of the territory. The Romanised, Christian population of the province had in part left and had in part been replaced by Romanised barbarian groups – Suebians and other Danubian Germanic groups, as well as Sarmatians – who had since long been neighbours of the province and who had gradually moved to the inland areas of the province. The Langobards did not settle among the population of a flourishing Roman province, but rather replaced this population.[32]

The emperor did not give up Pannonia so easily. Byzantium retained her legal claim on the territories beyond the Drava, which were regarded as Byzantine lands in the 6th century – in the Byzantine concept, control over these lands befitted the successor of the *imperium Romanum*. This is reflected in the treaty concluded with the Langobards in 546/547, in which Emperor Justinian I (527–565) donated the provinces of Pannonia Secunda and Savia, together with the towns and fortified places of the adjoining Norican areas, to King Audoin.[33] Byzantium no longer requested the defence of these areas in exchange, but asked for the military strength of the Langobard warriors against the Italian Ostrogoths and the Gepids in Great Hungarian Plain. The contract drawn up in 570 by Tiberios, Justinus II's plenipotentiary envoy, and Apsich, the Avar envoy, expressed a similar concept. According to the contract Bajan, Kagan of the Avars, requested the Emperor's consent for the occupation of Pannonian territories, which were not under Byzantium's control (i.e. the territories beyond Sirmium and

[31] *S. Soproni:* Nachvalentinianische Festungen am Donaulimes, in: Studien zu den Militärgrenzen Roms III, Vorträge des 13. Internationalen Limeskongresses, Aalen 1983. Forschungen und Berichte zur Vor- und Frühgeschichte in Baden-Württemberg 20. Stuttgart 1986, 409–415.

[32] One of the still unresolved issues of research in this field is the determination of the ratio and composition of the surviving Romanised population. The survival of the population in the neighbouring southern and western provinces can be documented also archaeologically until the early 7th century. In Pannonia, however, research was predominantly focused on the archaeological heritage of the newly arrived barbarian tribes. Even though the written sources do not mention the depopulation of the entire province or that the Goths, Langobards and Gepids settled in uninhabited areas, the archaeological record tends to confirm this impression. *E. Tóth:* Bemerkungen zur Kontinuität der römischen Provinzialbevölkerung in Transdanubien (Nordpannonien), in: B. Hänsel (hrsg.): Die Völker Südosteuropas im 6. bis 8. Jahrhundert. Südosteuropa Jahrbuch Bd. 17. Berlin 1987, 251–264.

[33] *Procopius, De bello gothico.* Ed.: O. Veh. München 1978, III. 33. 7–13; *I. Bóna:* Der Anbruch des Mittelalters. Gepiden und Langobarden im Karpatenbecken. Hereditas. Budapest 1976, 24: *urbs Pannoniae* and *Norikon Polis; W. Menghin:* Die Langobarden. Archäologie und Geschichte. Stuttgart 1985, 34: "Audoin ... wurde mit dem *Gemeinwesen der Noriker und den Kastellen bei Pannonien und vielen anderen Festungen* und mit sehr großen Goldsummen (beschenkt)"; *Nagy 1948* 139, note 14: "fortified places".

its environs), and he thereby acknowledged not only the Byzantine claim, but also that the treaty he had signed with Alboin before the Langobards' departure was no longer valid.[34] Even though the treaty was not signed at this time owing to the Emperor's resistance, three years later Byzantium relinquished her control over Pannonia, which had by then been evacuated by the Langobards, and also over Pannonia Secunda north of the Sava.[35] Similarly to the Langobards, the Avars promised military aid and, for example, they sent mercenaries, who fought on Byzantium's side in the war against the Persians (575).

The settlement of the *foederati* opened a new chapter in the province's life and it was an event, which came to be regarded as a sharp divide many centuries afterwards. The *Conversio Bagoariorum et Carantanorum* (c. 6) – probably based on Marcellinus comes' *Chronica* – records that "in the year 377 of the Lord's nativity and later, the Huns departed from their homes lying north of the Danube; they crossed the river and drove away the Romans, the Goths and the Gepids"; in other words, the Salzburgian author too regarded the settlement of the first *foederati* as marking the end of the Roman Age.[36] And rightly so, since the settlement of the barbarian groups was only seemingly advantageous, promising a new and more efficient defence, while in truth it intensified the centripetal tendencies that counteracted the dynamisms and values cementing the empire. Moreover, it did not fulfil the hopes expected from the settlement. The main reason for this was the Germanic tribes' political organisation, the "state" based on personal loyalties, described as a *"Personenverbandstaat"* by scholars of this period. The substrate of this "state" was not a specific territory, but the "people" and the personal bonds between individuals, based on authority and subordination, on leadership and retinue, while the state power was in essence replaced by the manifold relations between the king and the people and the king and the nobility.[37]

The border defence of the Avar Kaganate: the marchland

In 582, Sirmium, the northern gate of the East Roman Empire, was occupied by the Avars and the entire former province of Pannonia thus came under Avar control. As head of the political power in the Carpathian Basin, the Avar Kagan shook off the last remnants of the alliance. The annual tribute was no longer paid for services rendered to the Byzantine Empire, but became the price of peace. In this early phase, the Avar Kaganate was a shifting alliance system of nomadic and semi-nomadic tribes based on ever-changing personal relationships, which obviously did not have fixed territorial boundaries, resembling the *Personenverbandstaat* of the Germanic tribes in many respects. Only in the later 7th century, after a series of crises shook the Kaganate and after the territory under its control became restricted to the Carpathian Basin, did this monolithic society based on personal bonds undergo a structural transformation; its relation to the territory under its control also changed radically (accompanied by the uniformisation of its culture, reflected in the cast bronze belt sets ornamented with griffin and tendril designs), leading to the emergence of a power formation, which roughly resembled an early feudal organisation with more or less well defined territorial boundaries and corresponding to the contemporary European norms.

The historical sources and the archaeological record indicate that the idea of protecting their settlement territory with wide, uninhabited border zones first occurred to Avars in the late 7th and early 8th century. This border zone was primarily created in the Upper Danube Valley, vis-à-vis the Bavarian Duchy and the ever-stronger Carolingian Empire because the roads used since ancient times, enabling an unhindered military campaign against the Avar lands,

[34] *Nagy 1948* 138–140. Although the peace treaty with Justinus II was not signed, the Kagan nonetheless occupied the Pannonian areas evacuated by the Langobards in order to protect the Avar settlement territory from unexpected attacks from the west.

[35] *Nagy 1948* 141.

[36] *Mócsy – Fitz 1990* 50; *Wolfram 1979* 104. It is an entirely different question that the author of the *Conversio* makes no distinction between the Huns and the Avars who are also called Huns, this being the reason that the Goths and the Gepids are mentioned among the peoples driven away by the "Huns".

[37] *Gy. Györffy:* A magyar állam félnomád előzményei [The semi-nomadic antecedents of the Hungarian state], in: F. Tőkei (ed.): Nomád társadalmak és államalakulatok. Körösi Csoma kiskönyvtár 18. Budapest 1983, 382–383, with further literature.

led through this region. A similar border zone was established between the River Zala and the Graz area, as well as in the region of Mura–Drava Interfluve (Međjimurje/Muraköz) against the Karantanian Duchy and, even more importantly, the Langobard Kingdom in northern Italy. The traces of an artificial border of this type further south and in the east are less distinct. Although Aspruch, King of the Danubian Bulgars had built a series of impressive ramparts north and south of the Lower Danube, in Dobrudja and Bessarabia at roughly the same time in the 680s in order to defend his settlement territory, these lay rather far from the eastern boundary of the Avars' lands. The Bulgar border with the Avars was fixed much later, at the close of the 8th century. This border ran along the Timok and Iskar rivers (cf. the early 9th century history of the Timočan, a Slavic tribe living by the Timok).[38] Only in the north did the Avar Kaganate lack an artificial border – obviously because the Carpathian peaks formed a natural border there.

In contrast to popular belief, the march *(Grenzverhau, indago)* and the marchland *(Grenzödland, vastus, solitudo)* was not a defence system characteristic of nomads; on the testimony of the historical and ethnographic data, the protection of a territory with uninhabited border zones first appeared among sedentary, agrarian peoples.[39] It can be observed among the Celts and the Germanic tribes, who "considered the real evidence of their prowess that their neighbours shall be driven out of their lands and abandon them, and that no one dare settle near them" (Caesar, *De bello gallico* VI. 23, 1–2), but not among the "nomadic" Scythians for example. We know that in addition to a chain of border forts and a rampart system encircling their lands, the sedentary Khazars created an uninhabited border zone against the nomadic Pechenegs,[40] a strategy that proved quite successful (the Russians later pursued a similarly successful strategy against the Cumanians). This type of Khazar border defence system has been documented among the late Avars and the ancient Hungarians of the Conquest period, who basically adopted the Avars' marchland system.

The most vulnerable section of the Avars' settlement territory was the wide gate opening to the west in the Danube Valley. The Avars therefore pushed the border to the eastern boundary of the Bavarians' land which on the testimony of the archaeological evidence lay by the River Traun, a southern tributary of the Danube, with a small wedge towards Lauriacum/Lorch,[41] and from Linz to the Regensburg area in the north (cf. the pair of Avar stirrups found in the grave of a warrior buried with his horse in the church graveyard at Regensburg-Harting).[42] The Danube acted as a border river not only between the Avars and the Slavs, but also between the Bavarians and the Slavs.[43] The official border (*limes certus*) between the Bavarians and the Avars was the Enns, the next southern tributary of the Danube to the east since there would have little point in choosing a more northward line. When in the autumn of 791 Charlemagne began his campaign against the Avars, his first camp was by the River Enns (*castra super Anesum posita*), probably somewhere near Lauriacum/Lorch, where he spent three days praying and fasting "since this was the river that flowed between the marchlands of the Bavarians and Avars and served as the official border between the two empires *(nam is fluvius*

[38] *U. Fiedler:* Studien zu Gräberfeldern des 6. bis 9. Jahrhunderts an der unteren Donau. UPA 11. Aus dem Seminar für Ur- und Frühgeschichte der Freien Universität Berlin. Bonn 1992, 21–24, 26, Abb. 2.

[39] *Vékony 1983.*

[40] As regards the border defences of the Khazars, it must be borne in mind that "similarly to the western Turks, the Khazars placed an *iltbär* and a *tudun* over the peoples they had subjugated" (*K. Czeglédy:* Megjegyzések a honfoglalás előtti magyar királyság intézményéhez [Notes on the pre-Conquest period Hungarian kingdom], in: S. Imre – I. Szathmári (eds): A magyar nyelv története és rendszere. NytudÉrt 58 [1967] 86–87). Based on this passage, Gábor Vékony invoked a Khazar influence for the dignitary of the *tudun* of the late Avar period. Cf. *Vékony 1983* 223.

[41] *M. Pertlwieser:* Die frühmittelalterlichen Gräberfeld-Grabungen des OÖ. Landesmuseums, in: K. Holter (hrsg.): Baiern und Slawen in Oberösterreich. Probleme der Landnahme und Besiedlung. Linz 1980, Abb. 13.

[42] *S. Rieckhoff-Pauli:* Archäologisches Museum im BMW Werk Regensburg. Katalog. Regensburg 1987, 86, Abb. 67, 126, Abb. 103, 1–2.

[43] *M. Menke:* Die bairisch besiedelten Landschaften im 6. und 7. Jahrhundert nach den archäologischen Quellen, in: H. Dannheimer – H. Dopsch (hrsg.): Die Bajuwaren von Severin bis Tassilo 488–788. Rosenheim – Mattsee 1988, Abb. 36.

inter Baioariorum atque Hunorum terminos medius currens certus duorum regnorum limes *habebatur).*[44]

The Avars regarded the River Enns a border river from the close of the 7th century at the latest.[45] St. Emmeran wished to lead an evangelising mission to the Avars at the time, but the Bavarian prince Theodo (c. 680–716) prevented him, telling him that there were hostilities and war at the border marked by the Enns, for the Avars "had destroyed the towns lying by the Enns, the border river; they were abandoned and were like forests left to the wild beasts."[46] Emmeran remained in Regensburg and put his energies into reforming the church there in 685–690.[47] A decade later, the situation at the Avar–Bavarian border improved. Arriving to the Bavarian lands, St. Rupert, Bishop of Worms and a prominent member of the anti-Carolingian opposition,[48] wanted to extend his missionary activity to the Avar territory.[49] The wisdom of Rupert's decision to choose Lauriacum/Lorch as the base for his missionary activity is also confirmed by the archaeological record. The Roman, early Christian and Carolingian architectural periods indicate that the Laurentius Church had a strong settlement and cult continuity, making it a "suitable place" *(locus aptus)* for beginning the evangelisation.[50]

The Upper Danube region in the early Middle Ages

One widespread practice among the peoples basing their defence on the march and marchland system was the settlement of foreign population groups along the frontier, with the uninhabited frontier region serving as a kind of political *refugium,* which was settled either by the refugees fleeing the ruling power, by its settlers (after the elimination of the border defence system) or by new ethnic groups after the weakening of the ruling power (see below).[51]

The upper section of the Danube Valley between the Enns and the Vienna Basin was in the 8th century a mostly uninhabited region with small settlements of the marchland's armed defenders. When the defensive role of the Upper Danube Valley ceased in the early 9th century, the fertile river valley was soon colonised by settlers arriving from both the east and the west. The decline of the Avar Kaganate and the incorporation of the region into the Carolingian

[44] *Annales qui dicuntur Einhardi* ad a. 791 (L. Havlik [ed.]: Magnae Moraviae Fontes Historici. tom I. Brno 1966, 38).

[45] It has been suggested that the Bavarian–Slav conflict and the Avar interference in the ensuing armed clashes at the end of the 6th century mentioned in the written sources took place east of the Enns, rather than in the Inner Norican Drava Valley since "the Danube was topographically more suited to the deployment of the mounted Avar warriors than the Drava Valley in Carinthia" (*Szameit 2000* 515). Erik Szameit has elsewhere proven that in the late 6th and early 7th century a Slavic presence can only be demonstrated north of the Danube and the Drava Valley (*ibid.* 512–513). True enough, when the Slavs and the Bavarians first clashed in battle, Paulus Diaconus only notes that this battle took place *in Sclavorum partiam* (*Paulus Diaconus, Historia Langobardorum,* IV 7, p. 118) and does not specify the exact location. It seems likely that the battle was fought in the same place where in 610–615 the Slavs dealt a crushing blow to Garibald II, Tassilo's son and successor: *in Agunto* (*Paulus Diaconus, Historia Langobardorum,* IV, 39, p. 133), i.e. at Aguntum by Lienz in the Puster Valley. This region remained the centre of the Karantan Slavic principality in Odilo's time and it seems rather unlikely that the battle between the Avars and the Bavarians, fought in the interest of the very same Slavs, would have taken place much farther away from this region, somewhere near the Enns that was of little interest to the Avars at the time (*W. H. Fritze:* Zur Bedeutung der Awaren für die slawische Ausdehnungsbewegung im frühen Mittelalter, in: G. Mildenberger [hrsg.]: Studien zur Völkerwanderungszeit im östlichen Mitteleuropa. Marburg a. Lahn 1980, 537–539, and note 170).

[46] *Arbeo: Vita et passio Sancti Haimhrammi Martyris,* 5–10. Translated by B. Bischoff. München 1985², 12.

[47] *H. Wolfram:* Grenze und Mission. Salzburg vom heiligen Rupert zum heiligen Virgil. MGSL 115 (1975) 57–58.

[48] *H. Wolfram:* Der heilige Rupert und die antikarolingische Adelsopposition. MIÖG 80 (1972) 4–34.

[49] *Conversio Bagoariorum et Carantanorum* c. 1. = *Gesta Hrodberti* (*F. Lošek:* Die Conversio Bagoariorum et Carantanorum und der Brief des Erzbischofs Theotmar von Salzburg. MGH Studien und Texte Band 15. Hannover 1997).

[50] *L. Eckhart:* Die St. Laurentius-Kirche zu Lauriacum–Lorch/Enns in Geschichte und Wissenschaft. JOÖMV 120 (1975) 37–55; *L. Eckhart:* Die Stadtpfarrkirche und Friedhofskirche St. Laurentius von Enns/Lorch/Lauriacum in Oberösterreich. Die archäologischen Ausgrabungen 1960–1966. Teil I. Dokumentation und Analyse. Linz 1981.

[51] *Vékony 1983* 228–229, 235–236.

sphere of influence was a slow process lasting several decades, which differed from area to area. First to be incorporated into the Carolingian administration was the one-time western march and marchland, called Avaria and Sclavinia. The territory between Traun, Steyer, Enns and Ybbs, inhabited by the Slavs, was called Sclavia in the early Carolingian written sources, while the Lower Austrian Danube section to its east, incorporating also the Vienna Woods, which functioned as a marchland during the Avar Kaganate was known as Avaria.[52]

The slow, steady expansion of the Carolingian Empire also brought with it cultural transformations, as well as changes in costume, cultural preferences and values. There is no consensus as to the exact nature of this process or how long it lasted, and many question of the ethnic background and the settlement history of this period are still controversial.

According to Erik Szameit, the Upper Danube Valley was as densely settled in the 8th century as in the preceding and later centuries.[53] He argued that the late antique *Romani* population survived in the Danubian and the eastern Alpine region to a much larger extent than earlier believed. The Slavic tribes settled among this population, adopting its culture, traditions, customs and, in part, its costume; at the same time, the Slavs also adopted some elements of the Avars' traditions. In consequence of its mixed origins, there emerged an essentially indefinable, characterless population whose changing culture can at the most be chronologically periodised.[54] One of the most spectacular "results" of Szameit's re-evaluation is his expansion of the time-frame of the archaeological heritage – drawing in part from late Avar and in part from early Carolingian traditions – of the population of the Upper Danube Valley, which had increased following Charlemagne's campaigns (791–811), to span the two hundred years of the 8th–9th centuries. He claimed that this archaeological culture incorporated Bawarian elements of the late Merowing period and late Avar features from around 700 and, also, that even though the burial customs reflect Avar traditions, the population itself spoke a Slavic tongue. The cemeteries remained in continuous use from the early 8th century through the 9th century, i.e. also during the period of Carolingian rule (some were used up to the 10th century). He rejected the claim that the area was only populated at the dawn of the early Carolingian period, around 800. Szameit then extrapolated the model reconstructed for the population of the Danube Valley to the whole of Austria, arguing that it was valid for other regions too, such as Carinthia and the Krajina, Upper and Lower Austria, as well as the Steiermark, in spite of the different historical development of these regions.

Owing to the general lack of co-ordination in international archaeological research, Szameit can advance his views quite freely, without any consequences. For the time being, there are only a few tenuous strands linking the costume of the late Merowingian period (which gradually disappeared from the western European cemeteries in the earlier 8th century owing to the spread of Christianity[55]) with the costume of the late 8th and early 9th century Carolingian period, known from the archaeological heritage of the pagan groups on the fringes of the empire. To which we may add the lack of research, as a result of which the absolute chronological framework of the Avar period, especially its end, cannot be firmly established. Since we cannot quote any archaeological assemblages, which would challenge Szameit's "re-evaluation", he can continue to claim that the region previously considered to have been uninhabited was in fact continuously settled. Moreover, he apparently avoids the pitfall of "mixed argumentation" by quoting purely archaeological data. The main problem is that he interprets the archaeological record according to a preconceived historical construct and he thus falsifies the archaeological record and the historical evidence provided by it.

An unbiased archaeological analysis does not yield a picture differing from the one provided by the historical data. We know that in the Carolingian Empire pagan rites and

[52] *Bóna 1985* 154–156.

[53] *Szameit 2000.*

[54] *Szameit 2000* 534: „Mit W. Pohl stellt sich daher die Frage, ob es terminologisch sinnvoll ist, von Slawen zu sprechen, wenn nichts (im Fundgut) auf die Bewahrung slawischer Traditionen deutet. Es wird daher vorgeschlagen, von einer ethnischen Zuweisung der karolingerzeitlichen Funde und Befunde abzusehen. Für das einschlägige Fundgut aus dem österreichischen Ostalpen- und Donauraum sollten lediglich zeitbezogene Zuordnungen verwendet werden."

[55] *Stein 1967.*

burial customs were abandoned by the later 8th century and were replaced by burial in church graveyards, corresponding to the puritan precepts of Christianity.[56] In contrast, the interment of the dead in an ornate costume with jewellery and food and beverages for the journey to the afterworld according to the pagan custom can be observed until the early 9th century in the areas beyond the borders of the empire, among the Saxons, the Frisians, the Thuringians and the western Slavs,[57] as well as in north-eastern Bavaria, which had been recently incorporated into the empire.[58] These grave finds can be ordered into a reliable chronological sequence and the changes in the artefactual material can be easily traced.

The Frank–Avar war also affected the culture of the late Avar Kaganate. Some of the workshops supplying individual areas with their wares closed down; others reacted swiftly to the changes and began the turnout of products conforming to the new fashion in costume, discarding their previous products. Still, many areas were deprived of the earlier, accustomed services. It must also be borne in mind that the population of different areas also reacted variously to the new situation. A village community, which did not seek a new home and whose overlord remained unchanged, obviously reacted differently than a community, which moved to a new homeland, as did a community that had earlier been under Avar overlordship and had perhaps formally even followed the Avar cultural patterns.[59] The sites from which assemblages containing both "western" artefacts typical of other regions on the Carolingian Empire's fringes and the colourful "eastern" products of the final Avar period can be confidently dated to the period after the Frank–Avar wars, i.e. to the first third or first half of the 9th century. It is a grave methodological mistake to draw historical conclusions by using the prototypes and models to these finds as direct analogies.

In order to illustrate the exact process of how the Avar marchland was abolished and re-colonised, it is instructive to present the archaeological assemblages from one particular area, together with its archaeological and historical evaluation.

The typological and chronological analysis of the Sopronkőhida cemetery

The 145 roughly west to east oriented graves form three larger groups along a north to south axis on the gently sloping hillside of the Teich-dűlő beside the Rákos Stream.[60] Most of the grave pits were rectangular with rounded corners; about 10 per cent of the graves were slightly trapezoidal, narrowing towards the feet. Their depth ranged between 100–235 cm, their size between 1.2–2.6 m^2, although a few women and warriors (e.g. Graves 16 and 78) were laid to rest in larger grave pits, measuring 3.9 m^2. Child burials were usually smaller and shallower, although one child burial lay 200 cm deep (Grave 77) and a male burial containing a winged lance, a mount ornamented belt and vessels was dug to a depth of 120 cm (Grave 60). The other burial into which a winged lance had been deposited (Grave 84) was also relatively shallow with its depth of 140 cm. Most of the deep graves (170–240 cm) lay in the middle grave group (16 out of 45), with fewer lying in the southern and northern groups (6 out of 54 and 8 out of 46 resp.). These graves included five child burials, eight persons in the juvenilis-adultus age group and seventeen in the maturus-senilis age group; female burials only occurred among the latter group.[61] The deceased were laid to rest in an extended position on their back in a wooden

[56] Cf. *Stein 1967* for a general overview; for the small finds from the Carolingian empire, cf. *G. Haseloff:* Email im frühen Mittelalter. Frühchristliche Kunst von der Spätantike bis zu den Karolingern. Marburger Studien zur Vor- und Frühgeschichte, Sondernband 1. Marburg 1990; *E. Wamers:* Die frühmittelalterlichen Lesefunde aus der Löhrstrasse (Baustelle Hilton II) in Mainz. Mainz 1994; *M. Lennartsson:* Karolingische Metallarbeiten mit Pflanzenornamentik. Offa 54–55 (1997–98) 431–619.

[57] *S. Brather:* Feldberger Keramik und frühe Slawen. Studien zur nordwestslawischen Keramik der Karolingerzeit. UPA 34. Bonn 1996; *S. Brather:* Merowinger- und karolingerzeitliches "Fremdgut" bei den Nordwestslawen. Gebrauchsgut und Elitenkultur im südwestlichen Ostseeraum. PZ 71 (1996) 46–84.

[58] *Schwarz 1984.*

[59] The striking similarities between the Carolingian finds from the previously uninhabited areas of the Upper Danube Valley and the assemblages from the final Avar phase of the cemeteries used throughout the late Avar period in Transdanubia and from the burial grounds established in this period must here be recalled. Cf. *Szőke 1992a.*

[60] *Török 1973.*

[61] *Szőke 1992b* 49, Abb. 7.

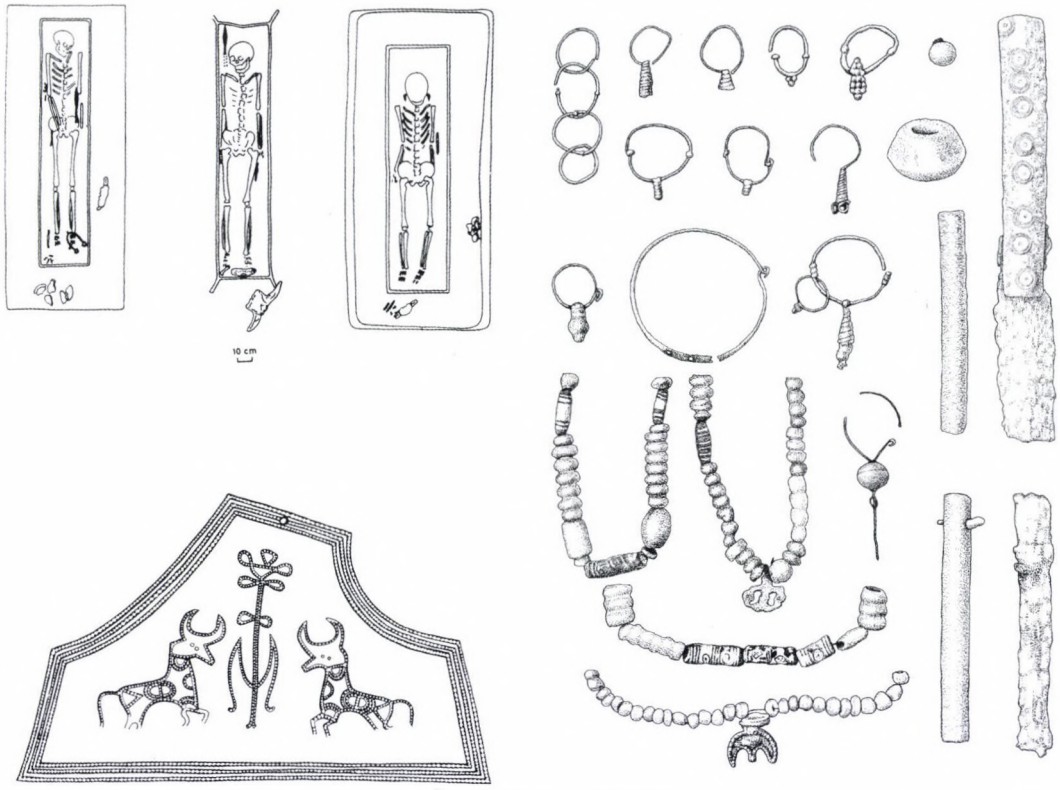

fig. 1. Sopronkőhida. Burials containing cattle skulls, salt cellar, and female jewellery

coffin of planks or a coffin hollowed from a tree trunk. Gyula Török observed coffin remains in about two-thirds of the graves. It would appear that the use of coffins was fairly common in the community. In some graves, larger stones were placed onto the coffin.[62] About one-fifth of the graves did not contain any grave goods (twenty-three of the thirty burials without grave goods were child burials falling into the neonatus and inf. I age group, the distribution of the others was as follows: one adultus, four maturus and one senilis). The other burials contained a wide range of costume ornaments, articles of day-to-day life and weapons, as well as food and drink offerings (vessels, animal bones, eggs).

The most typical ritual grave good was the mutilated cattle skull with horn-cores *(fig. 1)*. A total of eighteen graves contained mutilated cattle skulls, while two burials yielded goat or sheep skulls; seven of these twenty graves were female burials (all in the senilis age group), while the male burials covered all age groups (two infants, three juvenilis, three adultus, four maturus, one senilis). The cattle skull was usually cut crosswise under the horns and was always deposited by the feet, most often somewhere between the pelvic bone and the feet; it was often found together with other animal bones (hen, pig, goat/sheep) and the occasional vessel.[63] The

[62] For a discussion of the origins and the ritual background of partial and total stone packing, cf. *B. M. Szőke:* Das karolingerzeitliche Gräberfeld von Sárvár-Végh malom. CommArchHung 1992, 127–133.

[63] In the middle grave group, the deposition of mutilated cattle skulls can be observed up to the last, eastern grave row, whereas in the northern and southern group this custom can only be observed in the western (initial) grave row. It would appear that there was a difference between the middle and the two other grave groups as regards the first burials in them. One interesting feature in this respect is that the burials in the middle grave group usually contained individuals who had died before reaching the age of forty, while the two other grave groups are characterised by the burials of mostly older individuals. The relation between mutilated cattle skulls and hen remains is also quite interesting. At Sopronkőhida, many burials contained both hen remains and a mutilated cattle skull, although the burials from the late phase of the cemetery (the eastern section of the burial ground) only contained hen remains. The same phenomenon could be observed at Pitten: hen remains were usually found beside the mutilated cattle skulls, but



fig. 2. Sopronkőhida. Vessel types recovered from the burials

cattle skull was a grave offering customary among the Avars, while the other animal bones and/or vessels were the remains of food given for the journey to the afterworld.

Gyula Török interpreted the mutilated cattle skulls as masks symbolising the community's animal ancestor and the graves containing cattle skulls as the burials of shaman families who, fleeing persecutions, had settled between Savaria and Carnuntum in 805.[64] Péter Tomka and Herwig Friesinger rejected this interpretation of shaman burials, but they accepted the idea that cattle skulls were symbolic masks vested with apotropaic powers. They regarded the custom of depositing cattle skulls as partial animal burials.[65] I myself have also studied these burials, demonstrating that this burial custom can be traced to the Avar period and that the mutilated cattle skull symbolised the entire animal *(pars pro toto),* this being the reason that it was deposited into the grave as a food offering.[66]

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the graves dating to the late phase of the cemetery were similarly characterised by hen remains only. The burials in the southern grave group of the Tulln cemetery contained both cattle skulls and hen remains, the middle group included more burials with hen remains only, while the graves in the northern group only contained vessels. In the burial grounds uncovered at Mühling and Pottenbrunn the cattle skulls were deposited in themselves and were not accompanied by hen remains and the graves in the other part of the cemetery usually contained exclusively hen bones or the remains of other animals. Cf. *Szőke 1979* 58–70.

[64] *Gy. Török:* Pogány kultusz emléke a sopronkőhidai temetőben (Trace of a Pagan Cult in the Cemetery at Sopronkőhida). FolArch 14 (1962) 83–93.

[65] *Tomka 1969* 78–80; *Friesinger 1971–74* 85–86.

[66] *Szőke 1979* 102: „gewisse Teile des aufgeopferten Tieres wurden ins Grab gelegt." When I tried to refute the claim that the coffin or, in some cases, the deceased had been covered with the cattle hide into which the frontal bone with the horns had been preserved, I wrote slightly ambiguously. By demonstrating that the mutilated skull was closely linked to the food and drink remains, I inadvertly suggested that the cattle skull had also been part of the funerary food offerings that were deposited in the grave for the journey to the afterworld, even though my intention had been to emphasise that the animal sacrifice and the food offerings were placed in the same section of the grave. In his critique, Péter Tomka quoted additional arguments that the mutilated cattle skull represented the remains of a funeral sacrifice. *E. T. Szőnyi – P. Tomka:* Győrszentiván-Söprűshegy: késő római és kora Árpád-kori temető (Spätrömisches und früh-arpadenzeitliches Gräberfeld von Győrszentiván-Söprűshegy). CommArchHung 1985, 112–115.

Hens were the most typical food offerings for the journey to the afterworld. Complete hen skeletons were found in forty-three burials (30 per cent of the graves);[67] goat/sheep bones were also quite frequent (twelve graves).[68] Some kind of liquid or pulpy food was always deposited into the grave during the entire span of the cemetery's use-life. These food offerings were sometimes placed into two vessels (especially in the burials of the middle grave group), although interestingly enough never in iron-hooped wooden buckets, which were quite popular in other areas during this period. The pottery recovered from the burials were usually large, wide mouthed pots, while smaller mugs, cups and deep bowls with inturned rim were more rare – the latter were usually deposited into child burials or were the second vessel in the grave. The pots represent a new, distinctive Carolingian type with a marked S profile, whose mouth diameter is usually larger than their base diameter, while their greatest width is at the sharply carinated shoulder *(fig. 2).*[69]

The rites and customs allow a glimpse into the cultural traditions of a population group, while the costume, the tools and implements of everyday life and the weapons reflect the broader cultural environment and relations. Women's jewellery and ornaments are quite "sensitive" in reflecting these changes *(fig. 1).* The head ornaments were the most conspicuous element in women's costume. These were usually attached to ribbons suspended from a frontlet. Most were wire ornaments: simple penannular rings (sixteen graves) and earrings of two hoops (Graves 3, 11, 102, 129, 142), earrings with a loop and hook terminal (Graves 95, 129), earrings tapering downward (Grave 25 ?) and earrings with a widening spiral pendant (Graves 25, 126).[70] Earrings with a simple grape-bunch pendant (Graves 80, 88, 103) and double grape-bunch pendant on two sides (Graves 11, 53) too make their appearance.[71] The pyramidal earring with a glass bead pendant of the late Avar type from a girl's burial (Grave

[67] *S. Bökönyi:* A temető állatcsont anyagának vizsgálata [The animal bone sample from the cemetery], in: Gy. Török: Sopronkőhida IX. századi temetője. FontArchHung Budapest 1973, 121–122. According to Herwig Friesinger, the incomplete hen skeletons can be interpreted as meaning that the animal had already been cooked and prepared as food by time it was deposited in the grave. *Friesinger* 1971–74 84. Cf. also *Szőke 1992b* 58–60 for a more detailed discussion.

[68] Six burials yielded the pelvic bone or humerus of sheep/goat, seven burials contained pig bones and one burial contained the radius and ulna of cattle. In the Tulln cemetery, the hen bones were often found together with goat/sheep humeri. At Pitten, only nine of the 130 burials contained other animal bones, while in the other cemeteries quoted here, these were only found occasionally.

[69] Judging from its form and size, this vessel type was typical household pottery, probably used for storage and/or cooking. Cf. *P. Tomka:* A sopronkőhidai 9. századi település [The settlement from the 9th Century Sopronkőhida]. Arrabona 36 (1998) 48–51. This vessel type dominated the household pottery from the settlement features uncovered at Zalavár during more recent campaigns; at the same time, the pottery recovered from the cemeteries around Zalavár was characterised by smaller ovoid or rounded cups (*Szőke 1992b* 60–73, Abb. 16–21; *R. Müller:* Keramikformen des 9.–10. Jahrhunderts in der Gegend Keszthely-Zalavár, in: Č. Staňa [hrsg.]: Slawische Keramik in Mitteleuropa vom 8. bis zum 11. Jahrhundert. Brno 1994, 63–82.) At Oberpfalz this pottery was almost exclusive *(Stroh 1954);* proceeding eastward in the Danube Valley, increasingly more wares appear together with this vessel type, both on settlements and in the cemeteries (*Friesinger 1971–74; B. Cech:* Die keramischen Funde der slawischen Wallanlage in Thunau am Kamp [NÖ] Ein Beitrag zur Gliederung slawischer Keramik. ZalaiMúz 3 [1991] 57–72). In contrast, it is conspicuously rare in the major centres of the Moravian Basin (*L. Poláček:* Altes Gliederungssystem der Mikulčicer Keramik, in: L. Poláček [hrsg.]: Slawische Keramik in Mitteleuropa vom 8. bis zum 11. Jahrhundert – Terminologie und Beschreibung. Brno 1995, 131–195, Abb. 5).

[70] This ornament type appeared in the late Avar period and at the dawn of the Carolingian period in the western part of the (former) Avar Kaganate. It would appear that the workshops beside the late Avar centres were no longer active, while the workshops of the Carolingian period had not been established yet. Interestingly enough, certain types of these wire ornaments, such as the single or multiple S terminalled earrings, earrings with twisted terminals and ornaments with pendants suspended from a chain, are lacking. For a discussion of these ornaments, cf. *Szőke 1992a* 844–863; *Szőke 1992b* 115–124.

[71] The simple variant of this ornament made by soldering together three or four granules was popular among the women of the Carpathian Basin from the late 7th century; the two-sided type made by soldering together granules both above and below the hoop only appeared at the beginning of the Carolingian period. Widely popular during the 9th century, all varieties of these earrings disappeared by the mid-10th century. Cf. *Szőke 1992a* 844–863; *Szőke 1992b* 115–124; *Dostál 1966* 35–44; *B. Dostál:* Zur Datierungsfrage des großmährischen Schmuks. ZalaiMúz 3 (1991) 81–87.

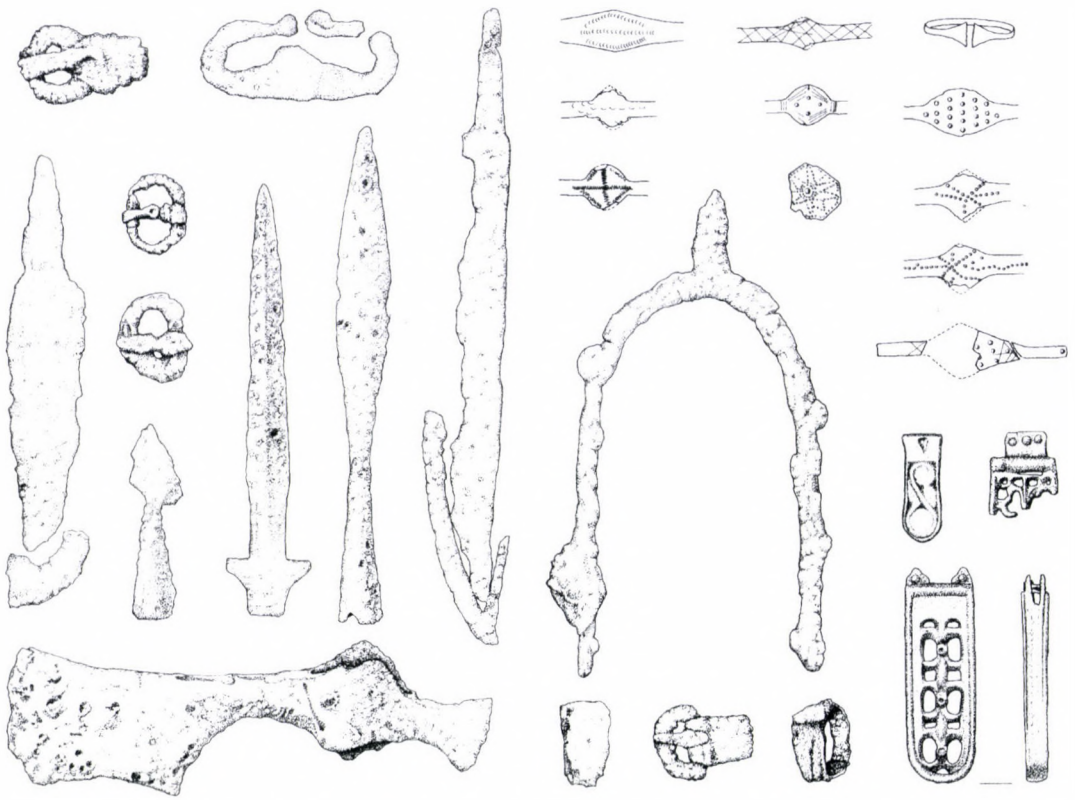

fig. 3. Sopronkőhida. Weapons, tools and implements from male burials

120) at the western end of the cemetery is important for determining the date of the burial ground.[72] The double-hooped cast earrings with pendants (Graves 2, 41, 61) indicate contact with the Moravian Slavs living in the Morva Valley and south-western Slovakia north of the Danube,[73] while the earrings with pendants of plaited wire with the Alpine Slavs (Karantani) populating the valleys of the eastern Alpine region (Styria, Carinthia, Krajina). Wire ornaments with downward widening spiral pendants with looped terminals (Graves 54, 129), earrings with spherical pendant of sheet metal and loop and hook terminals (Graves 101, 119) and earrings with loop and hook terminals with pendant sheet ornaments suspended from the lower part of the wide hoop (Grave 111) can also be assigned to this category of ornaments.[74] The typical ornament of the Carolingian province of Oriens in the Upper Danube Valley and

[72] The most widespread ornament type of the late Avar period remained in use until the very end of this period. A few specimens are known from the cemeteries of the rural villages dating from the period after the disintegration of the kaganate and the emergence of the Carolingian territorial units: the specimens from Judendorf, Grave 32 (with a golden hoop, *H. Dolenz:* Die Gräberfelder von Judendorf bei Villach. Neues aus Alt-Villach 6 [1969] 14, Taf. 23, 1–2), and Sieghartskirchen (*E. Szameit:* Zur chronologischen Stellung des frühmittelalterlichen Gräberfeldes von Sieghartskirchen, Niederösterreich, und die Grabfunde aus Proleb, Steiermark, in: F. Daim [hrsg.]: Awarenforschungen Bd. 2. Wien 1992, 807, Taf. 1, 1–2) can be quoted in this respect, although variants recalling this form are also quite frequent, as for example the specimens from Mühling-Hart, Grave 3, Pottenbrunn, Grave 139 and Auhof, Grave 99 (*Szőke 1992a* 865).

[73] The original form of this ornament, a wire spiral with a pendant, sometimes occurs together with wire ornaments (e.g. Dolní Věstonice, Graves 74 and 139: *J. Poulík:* Jižní Morava země dávných Slovanů. Brno 1949–1950, 159, 161), while the later variants with cast pendant do not (*Dostál 1966* 33). Dostál dated these ornaments to the later 9th and early 10th century.

[74] For the ornaments that can be associated with the vor-Köttlach and Köttlach I horizon, cf. *Giesler 1980.* Few analogies can be quoted for the ornament whose hoop was hammered into a crescentic form on the lower side, found in Grave 111. One comparable, but unperforated variant has been reported from Grave 21 of the Bešenov/Zsitvabesenyő cemetery in south-western Slovakia. It was found together with cast bronze buttons of the Conquest period. Cf. G. *Nevizánszky:* Pohrebisko z konca 9. a z 10. storočia v Bešeňove. SlA 27 (1979) 375–404, esp. 391, Pl. II. 9.

Transdanubia was the earring with a sheet pendant pressed into various forms (Grave 111: ribbed, biconical pendant, Graves 59, 62, 65: amphora shaped pendant).[75]

Necklaces were only worn by the very young (neonatus and Inf. I) and the very old (senilis) in the Sopronkőhida community (Graves 25, 59, 67, 88, 107, 110, 111, 115, 130). The form and the manufacturing technique of the beads were very characteristic and we know that they were exclusively manufactured in the Rhenish workshops of the Carolingian Empire. These necklaces were strung of multiple bar beads,[76] hollow beads, colourful mosaic eye beads and blue eye beads.[77] The beads of the preceding Avar period do not occur even sporadically, although belt mounts (Grave 25) or cast lead lunula pendants (Grave 115) were sometimes strung among the beads.[78] In contrast to the western areas of the Upper Danube Basin, bracelets were not worn in this community.[79] Plain wire and hoop rings, as well as ones with a shield shaped bezel were quite popular, worn by both men and women.[80] Only in one case was the overgarment fastened with a glass button with an iron loop (Grave 80), a popular product on the eastern Frankish fringes.[81] Female burials often contained spindle whorls, the typical female implement (recovered from ten graves),[82] needle cases made from bird bones

[75] For an overview of this group of ornaments and their wider context, cf. *Szőke 1992a* 859–860.

[76] Most of these blue, yellow, off-white multiple bar beads were made from rather inferior quality glass. The silver and gold foiled bar beads of the late Avar period, made from good quality glass, disappear almost entirely by the late 8th and early 9th century. Blown glass beads and mosaic eye beads are also infrequent, only a few were strung among the other beads of these necklaces. Cf. *Szőke 1992a* 876–881.

[77] Reinhard Andrae suggested that these necklaces had been assembled in bead workshops and that they were traded as complete necklaces (*R. Andrae:* Mosaikaugenperlen. APA 4 [1973] 101–198). However, the necklaces from the Sopronkőhida cemetery do not support this view.

[78] Similar lead lunulae, multiple bar beads, buttons and crosses are fairly frequent grave finds in Moravia, but they can also be found in the Upper Danube Valley and the Mosaburg/Zalavár area. These are usually interpreted as baptism gifts, given by the Bavarian missionaries working in the area before the Cyrill-Methodius mission of 863 (*Friesinger n.d.,* 21), while according to another explanation they can be linked to the activity of Bavarian missionaries, arriving primarily from Salzburg, who tried to counteract the success of Cyrill and Methodius' mission, the implication being that they can be dated to the last quarter of the 9th century and the early 10th century (*Z. Měřínský:* Kosočtverečné olověné křížky a jejich chronologické postavení v rámci hmotné kultury střední doby hradištní, in: Rodná země. Sborník k 100. výročí Muzejní a vlastivědné společnosti v Brně a k 60. narozeninám Ph. Dr. Vladimíra Nekudy, CSc. Brno 1988, 122–145).

[79] Cf. *Szőke 1992a* 866–869. The fashion of bracelets made from thick bronze wire can only be demonstrated up to the early decades of the 9th century, both in the late Avar cemeteries of the Carpathian Basin and in the new cemeteries of the Upper Danube Valley.

[80] Plain rings were recovered from Graves 1, 11, 16, 37, 80, 93 and 115 (two specimens), closed cast bronze rings from Graves 51 and 145, hoop rings with riveted terminals from Graves 6, 18, 41, 44, 95, 110, 119, 127 and 129 (two specimens), rings with a shield shaped bezel from Graves 20, 25, 29, 30, 44, 48, 65 (two specimens), 67, 88 and 142. The hoop rings and the bezelled rings were often decorated with incised, embossed or punched patterns. Good parallels to the decorative patterns can be found among the diamond or oval bezelled rings from the Upper Danube Valley. The rings from the Morava Valley represent other types, both as regards their manufacturing technique and ornamentation. These are characterised by a wide shield shaped bezel and punched or embossed knobs, such as the Blučina type rings. Cf. *Szőke 1992a* 869–871; *J. Poulík:* Bronzové prstený na nalezištích s keramikou blučinského typu. Eisnerov sbornik. HSl 5 (1947) 153–157.

[81] More recent excavations and publications have demonstrated that this button type – earlier considered to be a distinctive "Great Moravian" product – was fairly widespread in Pannonia during the Carolingian period from the second third of the 9th century, but is absent from the archaeological heritage of the Alpine Slavs (Karantani), the ancient Croatians of the Dalmatian coast and the Danubian Bulgars. It appeared at the end of the Avar period under eastern influences (Saltovo–Majak culture). Cf. *Szőke 1996* 98–100; *K. Mesterházy:* Nagymorva díszgombok honfoglalás kori sírokban (Great Moravian Ornamental Buttons in the Magyar Graves of the Hungarian Conquest Period). CommArchHung 2000, 211–226.

[82] Biconical spindle whorls, some decorated with incised zig-zag patterns or parallel lines were found in a conspicuously high number of female burials (Graves 8, 13, 38, 50, 79 [two specimens], 101, 110, 115, 130, and 145). The graves all contained the burial of older, 50–70 year old women (with the exception of Grave 115, the burial of an Inf. I child). Relatively many spindle whorls were found in the burial grounds at Pitten (six graves) and Keszthely-Fenékpuszta (six graves), while at other sites these articles were recovered from no more than two to four graves, mostly the burials of older women. The custom of depositing spindle whorls into the grave was fairly widespread on the territory of the former Avar Kaganate. Cf. *Szőke 1992b* 146–148.

(Graves 25, 79, 80), sheet iron and sheet bronze (Grave 129),[83] and iron knives with lathe-turned bone handle decorated with dotted circles (Graves 11, 25, 59, 62, 103).[84] A sickle was laid across the abdomen of the deceased in one burial (Grave 111).[85]

Men's costume was rather puritanical *(fig. 3)*. Their garment was fasted with a textile or light leather belt, which was rarely provided with an iron buckle.[86] Suspended from this belt was a leather sheath with wooden stiffening plaques in which the iron knife was kept[87] or a leather pouch for the strike-a-light and the flintstones (eight graves), a razor,[88] the occasional coin and similar articles.[89] Although late Avar cast bronze strap ends were also recovered from three graves, it is uncertain whether these had indeed been attached to the belt.[90] The leather foot thongs with a buckle and a strap end reflect the spread of costume articles from

[83] Needle cases of bird bone, sometimes with lathe-turned decoration were frequently deposited in the graves of the former Kaganate and the Oriens province of the Carolingian Empire, especially during the first and second third of the 9th century. In contrast, it is absent from the burials of the Alpine Slavs (Karantani). Specimens provided with a lid fashioned from sheet metal reflect western cultural influences; only a few finds of this type are known from the first third of the 9th century (Sopronkőhida, Grave 129; Keszthely-Fenékpuszta, Grave 39; Garabonc-Ófalu I, Grave 1; Pitten, Grave 36; Krungl, Grave 75; Brno-Líšen-Staré Zámky, Grave 43). For the use of bone needle-cases, cf. *Gy. László:* Adatok az avarság néprajzához (Contributi all'etnografia degli avari). ArchÉrt 68 (1941) 175–204; for bone and metal specimens, cf. *Szőke 1992b* 142–146.

[84] The main distribution of these knives, provided with a relatively long antler handle compared to the short, narrow blade – used mostly by women for some household task – was the Upper Danube Valley, with a few specimens known from the major centres in the Moravian Valley and the Mosaburg/Zalavár area. Cf. *Szőke 1982* 23–39.

[85] Sickles were believed to be endowed with apotropaic powers to ward off evil spirits. Deposited in graves from the late Avar period, they were usually placed on the abdomen (although there was also a practical reason for this: to prevent and delay meteorism). Its possible interpretation as a tool is contradicted by the fact that sickles have most often been recovered from male and warrior, rather than female burials. Cf. *I. Erdélyi:* Avar kori sarlók a Kárpát-medencében (Awarenzeitliche Sicheln im Karpatenbecken). Ethnographia 86 (1975) 153–163; *P. Somogyi:* A kárpát-medencei sarlós temetkezési szokás eredete (Ursprung des Bestattungsbrauches mit Sichel im Karpatenbecken). ArchÉrt 109 (1982) 191–200; *Szőke 1992b* 73–74.

[86] Buckles with a D shaped (Graves 18, 19, 33, 78, 133) and rectangular (Grave 37) body were widespread and popular on the eastern fringes of the empire. In contrast, buckles with a D shaped head and a rectangular body made from sheet iron (Graves 60, 100) were more common in the heartland of the Carolingian Empire, occurring rarely in the newly conquered territories. Such buckles have been reported from Ságvár-Végh malom (Grave 10), Kaposvár (Grave 64), Garabonc (Grave 21), and Pitten (Graves 52, 113) in Pannonia, and from Vysočany nad Dyjí (tumuli 7, 13) in Moravia. Cf. *Szőke 1992b* 102–104.

[87] Grave 37 yielded a knife sheath stiffened with an iron plaque of the so-called Baltic type. About one-half of the deceased were buried with a knife in a simple sheath (60 graves), regardless of age and gender, although knives were rarely placed into child burials. Almost all of the men and women in the maturus age bracket had a knife in their grave (sixteen women and fifteen men in the adultus age bracket were also provided with a knife). Some diversity can be noted in the size of the knives: the length of the specimens recovered from female burials ranged between 8–13 cm (except for the ones with handle carved from antler), while the knives from male burials were usually 10–20 cm long. A few knives were even longer (25–28 cm); these were no doubt used as weapons *(sax)*. Cf. *Szőke 1992b* 74–82, with a detailed discussion of comparable finds.

[88] The single razor or "pen-knife" (*Klappenmesser*) that could be folded back into an iron case was found in the burial of an elderly man (Grave 78). Even though this artefact is a distinctively western product, only a few pieces are known from the Eastern Alpine region and the Upper Danube Valley (Auhof/Perg, Grave 92; Gusen-Berglitzl, Grave 142; Pottenbrunn, Grave 155; Pitten, Graves 27 and 51), while it is fairly frequent in Pannonia, especially in the Mosaburg/Zalavár area (*Szőke 1992b* 106–108).

[89] Similarly to the graves in the cemeteries of the Upper Danube Valley, not one single whetstone was found in the Sopronkőhida burial ground among the articles kept in pouches. Whetstones have only been recovered from Grave 51B at Auhof/Perg, Grave 110 at Gusen-Berglitzl and Grave 25 at Rebensburg. These were carefully worked and perforated at one end. Whetstones were quite frequent among the grave goods recovered from the burials in the Mosaburg/Zalavár area; these were most often made from raw, unworked stone. Cf. *Szőke 1992b* 108–109.

[90] This is rather uncertain in spite of the fact that the decoration of the belt changed and became more modest throughout the Carolingian Empire and its cultural sphere of influence in the later 8th century. The (gilt) bronze or iron buckle and strap end were all that "survived" of the earlier mount decorated belts in the Merowingian period (*Stein 1967* 113–115). The use of these strap ends as belt mounts seems acceptable in the case of the openwork

the Carolingian Empire (Grave 30),[91] as does the presence of spurs (Graves 1, 92, 100). The spurs can be assigned to type II in Vilém Hrubý and Bořivoj Dostál's typology; they were used throughout the 9th century and especially in the last third of the century.[92] Similarly to the thonged footwear, these spurs never became widespread on the territory of the former Avar Kaganate owing to the eastern nomadic traditions of the region.[93]

A conspicuously high number of graves contained weapons.[94] One burial (Grave 37) contained a so-called warrior's knife *(Langsax),*[95] three yielded winged lances, nine a simple socketed lance with a willow or laurel leaf shaped blade,[96] one a so-called bearded axe (Grave 52)[97] and three contained socketed arrowheads (Graves 18, 20, 33).[98] Tools

cast bronze strap end with a lily pattern found in Grave 16, the burial of a ca. 25 years old man since the strap end lay between the thighbones of the deceased, although the belt was not fastened with a buckle. The pouch from Grave 60, the burial of a ca. 35 years old man, contained a small strap end with pointed terminal decorated with a tendril pattern, a Roman bronze coin and a strike-a-light. Grave 134, an infant burial, yielded the upper broken end of a large strap end with an openwork tendril (?) pattern that had perhaps been fixed to the belt with a bent bronze plaque and three rivets (according to the Carolingian custom), although it is not quite clear whether this was indeed the case. The lily patterned strap end from Grave 16 is the latest of these finds, its floruit being the close of the Avar period (*Cs. Szalontai:* „Hohenbergtől Záhonyig". Egy késő avar kori övveret típus vizsgálata [Von Hohenberg bis Záhony. Untersuchung eines spätawarenzeitlichen Gürtelbeschlagtyps]. Savaria 22: 3 [1992–1995] 1996, 145–162). The broken strap end with the openwork tendril pattern from Grave 134 can be dated within broader time brackets, cf. *B. M. Szőke:* Egy avar kori indavirág. Késő avar kori övgarnitúra Zalaegerszeg-Ola, Új kaszárnya területéről (Eine awarenzeitliche Rankenblume. Eine spätawarenzeitliche Gürtelgarnitur aus Zalaegerszeg-Ola, auf dem Gebiet der Neuen Kaserne). ZalaiMúz 10 (2001) 103–104, for a detailed discussion of this type. The tendril decorated small strap end from Grave 60 can be assigned to the middle phase of the late Avar belt ornaments, dated to the mid- or later 8th century, cf. *É. Garam:* Das awarenzeitliche Gräberfeld von Tiszafüred. Cemeteries of the Avar Period (567–829) in Hungary. Vol. 3. Budapest 1995.

[91] The grave contained the burial of an adult man buried with a winged lance. Foot thongs have rarely been found in Pannonia; not one single find unearthed in a well-documented position is known from the burials of the Carolingian period in Pannonia. In the Upper Danube Valley, foot thongs have been found at Tulln (Grave11), Pitten (Graves 27, 57, 109, 119), Pottenbrunn (Grave 193, together with a winged lance) and Mühling-Hart (Grave 36, together with a winged lance), as well as in Velký Grob/Nagygurab (Grave 18). Cf. *B. Chropovský:* Slovanské pohrebisko z 9. st. vo Vel'kom Grobe. SlA 5 (1957) 176, Pl. 1. 4–12. They were part of the female costume in the first half of the Avar period, cf. *T. Vida:* Bemerkungen zur awarenzeitlichen Frauentracht, in: D. Bialeková – J. Zábojnik (hrsg.): Ethnische und kulturelle Verhältnisse an der mittleren Donau vom 6. bis zum 11. Jahrhundert. Bratislava 1996, 107–124.

[92] *Dostál 1966* 75.

[93] Spurs of this type have been found in the destroyed Velemszentvid cemetery and at Zalavár-Várszíget (Grave 322 and a few more recently uncovered, but still unpublished graves). A few spurs with buckles of the so-called Biskupija–Crkvina type are also known. It must here be noted that the so-called *Hakensporn* type spurs recovered from late Avar contexts in the western marchland are absent from the cemeteries of the Carolingian period. Cf. *Szőke 1996* 88–96; *B. M. Szőke:* Siedlungsreste und Gräber aus dem frühen Mittelalter von Gelsesziget, Börzönce und Hahót-Cseresznyés, in: *Hahót Basin 1996* 167–170.

[94] The custom of depositing weapons in the grave had declined in the west during the 8th century, in part owing to the spread of Christianity, although it survived until the very end of the century among the nobility (*Stein 1967; Schwarz 1984* 84–119). In contrast, the deceased were buried with their weapons until Charlemagne's campaigns among the peoples of the Avar Kaganate.

[95] The grave contained the burial of a 30 years old man. A *Langsax* in a wooden sheath with iron fittings lay by the right foot, an iron buckle by the right knee was all that remained of the sword belt, indicating that the weapon had been deposited after it had been removed from the belt.

[96] Winged lances were recovered from Graves 30, 60 and 84; simple socketed lances were found in Graves 1, 5, 7, 16, 48, 78, 92, 127 and 128, all burials of men in the adultus-senilis age bracket.

[97] In Transdanubia, axes have been recovered from the Páli-Dombok cemetery, Grave 8 (Dostál's type Ib) and Grave 10 (Dostál's type Ia) (*Tomka 2000* 196–197), as well as in Grave 49 of the Garabonc I cemetery (Dostál's type Ia). An axe of Dostál's type II is known from Grave 141 of the Zalaszabar-Borjúállás burial ground (*Szőke 1992b* 97–99).

[98] Arrowheads have only been recovered from the first and last grave rows of the middle grave group, from the burials of an Inf. I., a juvenalis and an adultus male. It would appear that archers were not particularly valued in this community. Barbed arrowheads of western origin were fairly common in the Avar Kaganate during the 7th century, disappearing in the 8th century (together with a number of other artefacts) and re-appearing again at the close of the Avar period, usually on sites lying by the western border.

and implements were not deposited into male burials, the only exception being a salt-cellar carved from antler.[99]

Langsaxes were placed into graves until the close of the 7th century in the cemeteries along the western border and then again at the end of the Avar period.[100] In the Alpine region this weapon was widespread from the last third of the 8th century and the early decades of the 9th century.[101] It is usually absent from the newly established cemeteries of the Carolingian period on the territory of the one-time kaganate.[102] Double-edged swords, the dominant offensive weapon in the Alpine region, never became popular in the former kaganate since the *Langsax* could be wielded like a sabre and the single-edged, sabre-like sword (the so-called *palaš*), while double-edged swords called for an entirely different swordsmanship and battle tactics.[103]

Appearing in the first half of the 8th century, the winged lance was a new weapon also in the Carolingian Empire,[104] from where it spread to the western fringes of the Avar Kaganate,[105] and the opposite, western side of the marchland[106] in the last third of the 8th century and the first third of the 9th century.[107] Its frequency decreased proportionately from west to east; the relatively highest number of winged lances is known from Sopronkőhida, a site lying in the Upper Danube Valley.[108] Considerably less is known about the other, simple socketed lances with leaf shaped blade,[109] even though such a high number of these weapons has not been recovered from any other burial ground of the Carolingian period.[110] The bearded axe

[99] A total of one hundred Y shaped salt-cellars are known from some fifty sites in the Carpathian Basin. New ones are found on almost all excavations: for example, six richly carved specimens have been brought to light at Zalavár-Vársziget during the past five years, together with a dozen semi-finished pieces. The earliest specimens appeared at the close of the 7th century and they were also manufactured after the decline of the Avar Kaganate. Their *floruit* was the Carolingian period, especially the first half and the middle of the 9th century. None are known from the Conquest period. Cf. *Z. Torontáli:* Az avar kori agancstégelyek és ábrázolásaik [Antler salt-cellars and their decoration of the Avar period]. University thesis. Budapest 1997.

[100] Cf. the cemeteries uncovered at Zalakomár, Söjtör, Kehida etc.: *B. M. Szőke – L. Vándor:* Neue Ergebnisse der Ausgrabungen im Kisbalaton-Gebiet, in: H. Friesinger – F. Daim (hrsg.): Die Bayern und ihre Nachbarn. Band 2. Wien 1985, 207–212, Taf. 2.

[101] Oberpfalz: Kallmünz-Kinderheim, Theuern, Grave 2, Burglengenfeld, Grave 1, Krachenhausen, Grave 1 *(Stroh 1954);* Upper Austria: Auhof/Perg, Grave 64, Gusen-Berglitzl, Grave 147, Gusen-St. Georgen, Grave 2, Kirchdorf-Micheldorf; Lower Austria: Haidershofen and Steinabrunn, Grave 29 (*Szameit 1987* 155–157, 164–167, Abb. 1); Carinthia: Grabelsdorf/St. Kanzian (*E. Szameit:* Das frühmittelalterliche Grab von Grabelsdorf bei St. Kanzian am Klopeinersee, Kärnten. ArchA 77 [1993] 213–242).

[102] A *Scramasax* has been found at Zalavár-Vársziget, Graves 292 and 322 (*Á. Cs. Sós:* Die Ausgrabungen Géza Fehérs in Zalavár. ArchHung 41. Budapest 1963, 45, 47, Taf. LI. 1–2), and a *Langsax* at Keszthely-Fenékpuszta, Grave 9 (?) (*Cs. Sós 1961* 250, Taf. LXV.2).

[103] *Szőke 1992b* 92–96.

[104] *P. Paulsen:* Einige Flügellanzen aus Schwaben. Fundberichte aus Schwaben 18 (1967) 255–264; *P. Paulsen:* Flügellanzen. Zum archäologischen Horizont der Wiener 'sancta lancea'. FMS 3 (1969) 29–312; *J. Ypey:* Flügellanzen in niederländischen Sammlungen. Vor- und Frühgeschichte des Unteren Niederrheins. QWV 10 (Festschrift R. Stampfuß) (1982) 241–267.

[105] E.g. Söjtör, Grave 24 (unpublished excavation of the present author and László Vándor). Cf. *Szőke 1994a,* Pl. 10. 6.

[106] This dating is based on the associated finds, such as Avar costume articles (strap end, armring, rattle etc.) recovered from Wimm (burial mounds 4, 29, 43), Mühling-Hart (Grave 36), Steinabrunn (Grave 15), and the grave assemblage from Mautern-Grüner Weg, containing early Carolingian gilt bronze mounts (*Szameit 1987* 156–164, Abb. 2–6)

[107] *Szameit 1987* 170.

[108] Only a few other specimens are known from Pannonia: Keszthely-Fenékpuszta, Grave 22 (*Cs. Sós 1961* 255–256, Taf. LXIV. 1) and a stray find from Zalakomár-Kápolna puszta; cf. *L. Kovács:* Bemerkungen zur Bewertung der fränkischen Flügellanzen im Karpatenbecken. MittArchInst 8–9 (1978–79) 103–104. A comparable "unwinged" variant, which can nonetheless be assigned to the winged lances owing to the socket form and its overall appearance, was part of a hoard from Sebenje in Slovenia, cf. *A. Pleterski:* Der Hortfund von Sebenje. AV 38 (1987) 294–330.

[109] A good overview of these lances, with a detailed discussion of the socket and the blade forms (e.g. the facetting of the socket, the various types of blade damascening) is sadly lacking. It is therefore impossible to base any conclusions on the presence of this lance type.

[110] Four lances were found at Velký Grob/Nagygurab and three at Dolní Věstonice/Unter-Wisternitz; compared to the number of graves, the number of the lances found at Hausmenning, St. Georgen a.d. Gusen, Páli-Dombok (Graves 1, 17) and Sopron-Présháztelep (Grave 9) can be considered relatively high (*Tomka 1969* 72–74, Pl. IV. 6).

(*Bartaxt, bradatica,* Dostál's type Ib-c) is a typical weapon of the late Avar/early Carolingian period, which evolved from the narrow and wide axes of the Avar period (Dostál's type II–III) in the Upper Danube Valley and the Moravian Principality.[111]

The dating of these cemeteries and the problem of their cultural and ethnic background has since long intrigued the scholars of this period. Judging from the first few graves, Béla Szőke suggested a Slavic (Moravian Slav) population with an essentially Avar culture, who buried their dead in the last third of the 9th century,[112] while Gyula Török believed that the use of the burial ground spanned almost the entire 9th century and that it had been abandoned sometime before the arrival of the ancient Hungarians since none of the burials contained typical Conquest period finds.[113] He believed that the Franks had settled two Avar extended families here with the task of defending the border against the Avars living east of the Rába–Danube line. One family was recruited from the Avars of the Little Hungarian Plain, the other from the Avar-Slav population of the western and south-western border region, from the discordant Avars, who "were more in tune with the western European situation". Ágnes Cs. Sós assumed a Frankish defence line extending from the Leitha to Lake Balaton (resembling the *limes Saxoniae*), called *limes Pannonicus,* whose defence was in part entrusted to foreign warriors serving the Franks, such as the men buried in the Sopronkőhida cemetery.[114]

István Bóna was the first to set the cemetery in its wider context. He believed that this find material was typical of the eastern Carolingian "fringe culture", the implication being that "it can therefore be considered an independent archaeological unit, confirming that the late Avar griffin-tendril culture had indeed ceased over extensive areas of Transdanubia in the early 9th century since two such differing cultures could hardly have been distributed over the same area. ... It should be regarded as a new archaeological culture, which was earlier not detected by archaeological research."[115]

Herwig Friesinger named this culture the "Sopronkőhida–Pitten–Pottenbrunn type" on the basis of the cemeteries yielding similar finds assemblages.[116] This group was distributed in the area from the Enns on the southern bank of the Danube to Transdanubia and it can be easily distinguished from the two other groups north of the Danube: the Waldviertel and Mühlviertel group characterised by tumulus burials and the Moravian Weinviertel cemeteries. Friesinger suggested that the Sopronkőhida–Pitten–Pottenbrunn group can be linked to "Danubian Slavs", whose origins can in part be traced to the peoples living under Avar overlordship and in part to newly arrived groups from southern Moravia and Slovakia. The earliest burials can be dated by the Avar type finds, such as the ones from Grave 43a of Pitten and Grave 42 of Pottenbrunn (the burials at Pitten also included a cremation burial), while the latest ones by western costume accessories, such as the foot thongs with a metal buckle and strap end *(Wadenbindengarnitur),* as well as western weapons and arrowheads. He believed that the cessation of the custom of placing food and drink into the graves (clay vessels, animal bones,

Other contemporary burial grounds usually yielded no more than a single lance, although cemeteries in which none of the burials contained any offensive weapons are also known. It is rather conspicuous that lances (or other weapons) were not deposited in the burials around Mosaburg/Zalavár. A lance was only found near Grave 265, in Trench 22, while Grave 38 yielded a simple socketed lance (*Cs. Sós 1961* 259–260, Taf. LXIV. 2). Lances with a short socket can be traced to local Avar types, while heavier specimens with a longer socket are generally regarded as originating from the west. Cf. *Tomka 2000* 195–196, for an overview.

[111] *Dostál 1966* 70–72; *Friesinger 1972* 46–49. It has also been suggested that bearded axes or its variants may have evolved as early as the 8th century in an Avar context. Cf. *Tomka 2000* 196–197.

[112] *B. Szőke:* IX. századi sírok Sopronkőhidán [9th century graves at Sopronkőhida]. SSz 9 (1955) 55–68.

[113] *Török 1973* 59, 62.

[114] *Á. Cs. Sós:* Die slawische Bevölkerung Westungarns im 9. Jahrhundert. MBV Bd. 22. München 1973. 160, note 138.

[115] *I. Bóna:* Magyarország régészete és története a római uralom végétől a honfoglalásig [The archaeology and history of Hungary from the end of the Roman Age until the Conquest period]. Academic Doctoral Thesis (manuscript). Budapest 1971, 129.

[116] These include mutilated cattle skulls with the horn-cores, rings with shield shaped bezel, earrings with a chain pendant and a variety of late Avar female jewellery, as well as weapons, such as winged lances and the Slav bearded axes. Cf. *Friesinger n.d.* 15.

eggs) from the mid-9th century can be associated with the spread of Christianity and that the construction of churches also meant that the old cemeteries were abandoned and new ones were opened by these churches. One case in point is the cemetery of Mautern by the Danube, where the old burial ground containing graves with western weapons and food offerings was abandoned for the graveyard by the Church of Agapit.[117]

Péter Tomka prefers to call the Sopronkőhida–Pitten–Pottenbrunn group the eastern Alpine–Leitha–Fertő area group in view of the geographic boundaries of its distribution; in addition to the Páli-Dombok site, he also assigned the by now completely destroyed Győr-Sáraspuszta burial ground, lying in the middle of the Little Hungarian Plain, to this group.[118] He too emphasised the dominance of a Carolingian fringe culture as regards the ethnic and cultural context, noting that "cultural changes are not necessarily coupled with drastic changes in the gene pool or a linguistic change."[119] As regards dating, Tomka attempted to strike a balance between the earlier suggested chronological schemes, assigning Sopronkőhida and related cemeteries to the later 9th century and the early 10th century, while suggesting that the first burials at Pitten may be as early as the 8th century.[120]

I first studied this problem in connection with the chronology and distribution of burials containing mutilated cattle skulls.[121] In contrast to Gyula Török's dating, based on the schematic attribution of the burials to three generations spanning roughly one hundred years, I suggested a use-life of no more than 40–50 years, based on the combination of the archaeological record with János Nemeskéri's anthropological and Imre Lengyel's serologic analyses.[122] Based on Béla Szőke's date and Péter Tomka's analysis of the Sopron-Présház burial ground,[123] I dated the cemetery to the later 9th century.[124] The detailed study of the new archaeological assemblages, which have since come to light, and of the female jewellery of the late Avar period and the early Carolingian period,[125] however, call for a more careful approach.

The spatial and chronological context of the Sopronkőhida cemetery

Fifty years after the discovery of the first burials at Sopronkőhida it has become clear – not least owing to recent research and the proliferation of studies in this field – that the cemetery is not a solitary phenomenon, but part of a cultural group distributed in the region between two distinctive cultures, the Moravian Principality[126] and the Köttlach culture, which can be associated with the Alpine Slavs (the Karantani).[127]

(1) The exact distribution of the group could be determined on the basis of certain burial customs and artefact types, which were first uncovered in the Sopronkőhida cemetery. One of these is the deposition of mutilated cattle skulls, which more or less defines the population observing this tradition and, also, its settlement territory since rites and burial customs are better reflections of the cultural strands binding a community than jewellery articles or other

[117] For the cemeteries of the Carolingian period north and south of the Danube, from Lower and Upper Austria, cf. *H. Friesinger:* Beiträge zur Besiedlungsgeschichte des nördlichen Niederösterreichs im 9. bis 11. Jahrhundert I. ArchA 37 (1965) 79–114; II. 38 (1965) 44–85; *H. Friesinger:* Frühmittelalterliche Körpergräber in Tulln, NÖ. ArchA 50 (1971) 197–267; *Friesinger 1972*; *H. Friesinger:* Frühmittelalterliche Körpergräber aus Pottenbrunn, Stadtgemeinde St. Pölten, NÖ. ArchA 51 (1972) 113–190; *Friesinger 1971–74*; *H. Friesinger:* Studien zur Archäologie der Slawen in Niederösterreich II. MPK 17–18. Wien 1975–77; *H. Friesinger:* Das slawische Gräberfeld von Wimm, Gem. Maria Taferl, Niederösterreich. Ein Katalog. Mit Beiträgen von E. Szameit und P. Stadler. ArchA 68 (1984) 203–277.

[118] *Tomka 1994* 103–104.

[119] *Tomka 1994* 106.

[120] *Tomka 1994* 104.

[121] *Szőke 1979* 76–80.

[122] The planned, joint publication could not be realised owing to the co-author's untimely death. The first results of the analyses are quoted in *Szőke 1979* 77.

[123] *Tomka 1969* 86–89.

[124] My opinion concerning the dating has not changed over the years; I have tried to support my former arguments with new ones. Cf. *Szőke 1982* 26–33.

[125] *Szőke 1992a.*

[126] *B. Dostál:* Das Vordringen der großmährischen materiellen Kultur in die Nachbarländer, in: Magna Moravia, Sborník k 1100. výročí příchodu byzantské mise na Moravu. Praha 1965, 361–416; *Dostál 1966.*

[127] *P. Korošec:* Zgodnjesrednjaveska arheološka slika karantanskih slovanov I–III. Ljubljana 1979; *Giesler1980.*

artefacts. This area extends from the Ybbs in the Upper Danube Valley (the westernmost occurrence of mutilated cattle skulls has been reported from Mühling-Hart and Wimm) to Lake Fertő. The eastern boundary of this distribution is less marked since finds of this type appear in the Little Hungarian Plain north of the Danube, as well as in the Mosaburg/Zalavár area. The same holds true for the iron knives with antler handle, which can be found up to the Enns in the west and the Morava Valley in the north.

(2) The burial customs clearly show that the community using the cemetery was pagan, untouched by Christianity. The food offerings of poultry (hen) and/or vessels were typical of the late Avar cemeteries of the Carpathian Basin. At the same time, the wide mouthed pot is a new form reflecting western influences. One new type of animal sacrifice is the mutilated cattle skull, which – apart from a few uncertain cases – was apparently not wrapped into the hide of the skinned animal before its deposition in the grave.[128] Although this burial custom has no apparent antecedents in the former Avar Kaganate, certain analogies would nonetheless suggest that it is of Avar origin.[129]

(3) The jewellery from the cemetery only included one single late Avar ornament, a strongly worn earring with a glass bead pendant. The other pieces of jewellery all represented types, which were either widespread in the western half of the kaganate at the close of the Avar period, such as the wire ornaments (although the earliest types are lacking), earrings with bead pendants, simple hoop rings and rings with a shield shaped bezel, necklaces strung of glass beads originating from Carolingian workshops, or were types characteristic of the Alpine and Moravian Slavs (earrings with pendants of plaited wire or wire spiral pendants). Knives with antler handles are typical for the Sopronkőhida type cemeteries, as are needle cases of sheet metal modelled on western types, which can be dated to the first third of the 9th century.

(4) Instead of the mount ornamented Avar belt, men wore a belt fastened with a single iron buckle or with the ends simply tied together in the Carolingian style. None of the three cast bronze strap ends had been fixed to a belt; their presence in these burials simply indicates that the Avar period had only ended recently.[130] Disregarding one axe, the weapons were all western types. The *Langsax* and the winged lances, as well as the simple socketed lances can be assigned to the early finds of the cemetery, dating to the first third of the 9th century. The spurs, the foot thongs date from a slightly later period, from the mid-century, and it is not mere chance that they were recovered from burials in the last grave rows of the cemetery.

In addition to the chronological framework provided by the archaeological finds, an overview of the chronological anchors provided by the written sources is also instructive.

When the Sopronkőhida cemetery was still an isolated phenomenon, the date of 805 for the settlement *inter Sabariam et Carnuntum* was cited for linking this new culture – essentially Carolingian, but also displaying a few late Avar features – with the Avar population relocated to this area owing to their harassment by the Slavs. The growing number of cemeteries of this type and the "expansion" of their distribution territory, however,

[128] István Vörös noted a similar phenomenon in his analysis of the animal bone sample from the Avar cemetery uncovered at Vác: the cattle bones placed into the burials were unsuitable for human consumption and could therefore hardly be interpreted as food offerings. They appear to have symbolised the animal (*I. Vörös:* A váci avar temető archeozoológiai vizsgálata [The archaeozoological analysis of the Avar cemetery in Vác]. Manuscript. Budapest 2000).

[129] *Szőke 1979* 80–95.

[130] That this nonetheless means rather broad time brackets is illustrated also by the late Avar strap ends from Mosaburg/Zalavár. Strap ends were recovered during the excavation of the fortification in the northern end of the Várszíget (*Á. Cs. Sós:* Zalavár az újabb ásatások tükrében [Zalavár in the light of recent excavations], in: L. Kovács (ed.): Honfoglalás és régészet. A magyar honfoglalásról sok szemmel I. Budapest 1994, 90) and from one of the child burials in the graveyard of the pilgrim church dedicated to the martyr Hadrian (Grave 19/98). We know that Mosaburg was founded in the early 840s and that the construction of the pilgrim church was begun in the first half of the 850s – although the date of the dedication is unknown, the church is described as already standing around 870, suggesting that late Avar belt ornaments were used up to the mid-9th century, even if the workshops producing them had long ceased their activity.

meant that the original interpretation, according to which the Sopronkőhida cemetery was the burial ground of Avar *foederati* – recruited from persecuted "Shaman" families – who had settled east of a Szombathely–Petronell line and were entrusted with the defence of the border, was no longer tenable.

In the light of the wider distribution of Sopronkőhida type cemeteries, scholars invoked another passage in the historical sources, which recorded that after Charlemagne's campaign in 791, the Upper Danube Valley, which had until then been an uninhabited marchland, was gradually populated with new settlers and that the marchland was given a separate name (*Avaria:* 803/836; *Sclavinia:* 799/837).[131] It is most instructive and hardly mere coincidence that the Sopronkőhida type burial grounds all lie in the section of the Upper Danube Valley between Ybbs and Lake Fertő – the formerly unpopulated Avar marchland called *Avaria* in the written sources, which became one of the independent territorial units of the new eastern province of the Carolingian Empire.[132]

Another important date for the chronology of these cemeteries is the founding of Mosaburg/Zalavár. In the early 840s Priwina established the seat of his *comitatus* on an island which, on the testimony of the excavations conducted in the area, had been uninhabited during the earlier periods of the early Middle Ages. In other words, the finds of the Carolingian period brought to light on this site cannot predate 840, even if individual articles were manufactured before that date. The presence or absence of certain find types allow a more precise dating within the Carolingian period. As regards the Sopronkőhida cemetery, many of the grave assemblages contain finds, which that are either missing from the finds recovered from the Mosaburg burial grounds, or only occur in the earliest burials.

In sum, we may say the following:

(1) The Sopronkőhida cemetery was established at a time, when the marchland lost its former importance as a border zone for the protection of the western border and there was no reason to prevent its colonisation. The cemetery was used by a pagan community. It has been demonstrated that the deposition of mutilated cattle skulls symbolising sacrificial animals, a burial custom rooted in Avar traditions, is restricted to a specific area, namely the Upper Danube Valley section extending from Ybbs to Lake Fertő. This area coincides with the territory of Avaria, a separate territorial unit from the beginning of the 9th century to the second third of the century.

(2) The overwhelming majority of the finds from the cemetery can be assigned to the latest phase of the Avar period (especially the jewellery items) or represent articles produced in the Carolingian Empire at the turn of the 8th–9th centuries and the first third of the 9th century (weapons, certain bead types, certain tool types). The latest finds are represented by articles used until the mid-century or the second third of the century, or whose use began at this time (e.g. spurs, Eastern Alpine Slav and Moravian jewellery articles, certain bead types). Since, however, the anthropological analyses suggest that the cemetery was used for a span of 40–50 years,[133] it seems likely that the first burials can be dated to the first decade of the 9th century and that the cemetery was abandoned sometime in the 850–860s.

The Sopronkőhida cemetery as a historical source

It seems worthwhile to re-examine the colonisation *inter Sabariam et Carnuntum* of 805 in the light of the above. István Bóna and Herwig Wolfram's proposal that the seat of a vassal prince or a kagan's seat and/or an episcopal centre was created in the Petőháza area[134] is still

[131] *Bóna 1985* 154–156.

[132] The same territory was later occupied by the *comitatus* of Ratpod, the *praefectus* of the province of Oriens; his *comitatus* was separated from Rihharius' *comitatus* by Dominicus' estate in Lebenbrunn near Zöbernbach (Dominicus was Priwina's court priest). *Wolfram 1979* 131–132.

[133] This dating is also supported by the classical anthropological and biochemical analyses of the skeletal finds from the cemeteries around Mosaburg/Zalavár. *Szőke 1992b* 159–178.

[134] Cf. *B. M. Szőke:* A korai középkor hagyatéka a Dunántúlon (Denkmäler des frühen Mittelalters in Transdanubien). ArsHung 1998, 262–266.

widely accepted, even though there is nothing in the archaeological record to support the existence of a centre of this type east of the Petronell–Szombathely line.[135]

The archaeological and historical research conducted over the past decade have enabled an entirely new interpretation. The Sopronkőhida cemetery represents a cultural group, whose distribution begins west of the Szombathely–Petronell line and extends to the Ybbs in the Upper Danube Valley. This area corresponds to the earlier border zone called *Avaria* in the written sources (while the former marchland to its west was called *Sclavinia*). It must also be borne in mind that while in 805–806 *Avaria* denoted the entire territory of the former kaganate, between 808–836 this term only referred to the one-time marchland.

Ordering the above in a logical sequence we can reconstruct the following series of events. When in 805 the *kapkan,* who had already been baptised and was called Theodor,[136] turned to Charlemagne and requested a new settlement territory for himself and his people owing to the Slavs' harassment, the emperor gave them the territory *inter Sabariam et Carnuntum.* Since the emperor had personally visited the region, he knew exactly what he was talking about. The designation of the two ends of the boundary, however, did not mark a settlement area extending to its east (as formerly believed), but one extending to its west from these points, namely the fertile section of the Danube Valley, which had been uninhabited owing to its function as the Avars' marchland. This area was called *Avaria,* partly becuase of the ethnic background of its new settlers. The emperor thus repopulated a previously deserted and uninhabited region and, wisely, also prevented the outbreak of another conflict since he did not settle them in the midst of another people – as would have been the case east of the Szombathely–Petronell line – but in an uninhabited or sparsely populated area of the empire.

The question of where these "Avars" came from is more difficult to answer. Their costume, their artefacts are characteristic of the commoners of the end of the Avar period and the early Carolingian period from the Enns to south-western Transdanubia. Only the custom of depositing mutilated cattle skulls in the grave, symbolising the sacrificial animal and expressing a deep cultural tradition, could act as a reliable indicator. Even though this custom, widespread in *Avaria* itself, has been documented sporadically in several other areas, it does not offer a secure and reliable starting-point for the determination of the group's origins. We can therefore only hope that there will be evidence from currently less well investigated areas, although it is also possible that no evidence of this type will be forthcoming since this group had earlier cremated its dead. The turn of the 8th–9th centuries was a time, when the neighbouring Moravian Slavs and the ancient Croatians in the south turned from cremation to inhumation; a number of Alpine Slavic tribes, whose former burial rite (scattered cremation burials) left

[135] *I. Bóna:* „Cundpald fecit" (Der Kelch von Petőháza und die Anfänge der bairisch-fränkischen Awarenmission in Pannonien). ActaArchHung 18 (1966) 319–325; *H. Wolfram:* Die Geburt Mitteleuropas. Geschichte Österreichs von seiner Entstehung 378–907. Wien – Berlin 1987, 265 speaks of a *"Tributärkhaganat".*

[136] It is not mere chance that the imperial yearbook emphasised the kapkan's conversion to Christianity since this was the "prerequisite" for granting any wishes calling for the empire's support (cf. the baptism of the Kagan Abraham at a later date or even Priwina's baptism in the 830s). The paganism of the commoners was overlooked for quite a long time and nothing more than a formal Christianity – and, more importantly, the paying of taxes – was required from them.

[137] For the stages in the shift from cremation to inhumation, cf. *H. Zoll-Adamikowa:* Die Verwendbarkeit der Grabfunde aus dem 6.–10. Jahrhundert für die Aussonderung der Stammesgruppen bei den Westslawen, in: Rapports du IIIe Congrès International d' Archéologie Slave. I. Bratislava 1979, 941–952; *H. Zoll-Adamikowa:* Przyczny i formy recepcji ritualu szkieletowego u slowian nadbaltyckich we wczesnym sredniowieczu. PrzA 35 (1988) 183–229; *Szőke 1996* 105–124. It must here be noted that the entry in the Frankish imperial yearbook according to which the kapkan and his people (not his Avars!) had to flee the Slavs' harassment is not in itself proof that the persecuted were nomadic Avars. It is possible that the explanation for the animosity of the neighbouring (and perhaps related) Slavic tribes can be sought in their adoption and practice of a custom of Avar origin, in spite of their common ancestry. The fact that the kapkan had adopted Christianity would suggest that his original settlement territory did not lie very far from the western border since in 805 the fate of the kaganate was by no means decided. In other words, the kapkan and his people may have been Slavs who had lived under Avar overlordship in one of the Alpine river valleys.

few traces in the archaeological record, now "appear" and become archaeologically visible. It is thus hypothetically possible that one of these tribes adopted this type of animal sacrifice during the long centuries of co-existence with the Avars and that this only became visible after their adoption of the inhumation rite.[137]

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THE KERKA VALLEY IN THE MIDDLE AGES

Medieval history and archaeological topography

The medieval archaeological topography of the upper and middle reaches of the Kerka has been largely unexplored *(fig. 1)*. One of the issues examined during the research project conducted in the Kerka Valley was the question of when the march and the practically uninhabited marchland of the Hungarian Conquest period was settled and whether the settlements in this region had any antecedents, whether there was a continuity in the life of these settlements.

The investigated area extended from the forested hills acting as a watershed between the Kerka and the Zala to the communities of Szentgyörgyvölgy, Resznek and Kerkabarabás. This study offers an overview of the documentary evidence on this region and a comparison of the information contained in the written sources with the archaeological record.

The marchland and its guards in the written sources

József Holub discussed the shifts in the spatial boundary of the ecclesiastic and county administration in the western part of County Zala up to the age of King St. Ladislaus in his monumental study.[1] This boundary practically coincided with the border defence line of the ancient Hungarians' settlement territory. The western boundary of the county bordered on the Kerka–Lendva and the region of Mura–Drava Interfluve (Međimurje/Muraköz), both part of the marchland at the time. The ancient Hungarians separated their settlement territory from the lands of the neighbouring peoples with wide, uninhabited zones. This defence system provided adequate protection in the case of unexpected raids in their earlier homelands and it was therefore retained in the new homeland in the Carpathian Basin. The sparsely populated or uninhabited area between two countries, covered by dense, impenetrable forests and marshland, was called the marchland (*gyepűelve* in Hungarian). The march and the marchland were defended by border guards, called *speculatores* in the written sources. The ranks of these border guards often included Turkic speaking population groups, mostly Pechenegs, who had joined the ancient Hungarians during their migration.

In his discussion of the march and the marchland, József Holub's starting point was that the south-western part of County Zala was "essentially made up of two large landholdings, the region of Mura–Drava Interfluve and the estates of the Bánfis of the Hahót kindred, which extended from Csesztreg by the frontier in County Vas, through Nemti (Lenti) to Szemenye by the Mura and from there to the frontier (again in County Vas) along the Mura." Holub argued that huge landed estates of this type could hardly have evolved in the already occupied territories and that their emergence can only be conceptualised by assuming that "these estates lay beyond the march; when the country's borders were extended, these areas came into royal possession and the sovereign then donated these royal estates to his followers." In his opinion, these areas were then populated with settlers brought in by the new landowners.[2]

Holub also noted that the boundary between these two landholdings more or less coincided with the boundary between the Veszprém and Zagreb diocese. This boundary ran north-eastwards from Letenye to Magyarszerdahely, continuing in a north-westerly direction towards Börzönce, Szentpéterfölde, Hernyék and Zalabaksa to the River Kerka and from there to the frontier in County Vas along the river through Csesztreg and Ramocsa. In other words, the areas west of this boundary – the one-time marchland – were annexed to the Zagreb diocese at the time of its foundation in the late 11th century.[3]

Holub's assumptions have been confirmed by historical research. Gyula Kristó agreed that the Zagreb diocese was founded by King St. Ladislaus sometime between 1090–1095,

[1] *Holub 1929* 28–30.
[2] *Holub 1929* 29–30.
[3] *Holub 1929* 30.

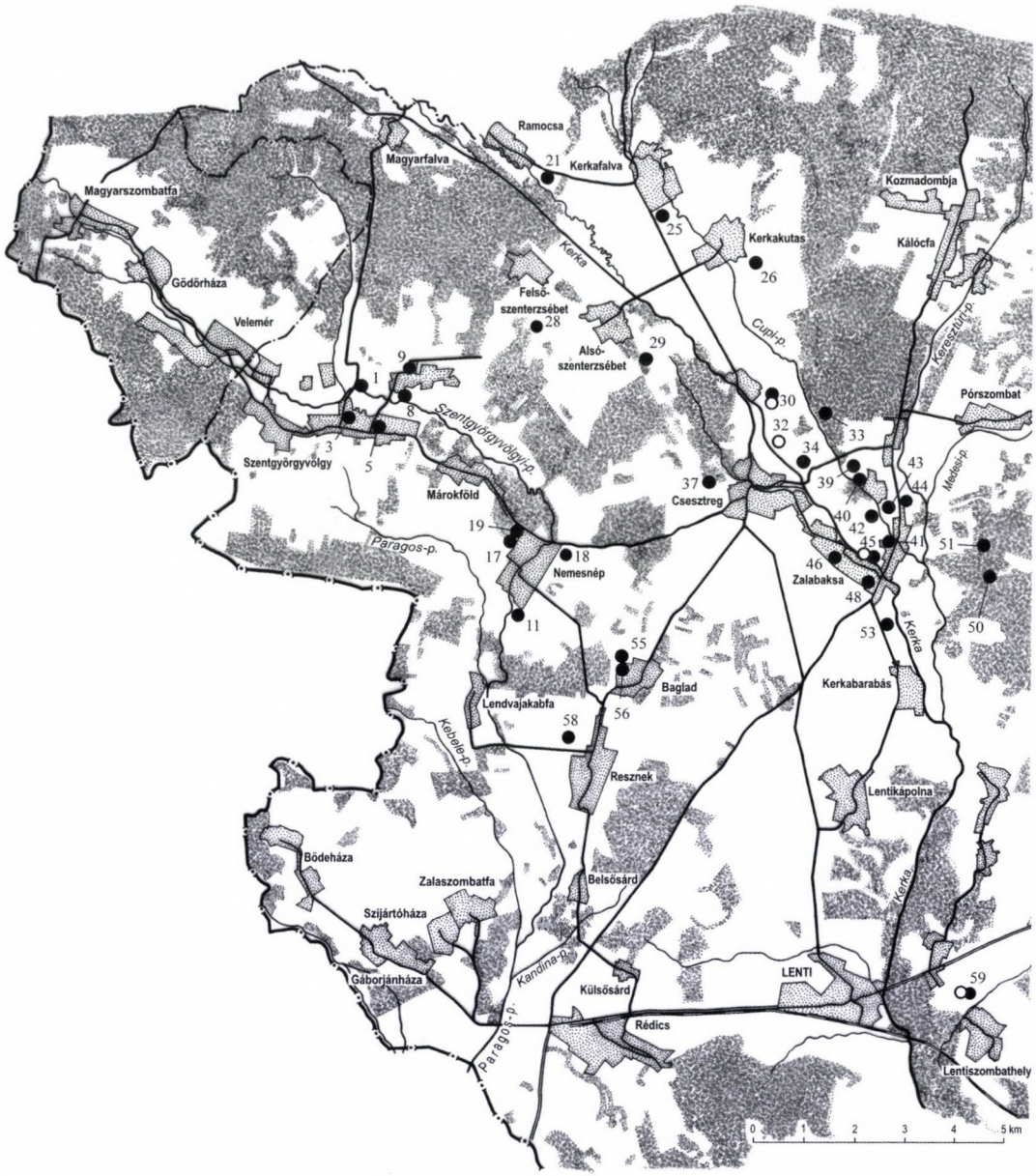

fig. 1. Medieval sites in the Kerka Valley

the only uncertainty being the exact date of the foundation.[4] Kristó too noted that the county administration only extended to these areas from the end of the 11th century.[5]

The march (the boundary of the early settlement territory) in the interior of the Göcsej Hills left the hilly region at Zalabaksa and continued to the county's boundary along the Kerka. Let us briefly review the evidence confirming that the march lay in this region, primarily the evidence for the border guards, the *speculatores.*

Although the data quoted in the following comes from documents drawn up about 150 years after the cessation of the marchland, they nonetheless prove that the frontier guards survived in this region.

The border guards of Zala along the Kerka are first mentioned in 1257.[6] A guard of County Zala, a certain Márton, son of Buza. who acted as notary to the vice-chancellor Benedek under Stephan V, was granted nobility together with his father and brothers. He was given five ploughteams of land from the guards' land that, according to the perambulation, lay

[4] *Kristó 1988* 305.
[5] *Kristó 1988* 248–250.
[6] *ÁUO* VII, 465.

beside the River Velemér, between Kebele and Csesztreg and beside Master Benedek's land (called Karka) near Őriszentgyörgyvölgye.[7] The guards of the Kerka region are last mentioned in 1334, in connection with Hétkutas and Csesztreg.[8] Mention of these guards can be quoted from the Reznek area, where Ladislaus IV donated a piece of land called Fényesfalva to his guards, members of the Csabi kindred, a donation that was later confirmed by Andrew III in 1292.[9] The toponym Őri-Szentgyörgyvölgy too reflects the name of guards in the area (*őr* means "guard" in Hungarian).[10] That the name of the Szentgyörgyvölgy settlement was apparently *Őr* before its church was constructed, is indicated by a document from 1335, in which a certain Egyed, filing a suit against neighbouring Kólgyár, was described as a nobleman from Őr *(nobilis de Our)*.[11] The presence of guards is perhaps also reflected in the toponym Lövő ("shooter") at Medes on the left bank of the Kerka, beside the boundary of the Sárd estate, mentioned in 1408.[12]

The written sources contain little information on the situation of the Zala border guards and neighbouring Vas region in the 12th–13th centuries; what we do know is that the Őrség region retained its function as part of the border defence system for a longer time than the Zala region. In addition to the name itself (*Őrség* means "guardian" in Hungarian), a charter issued by Stephan V in 1270 decreed that the guards of Monyorósd should continue to defend the border from the boundaries of County Zala to a place called Lug.[13]

The population of the region after the cessation of the marchland as reflected in the written sources

Following the above brief overview of the sources on the marchland and its guards, we must examine József Holub's claim that this region was populated with people brought here by the new landowners following the royal donations.[14] Holub based his argument on the foundation charter of the Almád monastery from 1121, from the age of Stephan II, in which the description of the boundaries of two villages called Páka includes a mention of River *Limpa* (Lendva),[15] suggesting that there were huge tracts of unoccupied land in the Kerka Valley.

Let us first review the documentary evidence on Csesztreg and the neighbouring settlements and their landowners. We know from a perambulation conducted under Charles Robert that together with Hétkutas and Szenterzsébet, Csesztreg was part of a huge estate belonging to Alsólendva Castle and that the king confirmed the possessions of the landowner, Miklós, son of István of the Hahót-Buzád kindred.[16] The charter describing this event is the earliest written source in which the region is discussed, and therefore any analysis of the early topography of the region must by necessity take this document as its starting point.

Csesztreg is first mentioned in a charter dating from 1275, as the possession of Master Hahót of the Hahót-Buzád kindred.[17] Unfortunately, it is unclear whether the settlement was ancestral or acquired property and neither does a charter from 1334 clarify this point. The village *(villa)* of Csesztreg was part of the estates belonging to Alsólendva Castle *(castrum Lyndwa)*.[18] This possession did not extend over the entire village since we know that other landowners too had holdings in this area. These were gradually acquired by the lords of Lendva Castle. In 1335, for example, they acquired one-half of the ancestral properties of Mokó, son of Csépán, through exchange and we know that they had acquired the other half at some earlier date.[19] The nobles of Csesztreg agreed to this exchange. Mokó (or Makó) is mentioned with the cognomen Csesztregi in 1353.[20] Hétkutas, the northern neighbour of Csesztreg, is first mentioned in the above quoted 1334 charter as part of the possession of Alsólendva Castle and

[7] *Holub 1929* 32–33. Based on a charter issued by Ladislaus IV, surviving in a copy drawn up under Charles Robert in the archives of the Tallián family.
[8] *ZO* I, 281
[9] *ÁUO* X, 32; *ZO* I, 605.
[10] MOL DL 21 222.
[11] *ZO* I, 330.
[12] MOL DL 36 701.
[13] *HO* VIII, 129.
[14] *Holub 1929* 30.
[15] MNy XXIII (1927) 363; *Holub 1933* 478, 598.
[16] *ZO* I, 276–286.
[17] *Holub 1933* 155.
[18] *ZO* I, 278–279.
[19] *ZO* I, 293.
[20] MOL DL 4359.

part of the estates of the Hahót-Buzád kindred. The charter also notes that this settlement was not an ancestral, but an acquired estate.[21]

This estate was in fact a group of villages made up of seven villages: Kutas (*Kutus,* present-day Kerkakutas) was the largest, central settlement. In the late 14th century, this village was twice or thrice as large as the other neighbouring settlements.[22] In 1469, it was a tolling station and had by that time grown into a market town *(oppidum).*[23] This is the single piece of documentary evidence for this status and it would appear that the settlement was unable to retain it. North-west of Kutas lay the settlement of Szatafalva (*Zatafalva;* in the Middle Ages there were two villages by the name of Szatta – one lies in County Vas, near the boundary with County Zala, the other was probably identical with Pusztaszatta, and lay close to Kutas), to its south lay Németkutas or Németfalu (currently part of Kerkafalva) and Péntekfalva (also part of Kerkafalva), while Csöde lay to north near the Zala, with Újfalu (identical with present-day Kerkaújfalu, part of Csesztreg) and Mihon (*Myhou*, a deserted settlement on the eastern bank of the Cupi Stream on the outskirts of Csesztreg, whose name is preserved by the Mihom Woods) to the south.

As a matter of fact, Kutas was the name of a larger area lying between the Zala and Kerka rivers, bordered by County Vas in the west and an ancient Roman road in the east, as shown by a passage in a document to be discussed below, according to which Szentpéter (present-day Pusztaszentpéter on the outskirts of Zalalövő), a village lying between Csöde and Kutas in the possession of lesser nobles (probably the descendants of border guards), was to be found in Kutas. Hétkutas was the name given to the seven villages owned by the Bánfi family.

The next medieval village north–north-west of Csesztreg was Szenterzsébet (present-day Alsó- and Felsőszenterzsébet), described as part of the ancestral estate of Master Miklós, son of István, in the 1334 perambulation charter.[24] The neighbours of the Hahót kindred's estates, lying in one block, are almost all mentioned in this charter.

Czup (present-day Cup, part of Zalabaksa) was Csesztreg's eastern neighbour; the boundary between the two settlements was the Cupi Stream. The landowner is described as a noble *(nobilibus de Czup).*[25] It was in later times also inhabited by so-called one-plot nobles, the Czupi, the Csonka, the Dezső, the Lóránt and the Móricz families.[26]

In the area where Csesztreg currently borders on Zalabaksa, the neighbouring fields were in the possession of the sons of a certain Csepán *(filiis Chepani).* The village of *Győrfalva* (present-day Győrfa in Zalabaksa), whose noblemen are first mentioned in 1426, emerged in this area.[27] In the earlier 14th century, Csesztreg did not directly border on *Baksafalva* (present-day Zalabaksa); the village itself is first mentioned in a document from 1341, in which it is described as being in the possession of the Rezneki family.[28]

The next southern neighbour was *Halastó,* a village which no longer exists, lying between Csesztreg and Reznek.[29] The 1334 perambulation mentions the Reznek forest and the main road leading from Csesztreg to the village of Herbold in this section. Herbold was the head of the Csabi kindred, who had his seat at Reznek.[30] In 1349, the village is described as lying on the road from Kölgyár to Vasvár, owned by János, son of Márk.[31] Later still, the Halastó family and the nobles of Halastó are mentioned as landowners in this area.[32] It is possible that the village is identical with present-day Baglad, a settlement not mentioned in medieval sources (and neither does the name of this settlement crop up in the works of Holub and Csánki). The first piece of data for the existence of the village dates from 1528.[33] According to the perambulation, the village of Halastó lay somewhere in the Baglad area and the so-called Halastó bridge towards Nemesnép too lay here.

[21] *ZO* I, 276–285.
[22] MOL DL 7467 (1381).
[23] MOL DL 16853.
[24] *ZO* I, 278–280.
[25] *ZO* I, 278, 284.
[26] MOL DL 32 206 (1513).
[27] MOL DL 11802.
[28] *ZO* I, 378.
[29] *ZO* I, 279.
[30] *ZO* I, 279.
[31] *ZO* I, 493.
[32] *Holub 1933* 277.
[33] *Ö. Boncz:* A Szentgyörgyvölgyi Bakacs család [The Bakacs family of Szentgyörgyvölgy]. Turul 17 (1899) 3.

Nemesnépfalva (present-day Nemesnép) was the south-western neighbour of Csesztreg. The village is not mentioned in the 1334 perambulation. Several holdings are listed for this area (sons of Bodolo, sons of Pant Gosztolai), and it seems likely that the village can be identified with one of them. This village, inhabited by one-plot lesser nobles, is first mentioned by name at a rather late date. In 1407, it appears in a nobleman's name.[34] The village later split into several smaller settlements: a document from 1441 mentions Nemesnépfalva and Felsőnemesnépfalva,[35] a charter from 1493 also lists a village by the name of Alsónemesnépfalva.[36]

The next settlement towards the west–north-west is *Karka* (Kerka), first appearing as the name of a field near Csesztreg in a 1275 perambulation, a holding of Master Benedek, the vice-chancellor.[37] In 1285, a piece of land called Karaka, lying by the Kerka, was purchased by the Rezneki family from Márton, son of Csekud of Szölc and his companions.[38] In the 1334 perambulation of Csesztreg, the village *(villa)* of Karka lay on the left bank of the Kerka, near Szenterzsébet and Metnek.[39] A road led from it to Szenterzsébet and Szentmárton, suggesting that there is a good chance of identifying its location.

The deserted village of *Metnek* (its name preserved by an area called Nagymetnek-puszta, lying north of Szentgyörgyvölgy) is likewise mentioned in the 1334 perambulation, in connection with the road leading to Szenterzsébet.[40] It is later described as a holding of the Bánfi family.[41] Ramocsa in the Upper Kerka Valley was originally in the possession of the Bánfi family of the Hahót-Buzád kindred, who in 1378 relinquished it to the Szentbenedeki family and the sons of Henczel of the Gyüre kindred.[42]

Dobrafölde (present-day Magyarföld) is not mentioned in József Holub's historical geography, even though it was very likely a medieval settlement, at least judging from its Slavic name. This settlement is located in an area, where the still unidentified village of Karka is believed to have lain.[43]

The following villages bordered Hétkutas from the north and east: *Szentmárton,* a deserted village on the outskirts of Csöde is mentioned in 1334 in connection with the great road leading to the village from Karka.[44] In 1342, it is described as lying in the neighbourhood of Csöde.[45] At this time, it was in the possession of a family later known as Salamonvári.[46] Kopasz, son of Salamon Vörös, after whom the family was named, had holdings in the area, when the village first appeared in the written sources.

Szentpéter (present-day Pusztaszentpéter on the outskirts of Zalalövő) is first mentioned in 1310 as Szent Péter village in Kutas.[47] Known also as Kutasiszentpéter in later times, it was possessed by nobles, who had in 1342 sold their estate called Csödefölde to Miklós Lendvai, *ispán* of Zala.[48] Irsa *(Jarsa)* is today part of Zalalövő. It is first mentioned in 1264 and later in 1265,[49] described as the possession of Zala Castle. Of the castle warriors living here, Stephan V granted the sons of Tynch nobility.[50] Mihnye (*Myhne,* a village that no longer exists) is first mentioned in the perambulation charter as an estate of Master Miklós. It bordered on Szentpéter and Irsa.[51] In later documents it is described as part of the Kutas *villicus.*[52] Although this village has not been identified yet, it can perhaps be sought in the area known as Mihes, lying north-east of Kerkakutas.

[34] MOL DL 9374.
[35] *ZO* II, 511.
[36] MOL DL 20 029.
[37] *Holub 1933* 365 (based on the family archives of the Tallián family).
[38] *ÁUO* IX, 345.
[39] *ZO* I, 279–280.
[40] *ZO* I, 280.
[41] MOL DL 6586.
[42] *HO* V, 158.
[43] *Holub 1933* 186: Dobra in the region of Mura–Drava Interfluve; *Holub 1933* 186–187: Dobri etc.
[44] *ZO* I, 281.
[45] *ZO* I, 393.
[46] *Holub 1933* 780.
[47] *ZO* I, 133 *(Villa sancti Petri in Kutus).*
[48] *ZO* I, 392. The *ispán,* called *comes* in Latin sources, was the royal officer in charge of one of the counties, or of a royal forest or a border district. He was also the collector of revenues in his district and judge of the free and unfree men in the county.
[49] *I. Nagy – F. Deák – Gy. Nagy (eds):* Hazai oklevéltár [Charters of Hungary]. Budapest 1879, 46; *HO* VI, 130.
[50] *HO* VI, 179.
[51] *ZO* I, 283–284.
[52] *Holub* 1933 506.

Kozmadamján (present-day Kozmadombja) is described as the village of the martyrs Kozma and Damján in connection with the road leading to the settlement.[53] In the late 14th century, the village was in the possession of Kálóz, son of János Kutasi.[54]

Ilvágy (*Ilwagh,* a no longer existing settlement on the outskirts of Kálócfa) is first mentioned in 1264, in connection with the road leading to the settlement.[55] The 1334 perambulation described it as a village adjacent to Mihó and Cup.[56] It would appear that the settlement came into the possession of several lesser landowners.[57] In 1433, Ilvágy is listed as being also called Kálózfalva with a church dedicated to St. Nicolaus, suggesting that it lay in its immediate vicinity.[58] The topographical evidence indicates that the village merged with present-day Kálócfa, which originally lay on the eastern bank of the Turdi Stream, while Ilvágy lay on the western bank.

The name of *Kálózfalva* (present-day Kálócfa) perhaps preserves the name of the Pecheneg *káliz,* although it seems more likely that the village was named after its landowner, who was of Pecheneg stock. A landowner by this name, from whom the Kutasi family was descended, can be documented in the late 13th century.[59] Proceeding north-eastward–eastward, the next village is Pórszombat, first mentioned in 1425 as the possession of the Marcali family.[60] In 1456, the settlement was called Szombathely.[61] If the latter was its genuine name, the village can be regarded as a rather early settlement, perhaps functioning as a settlement where markets were held. However, there is no conclusive evidence for its early date.

The next settlement was *Medös* (today on the outskirts of Pórszombat), a village which no longer exists; its name is preserved by a forest, a mountain and a stream called Medes. The village is first mentioned at a rather late date, in 1408, as the estate of the Lackfi family of Isabor.[62] *Szentandrás,* another settlement that no longer exists (on the outskirts of Zalabaksa), had originally belonged to the Bagodi family. When the sovereign confiscated their castle (tower) together with their villages and gave them to the Csabi kindred, the two kindreds came to an agreement. In exchange for the return of the Bagod tower, the Bagodis gave Szentandrás and other holdings to the Csabi kindred in 1287.[63] Moving southward, the village of Barabás (*Barlabás,* present-day Kerkabarabás) is described as a holding of the Rezneki family of the Csabi kindred in 1333.[64] *Reznek* (present-day Resznek), lying south of Baglad, was the centre of another major estate lying between Csesztreg and Lenti. The landowners came from the Csabi kindred; they were originally castle warriors, who had styled themselves as Rezneki [from Reznek] as early as 1282.[65] It seems likely that their castle, destroyed sometime before 1326 by Salamon Vörös of Harkály, had been built by this time.[66]

Mention must also be made of a holding south-west of Csesztreg, part of the Reznek estate, that similarly to Kutas included several (four or five) villages. This area was called *Fevenyesfölde,* and according to a 1342 charter, it lay between Resznek and Kebele *(Kobilje).*[67] It was originally in the possession of royal border guards, *speculatores,* but was later donated to the Rezneki family by Ladislaus IV.[68] In 1360, the area called Fényesföld by the Rezneki family incorporated Lékfalva, Jakabfiajánosfalva and Pósfalva. Another charter from the same year describes these villages as lying within these boundaries.[69] In 1419, yet a fourth village, *Pocmanlaka,* is listed among the settlements in the area.[70] Fenyvesföld is mentioned twice in this charter: first separately and then as the other name of Jakabfiajánosfalva.[71]

[53] *ZO* I, 284.
[54] *Holub* 1933 426.
[55] *HO* I, 46.
[56] *ZO* I, 284.
[57] *Holub 1933* 284.
[58] *Holub 1933* 314, based on the Festetics archives, Zalad. 107a.
[59] *Holub 1933* 351.
[60] MOL DL 11712.
[61] *ZO* II, 565.
[62] *ZO* II, 337.
[63] *HO* VI, 328.
[64] *ZO* I, 271.
[65] *ÁUO* IX, 345.
[66] *ZO* I, 194–195.
[67] *ZO* I, 396.
[68] *ÁUO* X, 32.
[69] *ZO* I, 605; MOL DL 4944.
[70] MOL DL 10854.
[71] *HO* IV, 209; *Holub 1933* 230.3

Jakabfiajánosfalva can be identified with present-day Lendvajakabfa. Preserved in a number of toponyms, Lékfa lay to its west, towards Resznek. We were unable to identify the other settlements.

Of the settlements between Szentgyörgyvölgy and Csesztreg, Márokföld *(Márkfölde)* first appears in the written sources in 1344, when the Rezneki family claimed that it had been their holding which they had been cheated out of.[72] It would seem that this was not quite the case since a document drawn up in 1351 records that when Márk, son of Buza died heirless, the sovereign donated the village to Ban Miklós of the Hahót kindred; it thus became a holding of the Bánfi family[73] and remained in their possession throughout the Middle Ages.

Kólgyár (present-day Kógyár, now part of Szentgyörgyvölgy) is first mentioned in the 1334 perambulation. One year later, Egyed, a noble of Őr *(Our)* litigated over this holding with the Rezneki family.[74] Later, the village passed into the possession of the Kolgyári family.[75]

As has been mentioned above, *Őr* or *Őriszentgyörgyvölgy* is probably the earliest name of Szentgyörgyvölgy.[76] The Rezneki family tried to acquire holdings here, but their efforts were unsuccessful since the settlement remained the property of the lesser nobles.[77] The settlement itself was made up of several smaller hamlets *(szeg),* named after the noble families, who had holdings there.[78]

Farkasi (present-day Alsó- and Felsőfarkasi, part of Szentgyörgyvölgy) is first mentioned in a charter dated 1457. It is probably not identical with the settlement of *Farkasfalva,* listed as a Hahót property, that has not been identified yet.[79]

Cséplak (today part of Szentgyörgyvölgy) is first mentioned in 1358.[80] According to Holub, the village was originally called Széplak and lay in County Vas; its first mention in the written sources is known from 1368.[81] There was a noble by this name, although the settlement was in the possession of the Csabi kindred.[82]

In spite of its medieval-sounding name, *Asszonyfalva* (today also part of Szentgyörgyvölgy) does not appear in the sources and neither can it be identified with the settlement of the same name in County Vas.

It is clear from the above that there were two larger estates in the region, owned by the Bánfi family of the Hahót kindred and various families of the Csabi kindred.

The Bánfis came from the Hahót branch of the Hahót-Buzád kindred. The ancestor of this kindred was of German stock and came to Hungary in 1163 to serve King Stephan III. The Hahót branch *(Hahold, Hoholt)* received extensive estates in County Zala in exchange for services rendered to the king, namely for supporting his efforts to regain his throne from the pretenders supported by Byzantium. The most significant landholdings of the Hahót branch lay in the Lendva and Kerka valleys, as well as in the valleys of the neighbouring streams. Unfortunately, none of the charters of donations have survived; the holdings of this kindred in the area are first mentioned in 1192 in connection with their expansion in the Alsólendva area.[83] In the 14th century, they were again granted estates in the region for services rendered to Charles Robert and they also bought holdings in this region. Csesztreg and its broader area – including Hétkutas and Szenterzsébet – were in 1334–35 part of this larger estate. By acquiring Lenti Castle and its estate a few years later (in 1343), the Bánfis became the indisputable lords of the Kerka Valley.[84]

[72] *Holub 1933* 496, based on the archives of the Esterházy family, 32.B.88.
[73] *ZO* I, 513.
[74] *ZO* I, 330.
[75] *Holub 1933* 416.
[76] *ZO* I, 195 (1326); *ZO* II, 16 (1368).
[77] *Holub 1933* 764–766.
[78] *L. László:* Szentgyörgyvölgy – Műemlékek [Szentgyörgyvölgy. The historical monuments]. Tájak – Korok – Múzeumok kiskönyvtára 431. Budapest 1992.
[79] *Holub 1933* 220.
[80] *ZO* I, 540.
[81] *ZO* II, 24.
[82] *E. Reiszig:* A Csabi nemzetség [The Csabi kindred]. Turul 17 (1899) 33, 67.
[83] *M. Wertner:* A Buzád-Hahót nemzetség [The Buzád-Hahót kindred]. Turul 16 (1898) 19–33, 59–65; *Karácsonyi 1901; L. Vándor:* A Hahót-nemzetség korai központjai [The early centres of the Hahót kindred], in: B. Somfai (ed.): A Dunántúl településtörténete VII. Veszprém 1987, 53–60.
[84] *Karácsonyi 1901* 133.

The other major landowner was the Csabi kindred, originally castle warriors *(iobagiones castri),* whose possessions in the area beyond the Kerka are documented before 1264. They enlarged the estate around Reznek with lands acquired from the Bagodis in the 13th century. The area in their possession extended from Szentandrás near Baksa to Cséplak, separating the Bánfis' holdings in the Csesztreg and Lenti area. They built a castle at Reznek, the centre of their estates, which was completed by the early 14th century.[85] They lost most of their properties in 1403 owing to treason against the sovereign; these properties were then donated to the Egervári family.[86]

The number of villages of the lesser nobility is quite significant; their occupants were most likely the descendants of the one-time frontier guards. Although the expanding large estates incorporated many smaller holdings, there were at least eight villages dominated by lesser nobles.

If the villages discussed in the above are listed according to their first mention in the written sources, we find the following:

First mentioned in the 13th century: 15%

1. Ilvágy (1264)
2. Irsa (1264)
3. Csesztreg (1275)
4. Szentandrás (before 1278)
5. Resznek (Reznek) (1282)
6. Fevenyes/Fényesfölde (before 1292)

First mentioned in the earlier 14th century: 50%

7. Szentpéter (1310)
8. Szentgyörgyvölgy (1326)
9. Barabás (1333)
10. Szentmárton (1334)
11. Csöde (1334)
12. Szatta (1334)
13. Németfalu (Németkutas) (1334)
14. Péntekfalu (1334)
15. Kutas (1334)
16. Újfalu (1334)
17. Mihom (Mihó) (1334)
18. Cup (1334)
19. Metnek (1334)
20. Karka (1334)
21. Szenterzsébet (1334)
22. Kozmadamján (1334)
23. Halastó (1334)
24. Kógyár (Kolgyár) (1335)
25. Baksafalva (1341)
26. Pósfalva (1341)

First mentioned in the later 14th century: 12.5%

27. Cséplak (1358)
28. Lék or Légfalva (1360)
29. Jakabfijánosfalva (1360)
30. Kálócfa (1364)
31. Ramocsa (1378)

First mentioned in the 15th–16th centuries: 17.5%

32. Nemesnép(falva) (1407)
33. Medös (1408)
34. Pocmanlaka (1419)
35. Pórszombat (1425)
36. Győrfa (Györgyfalva) (1426)
37. Farkasi (1457) (1222?)
38. Baglad (1528)

Not mentioned in medieval documents: 5%

39. Asszonyfalva (Szentgyörgyvölgy)
40. Dobraföld (Magyarföld).

[85] *Karácsonyi 1901* vol. 3, 166–174.

[86] *E. Reiszig:* A Geregye nemzetség [The Geregye kindred]. Turul 18 (1900) 59.

Only 15 per cent of the villages are mentioned in the 13th century, and most of these mentions come from the second half of the century. One-half (50 per cent) of the villages in this region first appear in the written sources in the earlier 14th century; together with the ones first mentioned in the second half of the century, they make up about two-thirds (62.5 per cent) of the settlements. The number of late mentions is also quite high (17.5 per cent).

It would appear that only settlements in the areas east of the valley are mentioned at an earlier date than Csesztreg (1275). Although the fact that most settlements crop up in documents from the 14th–15th century does not reveal much about the actual date when these areas were first populated, a comparison with the documentary evidence from other areas of County Zala seems to confirm József Holub's opinion that these areas were settled at a relatively late date.

A total of thirteen villages (30 per cent) perished during the Ottoman period. These are the following: Fényesfölde, Halastó, Ilvágy, Karka, Lékfalva, Mihon, Medes, Metnek, Mihnye, Szatta, Szentandrás, Szentmárton and Szentpéter. Some of these continued to exist as an inhabited place *(puszta),* but they never became independent villages again. The continuous settlement of this region and the survival of its inhabitants' traditions is reflected in the fact that documentary evidence was only lacking in the case of two settlements, Fényesfölde and Karka. It is possible that these two settlements now have a different name.

The military events and the devastations of the Ottoman period are indicated not only by the high number of deserted villages, but also by the fact that the medieval church only survived in two villages, Csesztreg and Kálócfa. The church in the latter was unfortunately demolished. The churches in Medes, Szentandrás, Szentmárton and Szentpéter perished together with the village; we also know that many of the surviving villages, such as Kozmadombja, Resznek, Szenterzsébet, Szentgyörgyvölgy, had originally had their own church in the Middle Ages.

The results of the archaeological surveys

A total of fifty-eight sites were identified during the field surveys in the Kerka region; twenty-seven of these yielded medieval finds. The field surveys were restricted to the Upper Kerka Valley, a much smaller area than the one discussed in the above. The field surveys were conducted in the area of fourteen present-day villages. Resznek was omitted from the survey, although a small sounding excavation was conducted on the site of the region's single medieval stronghold. We found considerably more settlements existing continuously since the Middle Ages in the area of the fourteen surveyed villages: Kólgyár, Farkasi, Cséplak, Asszonyfa and Csekeszer were incorporated into Szentgyörgyvölgy, Kerkafalu emerged from the merging of Péntekfalu and Németfalu, while Újfalu is now administratively part of Csesztreg and Győrfa was incorporated into Zalabaksa. In this sense, we had surveyed twenty-two settlements existing since the Middle Ages, as well as three deserted settlements: Mihon on the outskirts of Csesztreg, Szentandrás on the outskirts of Zalabaksa and the village of Medes that in part extends into this area. In other words, we surveyed twenty-five medieval settlements, 62.5 per cent of the forty settlements examined in the light of the written sources.

The findings of the field surveys can be summarised as follows: even though a modern village often overlay the medieval settlements, the latter could nonetheless be identified (only at Felsőszenterzsébet and Kerkabarabás were finds from the Middle Ages lacking). The perished settlements could also be identified in the surveyed area.

The findings of the field surveys can by and large be correlated with the evidence from the written sources. Finds from the Árpádian Age were collected at four sites only, accounting for 14.8 per cent of the twenty-seven sites and roughly corresponding to the percentage of the villages mentioned in the documents of that period. Obviously, the nucleus of the one-time medieval villages overlain by a modern settlement cannot be investigated during field surveys.

It is also quite certain that there were more villages in the 13th century – a fact also confirmed by the historical data – even if their archaeological traces could not be detected within the modern settlement.[87]

The image projected by the documentary evidence, namely that this region was sparsely populated during the 10th–12th centuries, has also been confirmed by the field surveys. In contrast to the regions lying to the east, where the remains of settlements smaller than villages have been identified, very few smaller settlements of the Árpádian Age were detected and the stray finds characterising more intensely settled zones were also lacking.

Medieval roads through the region

The road network of medieval County Zala and of the region discussed here, as well as the tolling stations associated with these roads have been described in detail by József Holub.[88]

In his analysis of the main roads, Holub noted that the most important road in the Csesztreg area was the one leading from Csáktornya (Čakovec in Croatia) through the ferry at Szerdahely (Murska Središće in Croatia) to Lendva (Lendava in Slovenia), (Zala)Lövő and finally to Körmend. This road corresponded to a major Roman route, the Amber Road. Another road leading through Szentpéter and the tolling stations at Kutas and Csesztreg to Dobronak, branched off at Irsa. This road joined the Kanizsa–Lendva–Vas county road at Dobronak. The importance of this road is indicated by the fact that there were tolling stations at two close-lying locations, Csesztreg[89] and Kutas.[90] The importance of the latter grew in the 15th century. The road leading from Csesztreg to Dobronak is mentioned several times in the 1334 perambulation, as is its course from Irsa to Szentpéter and thence to the River Zala. The roads from Szenterzsébet to Karka and from Karka to Szentmárton and then to the River Zala were similarly major routes. Another important road in the 14th century was the one between Szentpéter and Kozmadamján.

The toponyms of the Upper Kerka region

The study of how village names evolved is a linguistic task and would lead very far. Here I shall only quote the generally accepted observations and only to the extent necessary for a better understanding of the chronology of the settlements and the ethnic mosaic of the region.

The names of the villages were used by their residents and they obviously gave names in their own tongue – although in occupied or newly conquered territories they often adopted the names used by the indigenous population, even if they did not understand them. These toponyms often became distorted in the process.

Village names usually became fixed through the surrounding world – as a means of differentiation; very often the occupants too played an active role in the emergence of the name. In the distant past, the name may have been one person's idea, but it may equally well have developed spontaneously. In the latter case, the place-name often provided information on the settlement's location. For example, if the servants of a landowner were asked whose men they were and whence they came, the answer could be that they were the men of a landowner called Peter and that they came from Peter's village. Repeatal is one mode of name fixation and many village names developed in this manner. The occupants of the village and the landowner too could name the settlement. In the early centuries of the Middle Ages, the toponyms were not fixed and often changed. The main reason for the change was that the village or the area came into the possession of a new landowner or that the outward appearance of the settlement was transformed.

[87] As we have seen, 50 per cent of the villages are mentioned in the earlier 14th century, suggesting that some of them had already existed in the late 13th century.

[88] *J. Holub:* Zala vármegye vámhelyei és úthálózata a középkorban [The tolling stations and road network of County Zala in the Middle Ages]. Századok 51 (1917) 45–60.

[89] MOL DL 37364 (1322), 16853 (1469) and 37006 (1424).

[90] MOL DL 16853 (1469).

The earliest group of village names is made up of ones derived from a personal name. In the 11th–12th centuries, the personal name became a village name without any suffixes; in the 13th century the suffixes *-háza* [house], *-földe* [land], *-falva* [village], *-ülése* [seat], *-telke* [plot] were added to the genitive of the personal name.[91] This practice was typical for the villages of the lesser nobility who owned one village. Villages could also be named after their founder(s). The suffix *-földe, -telke* could at first designate an unbuilt holding, but from the 13th century they were only used to denote villages.[92]

The other major group of village names is made up of geographic terms and the names of various features of the landscape. The names of the villages in this group primarily evolved from hydronyms, but they could equally well come from the name of a mountain, a hill, a mound, the vegetation etc.

From the late 12th century, it became customary to name the village after the patron saint of its church. This practice was especially popular during the 13th–14th centuries. In many cases this involved a change of name. Some villages were named after the occupation of its inhabitants, others had a name indicating the ethnic background of the villagers. The latter usually evolved by adding the *-i* suffix to the ethnonym. Many village names in the region indicate that its occupants had served as frontier guards.

Using Lajos Kiss' etymological dictionary, we examined the toponyms in the Upper Kerka region, starting with the hydronyms.[93] There is a general consensus that the names of the major watercourses in the area, including the River Kerka[94] and its most important tributaries, the Cserta[95] and the Kebele streams,[96] were of Slavic origin.

The determination of the date of the emergence of the forty settlements listed above using a linguistic approach indicates that twenty-two of them could not have developed before the late 12th or the early 13th century.[97]

It can thus be seen that 55 per cent of the settlements are late ones.

The further examination of the place-names reveals that the twenty-two late settlements all have a Hungarian name and that another five of the remaining fifteen place-names can also be assigned to this group,[98] indicating that 58.8 per cent of the villages were named by Hungarians. There are four villages with a Slavic name: Cseszteg, Irsa, Karka and Reznek (8.8 per cent), while in the case of six villages (20.5 per cent) the origins of their name is uncertain (Mihon, Cup, Kolgyár, Metnek, Mihnye and Ilvágy) since they are not listed in Lajos Kiss' book.

The presence of non-Hungarian ethnic groups is indicated not only by the place-names, but also by hydronyms, preserving the memory of Slavic groups, who had lived in this region. The number of such toponyms is low – a much higher percentage can be found in more easterly areas of County Zala. The place-names also indicate that in addition to local (or settled) Slavic groups, a small group of Germans too had settled or been settled in the area, as shown by the name of Németkutas, Lenti (from Németi–Nemti–Lenti) and Ramocsa that can also be derived from German.

The place-names preserved in the perambulation charters from the earlier 14th century suggest that the region was primarily populated by Hungarians, who gave Hungarian names to the various features of the landscape surrounding them: Gala woods *(silva Gala),* Garadanvölgy [Garadan Valley], Kolgyarvölgy [Kolgyar Valley], Kálozkuta [Káloz's well], Koloskuta [Kolos' well], Csurnukszéle [Csurnuk's edge], Téglásvölgy [Téglás Valley], Hidegvölgy [Hideg Valley], Galnazovölgy [Galnazo Valley].

[91] *I. Kniezsa:* Kelet-Magyarország helynevei. Magyarok és románok [The place-names of eastern Hungary. Hungarians and Romanians]. A Magyar Történettudományi Intézet Évkönyve I (1943) 111–313; *Szabó 1971* 42.

[92] *Szabó 1971* 42.

[93] *Kiss 1988* I.

[94] *Kiss 1988* I. 720.

[95] *Kiss 1988* I. 325.

[96] *Kiss 1988* I. 702.

[97] Szatafalva, Németkutas, Péntekfalva, Csödefalva, Újfalu, Szenterzsébet, Baksafalva, Halastó, Szentmárton, Szentpéter, Kozmadamján, Fevenyesfölde, Lék or Légfalva, Jakabfiajánosfalva, Pósfalva, Pocmanlaka, Dobrafölde, Kálózfalva, Szentandrás.

[98] Medös (*Kiss 1988* II. 113; cf. also Magyar Nyelv 25 [1929] 345), Kutas (*Kiss 1988* I. 721), Őr (*Kiss 1988* II. 296), Pórszombat (*Kiss 1988* II. 365), and Ramocsa (*Kiss 1988* II. 399).

This brief overview is no more than a preliminary study without any pretence of completeness. It will hopefully contribute to a better knowledge of the region and indicate the main problems faced by archaeological research. A detailed topography of the Csesztreg area can only be assembled after the completion of the archaeological work. The main motives for the publication of this study was that no general overview of the area is yet available and that many years will elapse before the publication of the detailed topography.

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LATE HOLOCENE GEOHISTORY OF THE HUNGARIAN PART OF THE EASTERN ALPINE FORELAND IN THE LIGHT OF RECENT RESEARCH

Lying in the Alpine foreland, the Őrség, Hetés and Göcsej regions form one of the most beautiful and undisturbed parts of Hungary. They are enclosed by the towns of Szentgotthárd, Körmend, Lenti and the county's western border. This research was conducted as part of a joint Austrian–Slovenian–Hungarian archaeological research project on the Bronze Age, "Pollen analysis and Archaeology of Early Settlement between the Raab and Mur (Austria, Slovenia, Hungary)".[1] Our goal was to reconstruct the vegetation and climate of this area from the Bronze Age to the present *(fig. 1)*.

Areas permanently covered by loose sediments generally preserve the pollen grains of the region's vascular plants, as well as the remains of aquatic plants. Assuming that pollen analysis might be incomplete and insufficient[2] for the reconstruction of vegetation history, our research focused on sediment sequences from smaller lakes, marshes, mires and bogs. In the winter and spring of 1997, sediment samples were taken from various undisturbed locations in the valley of the Rába and Zala rivers, the Kerka and Szentgyörgy brooks and their tributaries. Sediment cores were extracted in six locations at Farkasfa, Szőce and Szalafő in the Vasi Hegyhát region, and at Szentgyörgyvölgy, Csesztreg, and Resznek in the Zala Hills *(fig. 1)*.

An overview of the area's geology is followed by a description of the sediment sequences and the palynological evaluation of the samples, complemented by a detailed reconstruction of the palaeovegetation and the TILIA diagram of two areas, Szőce *(figs 3–5)* and Farkasfa *(figs 6–8)*, where the pollen assemblage of the samples was richer than in the other sequences. The overview of the region's geography, geology, climate and current vegetation cover is based mainly on the available literature.[3]

Description of the study area

The study area lies in the western part of Hungary, in County Zala and County Vas. Geographically, it includes two naturally uniform regions, the Vasi Hegyhát region (Szőce, Farkasfa, Szalafő) and the western margin of the Zala Hills (Csesztreg, Szentgyörgyvölgy, Resznek). These two geographic units are part of the eastern Alpine foreland, which extends to the Burgenland and Styria in the north-west, and to Slovenia in the south-west. The trilateral archaeological project, complemented with geological-palynological studies, was conducted in this area in 1997. Based on their morphology, the Zala Hills and the Vasi Hegyhát region share numerous geological features.

The Vasi Hegyhát region, extending southward from the River Rába to the Zala Valley, consists of Pannonian sedimentary hills covered with gravel. It was uplifted and broken up by tectonic faults. Rising to 200–350 m a.s.l., the hills are broken up by erosion and corrosion valleys filled with young sediments in varying thickness. These valleys are typically

[1] *L. Draxler – A. Lippert*: Pollenanalytische Daten und eine archäologische Bestandsaufnahme zur frühen Siedlungsgeschichte im Gebiet zwischen Raab and Mur (Österreich, Slowenien, Ungarn). Abhandlungen der Geologischen Bundesanstalt, Bd. 56/1. Wien 1999, 337–396.

[2] *G. Tímár:* A vegetációtörténet pollenanalitikai elemzésének problemái [Problems of the evaluation of vegetation history by pollenanalytical methods]. Manuscript, University of Sopron, Department of Botany 1977; *E. B. Berglund (ed.):* Handbook of Holocene Palaeoecology and Palaeohydrology. Wiley Chichester 1985.

[3] *F. Franyó – S. Jaskó – Á. Juhász – M. Széles – L. Szűcs – Gy. Wein:* Magyarázó Magyarország 1:200,000-es földtani térképsorozatához, L–33–XI, Zalaegerszeg, XI [Explanatory to 1: 200,000 geological map series of Hungary, L–33–XI, Zalaegerszeg, XI]. Budapest 1976, 144; *Hortobágyi – Simon 1981.*

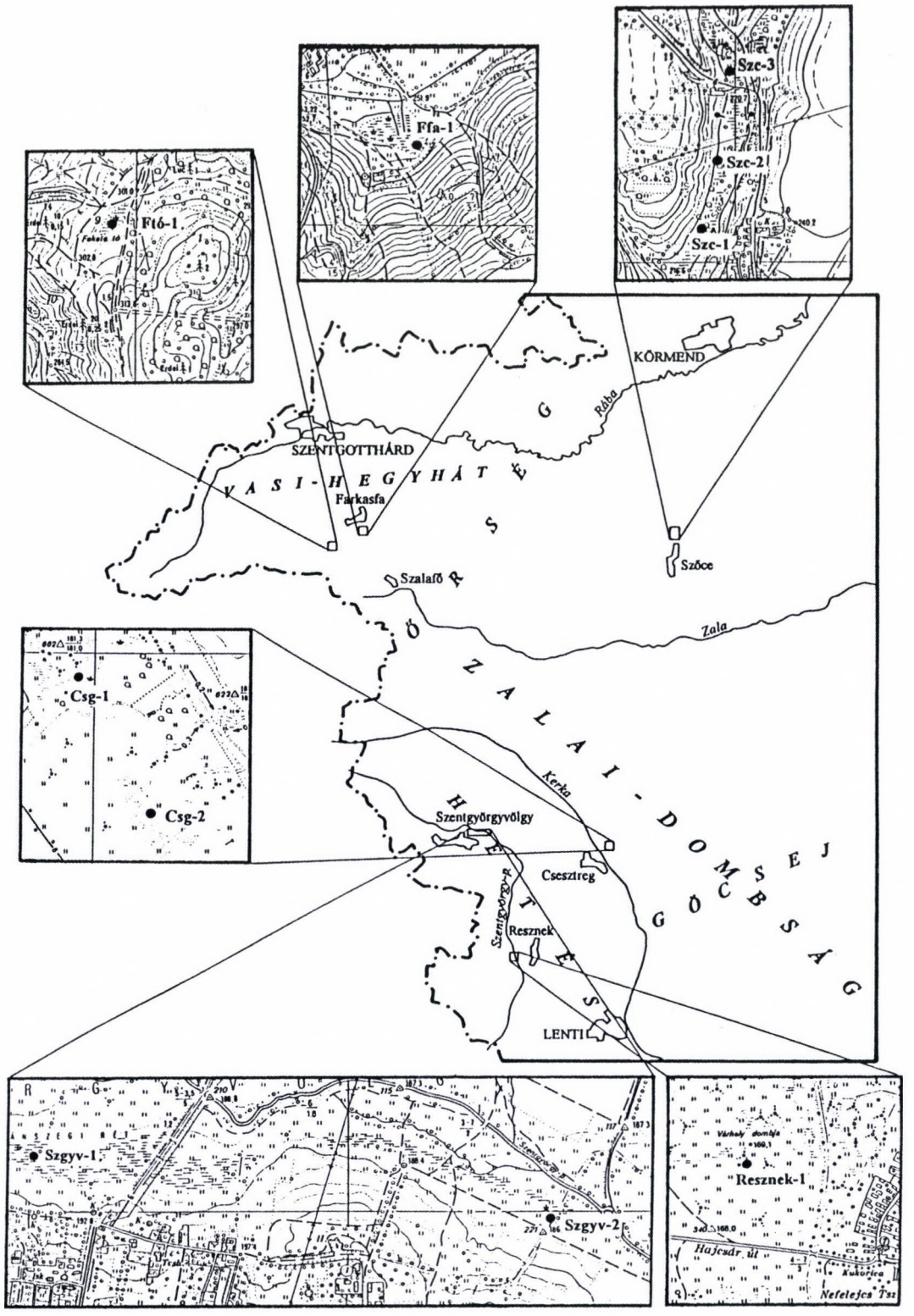


fig. 1. Map of the sampling locations

several kilometres long and several hundred metres wide. The local relief-energy is significant. Changes in altitude can reach 100–150 m. The area has an extensive forest cover.

The western region of the Zala Hills is also made up of Pannonian and Quaternary sediments and was uplifted and broken up by young structural movements. Its largest structural valleys were carved by the Zala and Kerka rivers, and its surface was further dissected by

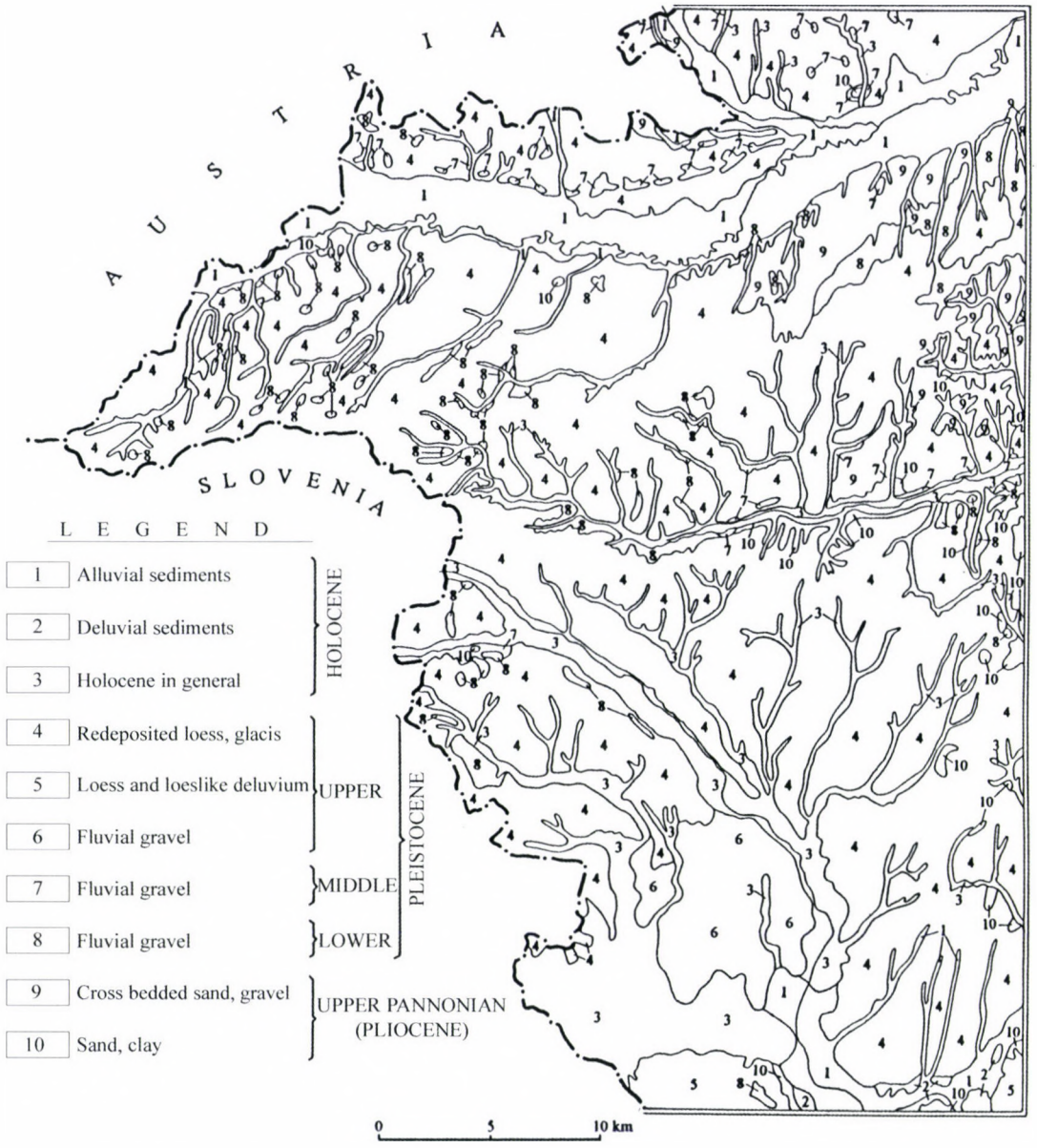


fig. 2. Geological map of the region (drawn by A. Pentelényi and P. Scharek, based on the data in Franyó 1968 and Moldvay 1975)

smaller, tectonically preformed erosion valleys and subsidence basins. The valleys are under agricultural cultivation, while the hills are covered with forests. Both geographical units have suffered from strong linear and areal erosion, which halted sedimentation in the entire region during the Quaternary except in a few places, as a direct consequence of the dominant sediment transport.

Both areas are covered by Quaternary sediments in varying thickness, although a few locations have older, Pliocene (Pannonian) sediments on the surface. During the Quaternary, alluvium was deposited in the river valleys, and deluvial sediments were deposited on the slopes. The most common sediments in the area are Upper Pleistocene redeposited loess, other loess-like sediments, and Lower and Middle Pleistocene fluvial gravel sediments. The geological map shown in *fig. 2* was compiled by Antal Pentelényi and Péter Scharek in 1998.

The area has a well-developed drainage system with numerous smaller streams besides the Rába, Zala and Kerka rivers. Owing to high precipitation and the dissected surface of the watershed area, stream discharges fluctuate strongly. In times of extensive floods, the volume of water rushing down can increase by two orders of magnitude compared to the normal flow

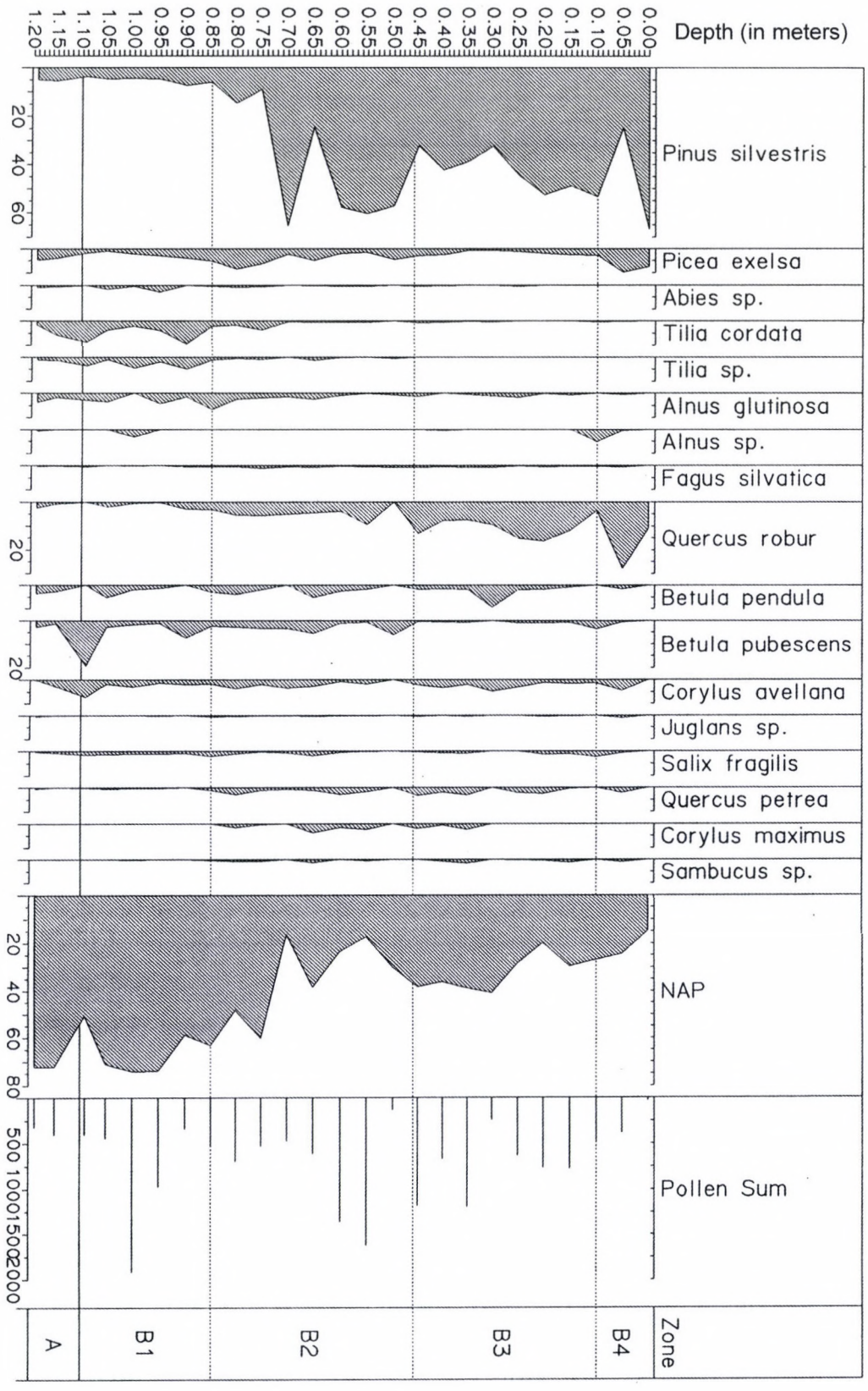


fig. 3. Szőce–1, pollen profile (AP+NAP = 100%)

which, considering the relatively high gradient of the river channels, can move substantial amounts of sediment.

This area has the highest precipitation rate and the least variable temperatures in Hungary. Quite often, the climate is strongly influenced by Sub-Mediterranean and Atlantic effects. The mean annual precipitation is 800 mm; the mean annual temperature is –2 °C in January and 21 °C in July.

The soil cover in the eastern Alpine foreland is determined by the cold and wet climate, the vegetation, and the quality of soil-forming rocks, as well as the dissected landscape. The typical soil types in the region are chernozem and brown forest soils.

The flora in the study area can be assigned to the East Alpine flora type,[4] characterised by oak forests mixed with Scots pine *(Genistae-Pinetum; Quercetosum)* and by acidophilous Scots pine forests (Genistae-Pinetum). In addition to Scots pine, naturally growing spruce *(Picea abies)* and larch *(Larix decidua)* too occur. Spruce forms extrazonal forests on the northern slopes of narrow valleys. *Sphagnum* peat-bogs are quite frequent in the area. Dealpine flora commonly appears in meadows and on river banks. The best-known dealpine flora element is *Alnus viridis,* which grows in coniferous forests, as well as in forest margins.

Description of the sampling locations – research in the Hetés Region (Szentgyörgyvölgy and the Kerka Valley)

Sampling was begun in the Kerka Valley, near the villages of Csesztreg and Szentgyörgyvölgy, which were selected because of their wetland area and also because of nearby archaeological sites. It was assumed that the cores from the slightly elevated land between the Kerka and Cupi streams at Csesztreg and Pityerdomb would yield relatively rich sequences, providing valuable data for determining the age and palaeoclimatic features of the archaeological sites near Csesztreg and Pityerdomb. Sediment cores were extracted at both sites, but only disturbed samples were obtained. The sediment sequence and the pollen profile were as follows:

Csesztreg/Csg–1 (fig. 9)

0.00–1.50 m: Yellow clayey silt, with limonite mottles. Compacted, moist, alluvial sediment.
1.50–3.00 m: Gravelly sand. Grey with ochre yellow spots. Well rounded fluvial gravel, 2–3 cm in diameter.
1.60–3.00 m: Sandy gravel, grey, saturated with water.

Csg–2

0.00–2.20 m: Clayey silt, with brown and dark brown limonite spots. Dark grey between 1.8–2.0 m. The layers are fluvial and floodplain marsh sediments.
2.20–2.50 m: Grey gravelly sand. The gravel is 1–3 cm in diameter, well rounded, of fluvial origin.
2.50–2.60 m: Grey silty sand, floodplain sediments.
2.60–4.70 m: Grey, fluvial gravelly sand (as the second layer).

Szentgyörgyvölgy/Szgyv–1

0.00–2.70 m: Dark yellow silty clay, with ochre and grey mottles. It is floodplain marsh sediment.
2.70–3.00 m: Silty clay with high organic content. It is dark brown and black marsh sediment.
3.00–3.30 m: Grey fine sand with gravel and wood remnants in scattered spots. It is fluvial sediment.
3.30–4.00 m: Grey sandy gravel, fluvial sediments.

Szgyv–2

0.00–0.30 m: Yellow loess-like deluvial sediment.
0.30–2.00 m: Dark yellow silty clay with ochre yellow, grey mottles. Strongly compacted and moist.
2.00–4.10 m: Clayey silt, dark brown, with scattered gravels.
4.10–4.30 m: Grey fine sand with some gravel.
4.30–5.00 m: Grey gravelly sand, saturated with water.

[4] *Hortobágyi – Simon 1981.*

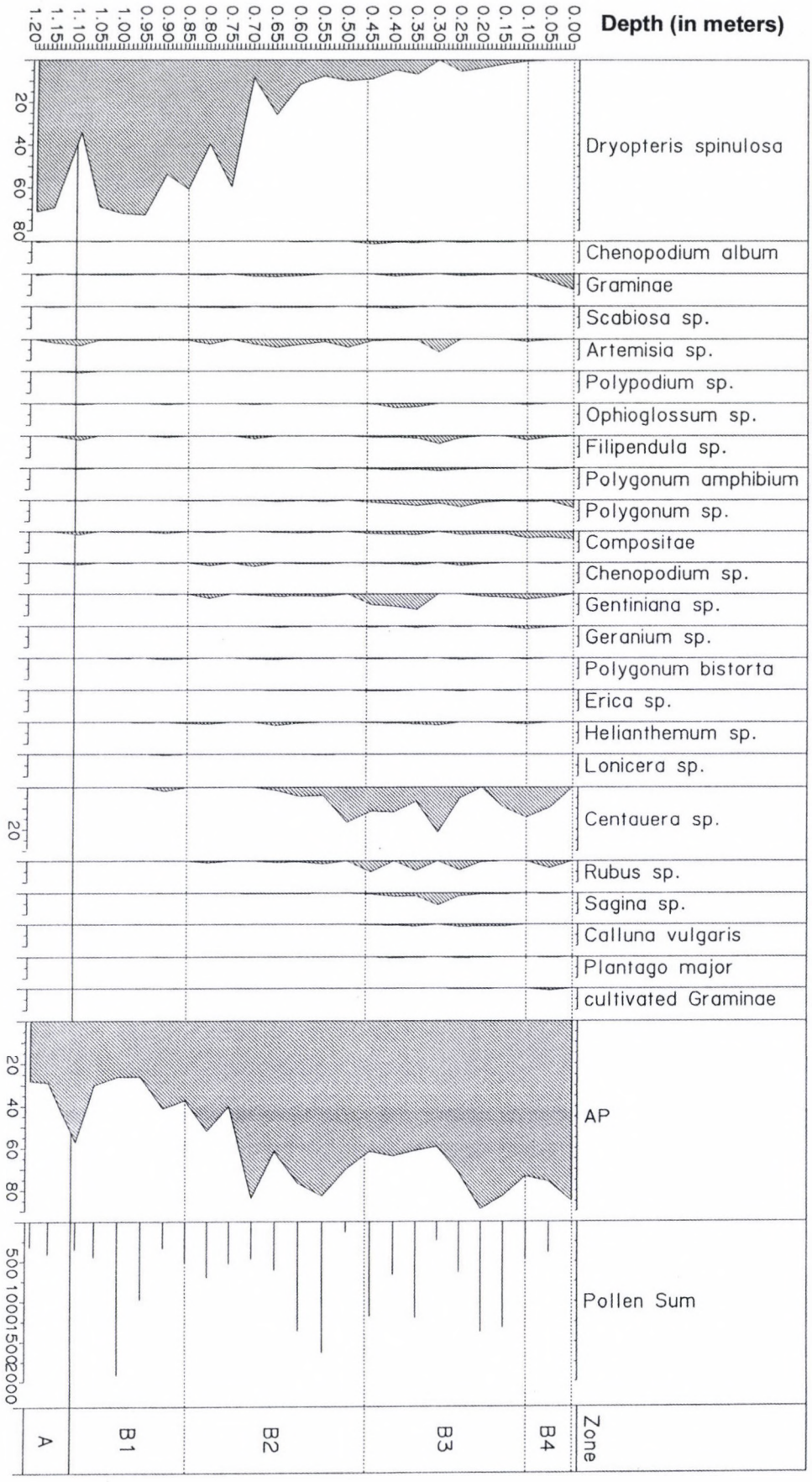


fig. 4. Szőce–1, pollen profile (AP+NAP = 100%)

Pollen profiles of the cores extracted at Szentgyörgyvölgy in the Kerka Valley

Each drilling penetrated fluvial-paludal sediments. The samples contained sporadic pollen material, represented by species occurring throughout the Pliocene, Pleistocene and Holocene. However, their presence does not allow the determination of relative age, or the reconstruction of the palaeo-vegetation and palaeo-climate. Herbaceous species dominated the samples; species typical for deciduous forests were lacking. The sediment sequence and the pollen record both indicate that fluvial and paludial sedimentary processes were often interrupted by erosion during the Quaternary. The Szgyv–1 core, extracted in the vicinity of Pityerdomb, contained plant remains in the layer between 2.80–3.00 m. The radiocarbon age of the organic remains is 8771±54 yr BP (deb-5018).

Research around Resznek Castle

Following the first, relatively unsuccessful survey, we took samples from the moat of the Resznek earthen fort. The ruins of a medieval castle enclosed within a triple moat lie near the village of Resznek, on the floodplain between the Lékfai and Zsibi streams. All moats have a width of 2 m, and have no rampart. One core was extracted from each moat along a line south-west of the castle. At the time of sampling, the ditches contained water to a depth of 20–50 cm, where *Potamogeton, Carex,* and *Typha* grew. The best and most promising sequence for the palynological analysis came from the core extracted from the outer moat (Resznek–1). This core contained a peat layer suitable for radiocarbon age determination at a depth of 140–160 cm. The sediment sequence and the pollen profile were as follows:

Resznek–1

0.00–1.30 m: Clayey silt, yellowish-brown, limonite, containing limonite precipitation. Slight humus content, presumably caused by human activity (watering, animal pasturing, and cultivation), lake-marsh transitional sediments in mixed structures.

1.30–1.40 m: Clayey silt, bluish-grey, containing colloidal humus. Disturbed by human activity, reductive, deposited under continuous water cover.

1.40–1.60 m: Dark brown peat, containing burnt, tiny (<2 mm) charcoal. Contains organic matter in traces. Based on the structure, the peat was formed from moss. Its radiocarbon age is 324 ± 80 yr BP (deb-5048).

1.60–2.10 m: Clayey silt, containing organic matter in a minimal amount, entirely carbonate free, light greenish grey. Slightly disturbed sediment of the original moat.

2.10–2.60 m: Sandy silt, whitish-grey. The original bottom level of the moat.

2.60–2.70 m: Sandy gravel, whitish-grey, fluvial sediment.

Pollen profile of the Resznek–1 core

The age of the section between 2.10–2.70 m of the Resznek–1 core is uncertain. The layers between 0.00–2.00 m were deposited during the late phase of the Sub-Atlantic. The tiny charred remnants, collected from depths between 1.40–1.60 m, suggest that the castle perished sometime between 1465 and 1658 AD according to the radiocarbon measurements. The samples are quite rich in pollens and are dominated by oak *(Quercus;* cf. *fig. 11. 2). Lonicera* and *Hedera* appear among the climate indicators. The pollen composition of the aquatic environment suggests that shallow, eurotrophic water covered the moats. The pollen record indicates that there was no sedimentation at this location during the Bronze Age, or that it was eroded later.

Research in the Őrség region (Szőce peat-bog)

Research in the Zala Hills did not yield the results expected by our archaeologist colleagues. Therefore, we continued our investigation in the Vasi Hegyhát region (Szentgotthárd-Farkasfa), at the springs of the River Zala (Feketető), and in the Göcsej region (Szőce peat-bog). All three study areas lie in protected areas. The perhaps most unique part of the Őrség Nature Reserve

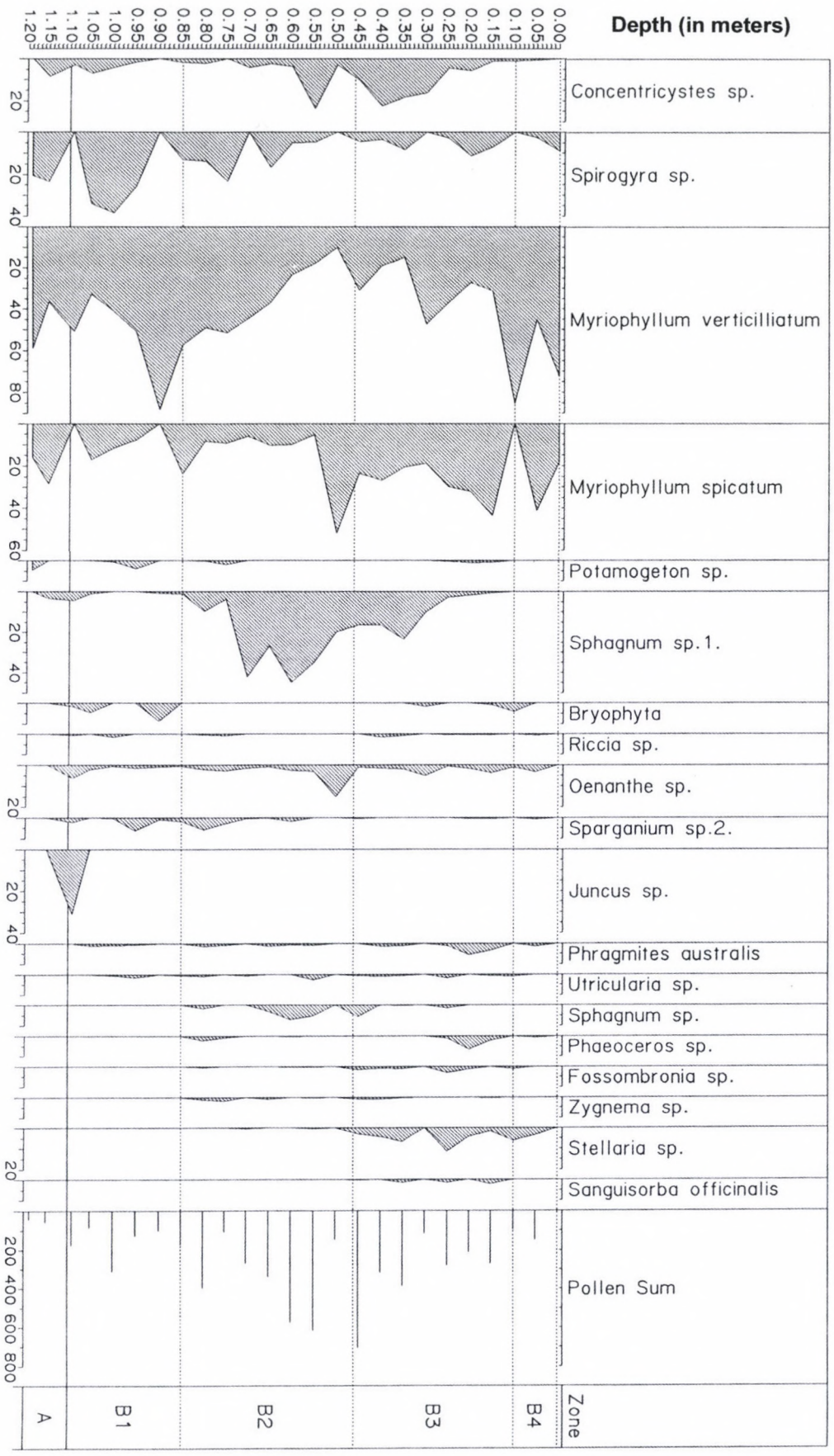


fig. 5. Szőce–1, aquatic and swamp plant data (100%=Σ)

is the strictly protected Szőce peat-bog. This area is considered as the Mecca of Hungarian botanists, since ten moss species and *Drosera rotundiflora, Eriophorum latifolium, Iris sibirica, Hemerocallis lilio-asphodelus, Doronicum austriacum,* and *Trollius europaeus* thrive in this small area. Cold-water springs continuously feed the bog, surrounded by *Cariceto brizoidis-Alnetum* along the valley sides. Two shallow cores (Szc–1, Szc–2) were extracted from the deepest part of the moor on the bank of the Szőce Brook. The sediment sequence and the pollen profile were as follows:

Szőce/Szc–1
0.00–0.46 m: Clayey silt, containing organic matter, peat fibres, brownish-grey, bog sediment.
0.46–0.61 m: Marsh peat, brown.
0.61–0.85 m: *Sphagnum* peat, black.
0.85–1.10 m: Clayey silt, peat laminae, grey. Bog sediment formed on river terraces.
1.10–1.20 m: Sandy gravel, 1–2 cm diameter rounded quartz gravel, fluvial.

Szc–2
0.00–0.10 m: Silt with peat laminae, brown.
0.10–0.60 m: Silty fine sand, with ochre mottles, the last 5 to 8 cm is grey.
0.60–0.80 m: Sandy (fine) silt, mica, greyish-brown.
0.80–0.90 m: Sand, mixed sizes, brown. Between 0.82 and 0.85 m charred plant remains.
0.90–0.95 m: Sandy gravel, the gravel is 1–2 cm in diameter and medium rounded.

Pollen profile of the Szőce–1 core

The detailed pollen sequence of the Szc–1 core reflects the vegetation of the second part of the Sub-Atlantic (Fagus 2 vegetation phase), in which two sub-zones (A and B) could be distinguished *(figs 3–5).*

Zone A, 1.20–1.10 m

In Zone A, the environment is a typical floodplain, without any indication of a peat-bog. Mostly open-water loving *Myriophyllum vericillatum, M. spicatum* and *Potamogeton perfoliatus* are widespread. The presence of *Nuphar* indicates flowing water. The characteristic plants of riverbanks, streams and marshes *(Scirpus, Salix, Alnus)* also occur.

Zone B, 1.10–0.00 m

Zone B can be divided into four sub-zones (B1, B2, B3, B4).

Sub-zone B1, 1.10–0.85 m

The sporadic presence of *Fagus sylvatica* can be noted in the vicinity of the peat-bog, as a result of the flooded, nutrient-poor soil. The AP diagram *(fig. 3)* of the lowest layers reflect the dominance of a deciduous forest, made up mostly *Tilia-Betula. Tilia cordata* was the most common species, thriving on the slightly acidic soil (pH 5–6) in the lime forests; the presence of *Tilia platyphyllos* reflects milder winters. The birch forest consisted of *Betula pendula;* later, during a more humid period, the bog was formed with *Betula pubescens. Alnus glutinosa* and *Salix fragilis* thrived in the vicinity of the peat-bog. The proportion of *Pinus sylvestris* was only 10% in the vegetation. *Juglans,* whose presence in Hungary can be traced from the Bronze Age as a consequence of planting,[5] also occurred. The ratio of terrestrial herbaceous species, dominated by *Artemisia* and *Juncus,* with *Lonicera* as a climate indicator,[6] was extremely low in this sub-zone.

During the formation of the peat-bog, the most common species were the ones preferring shallow water. In addition to *Spirogyra,* the most frequent species of the vegetation were

[5] *Zólyomi 1980.*

[6] *J. Iversen:* Viscum, Hedera and Ilex as climate indicators. Geologis, Förenings Förhandlingar, Band 66, Heft 3. Stockholm (1944) 463–483.

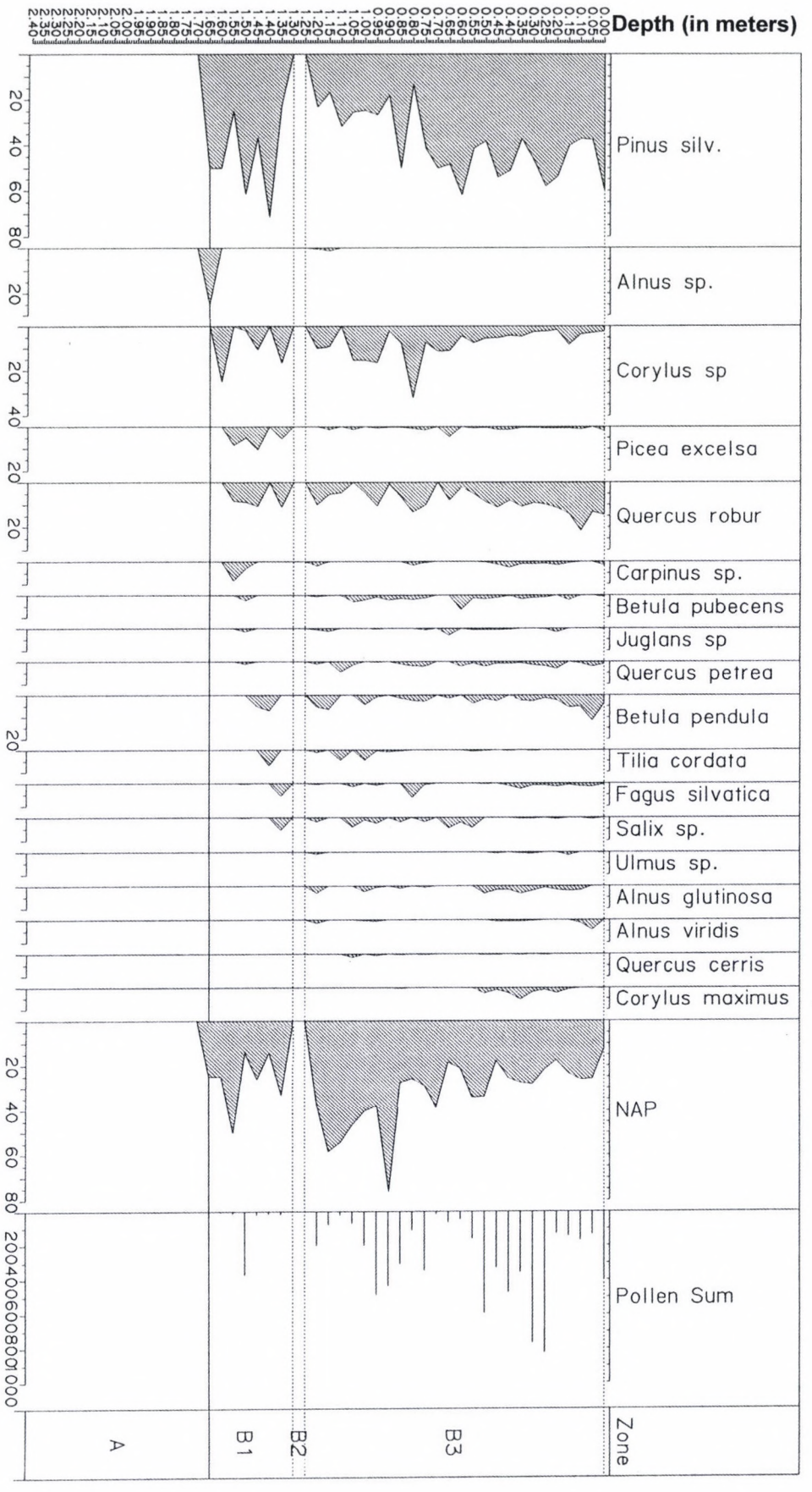


fig. 6. Farkasfa–1, pollen profile (AP+NAP = 100%)

Myriophyllum verticillatum, Oenanthe and mosses in the shallow, open water. *Juncus* made an abrupt appearance at the beginning of bog formation. Its pollen grains possibly came from *Juncus subnodulosus,* a common turf forming plant in Transdanubian bogs. Various *Sphagnum* species began to appear at this time as well. *Mougeotia* and *Zygnema* indicate an oligo-mezotrophic water quality; their presence together with *Spirogyra* indicates that the water was shallow, less than 2 m deep, and that its acidity was approximately pH 5.[7] This is also confirmed by the presence of the dominant higher-class aquatic plants. The water edges were surrounded by *Phragmites australis* and *Carex.* The undergrowth of the widespread *Salix* and *Alnus* groves was almost exclusively dominated by *Dryopteris spionulosa.*

Sub-zone B2, 0.85–0.46 m

A significant change can be noted in this sub-zone owing to decreasing temperatures and, partly, to human activity. The deciduous forests became sparser, possibly as a result of arable farming, leading to the expansion of herbaceous species, such as *Artemisia, Gentiana, Scabiosa, Centaurea scabiosa, Gramineae,* and *Rubus,* the typical undergrowth after deforestation. The sudden expansion of *Pinus sylvestris* from the original 10% to 60% may in part have been caused by human activity.[8] *Quercus robur* and *Betula pubescens* persisted in the deciduous forests, while *Salix* and *Alnus* retreated. *Filipendula* thriving in wetlands and *Centaurea* species became widespread. Following changes in water conditions, *Sphagnum* carpets appeared, bringing an end to the dominance of ferns and leading to the formation of a raised bog. Parallel to this process, open-water reed-grass declined. The accumulation of *Zygnema,* the sudden expansion of *Sphagnum* and the gradual spread of *Oenanthe* reflects a drop in the water level. The continuously present *Concentristes* algae peaked in this sub-zone, reflecting denudation.[9] The Atlantic phase is probably missing from this sequence.

Sub-zone B3, 0.45–0.10 m

The next change in the vegetation was marked by the expansion of *Quercus robur. Betula pubescens* declined parallel to the expansion of *Quercus robur.* Mainly *Betula pendula* mixed into the oak forests, although the ratio of arboreal taxa declined further. The appearance of cereals indicates the growing intensity of arable farming. Ferns were replaced by plants preferring drier soils, such as *Centaurea scabiosa* and Compositae. *Viburnum* is a climate indicator. *Calluna vulgaris* thrived on the acidic soil, possibly in the dry bogs. It seems likely that the climate turned more continental in this period and that precipitation decreased. Simultaneously with more intensive farming activity, weeds such as *Chenopodium album, Plantago major, Centaurea cyanus* became widespread. Plants tolerating eutrophy (e.g. *Myriophyllum spicatum*) became dominant in the aquatic environment, parallel to the decline of *Sphagnum,* although other moss species *(Fossombronia, Riccia, Phaeoceros)* and bog plants *(Oenanthe, Stellaria)* were continuously present. *Polygonum* and *Gentiana* grew on wet soils in the vicinity of the bog.

Sub-zone B4, 0.10–0.00 m

From this period to the present, the stock of Scots pine has been significant. Farther away from the bog, Gramineae and Compositae were common. Cereals increased and weeds became more widespread too in consequence of intensifying farming activity. *Vitis* appeared as a climate indicator. Plants tolerating eutrophy dominated the aquatic environment, with *Sphagnum* becoming extremely rare. Only a few scattered ferns remained in the oak forests lining the bog.

[7] *B. Van Geel:* A palaeoecological study of Holocene peat bog sections in Germany and the Netherlands, based on the analysis of the pollen, spores and macro- and microscopic remains of fungi, algae, cormophytes and animals. Review of Palaeobotany and Palynology 25: 1 (1978) 1–120; *B. Van Geel – Van Der Hammen:* Zygnematacae in Quaternary Colombian sedimens. Review of Palaeobotany and Palynology 25: 5 (1978) 377–392.

[8] *B. Zólyomi:* Die Entwicklungsgeschichte der Vegetation Ungarns seit dem letzten Interglazial. Acta Biologica Academiae Scientiarum Hungariae 4 (1953) 367–430; *Zólyomi 1980.*

[9] *Morzadec-Kerfourn 1988.*

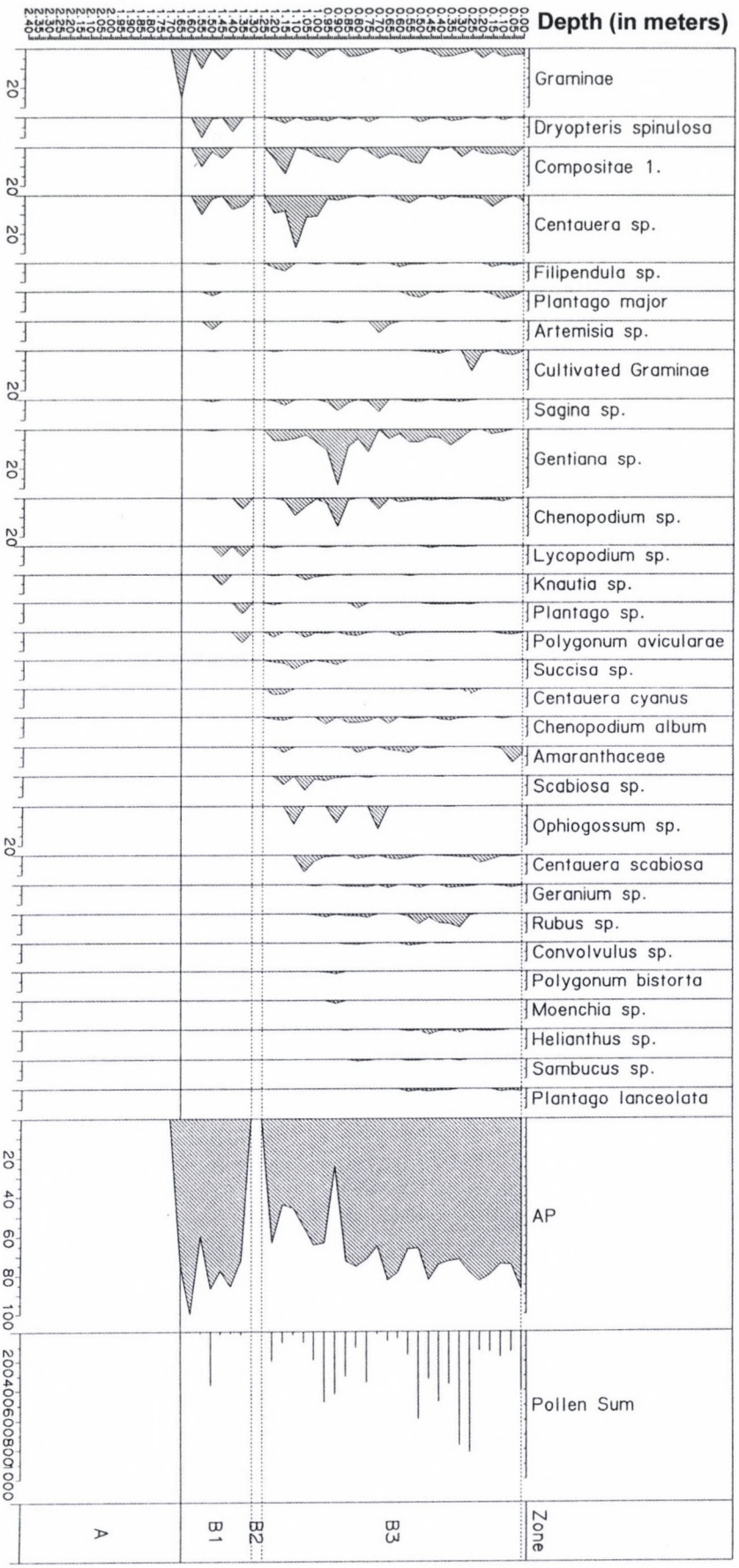


fig. 7. Farkasfa–1, pollen profile (AP+NAP = 100%)

The evolution of the Szőce peat-bog could be traced in the sediment and the pollen record, as well as through the radiocarbon dates. The bog was formed at the end of Holocene and in the younger part of the Sub-Atlantic, and shows vegetation development from the Fagus 2 vegetation phase[10] to the present. Climate indicators *(Lonicera, Vitis, Viburnum)* were present in the cores as well. The vegetation, as well as the extent and depth of the bog changed dramatically not only as a result of climate change, but also owing to human activity. At the beginning of the studied period, the bog was shallow and had an oligo-mezotrophic water coverage with open-water reed-grass and marsh species. *Sphagna* occurred but sporadically. Increasing precipitation led to the expansion of bryophyte species, especially of *Sphagnum,* parallel to the decline of open-water reed-grass. Later, intensifying farming activity and deforestation led to a rise in bog species tolerating an eutrophic environment. Pollen diagrams indicate that the occurrence of *Sphagnum* is significantly lower at present than in earlier periods. The extent of the bog most probably decreased owing to farming and peat cutting, whose direct consequence was erosion, reflected by the spread of herbaceous plants in the area, which dried out.

The radiocarbon dates obtained for two different peat layers are very young. The sample from 0.5–0.6 m gave a date of 388±45 yr BP (deb-5364), the one from 0.70–0.80 m a date of 743±65 yr BP.

Research in the bogs of the Vasi Hegyhát region (Feketető and Farkasfa bog)

Both bogs are situated in a protected natural forest near Szalafő. Another marsh, Feketető, lies in the woods between Szalafő and Szentgotthárd. The extent of the Feketető marsh barely exceeds one hectare and is protected by a fence to keep away unauthorised visitors and game animals. Feketető is a *Sphagnum* bog without open water; its surface is completely covered with peat-moss. With the exception of one species, all moss species of Hungary can be found here, together with some of the country's rarest plants, such as *Menyanthes trifoliata, Eriophorum latifolium, Drosera rotundifolia, Carex echinata, Sparganium minimum,* and *Betula pubescens.* These rare plants, which form a unique plant assemblage, can be associated with the first phase of the warming following the last glacial.

Core Ftó–1 was extracted from the eastern part of the swamp with closed drainage, lying in a clay depression, where the thickness of the peat-moss and the water was 1 m.

Feketető/Ftó–1

0.00–0.28 m: Clayey silt, brownish grey, charred plant remnants (^{14}C) at depth of 0.17 m, lake sediment.

0.28–0.80 m: Clayey silt, light brownish grey with ochre spots. More compact than the overlying layer.

Ftó–2

0.00–0.12 m: Clayey silt with peat laminae, greyish-brown. Well determined fibrous peat laminae between 0.07 and 0.08, and between 0.09 and 0.12 m.

0.12–1.20 m: Clayey silt, brownish grey with limonite spots and charred mottles. Becoming more compact towards the base of the core. Grey from 0.75 m.

Pollen profile of Feketető

In contrast to general beliefs, the sediment cores indicated that lacustrine or paludal sediments did not accumulate to a significant thickness in the area. The lower section of the sediment core contained badly preserved pollen grains, while the upper section indicated a vegetation resembling the one reflected by the pollen record from Szőce, namely a sparse, mixed deciduous forest *(fig. 11).* The dominant species were *Betula pubescens* and *Quercus robur,* reflecting a humid, bogland environment. The presence of *Plantago major* among the herbaceous species

[10] *B. Zólyomi:* Degree and rate of sedimentation in Lake Balaton, in: M. Pécsi (ed.): Pleistocene environment in Hungary. (Contribution of the INQUA Hungarian National Committee to the XIIth INQUA Congress Ottawa, Canada 1987.) Budapest 1987, 57–79.

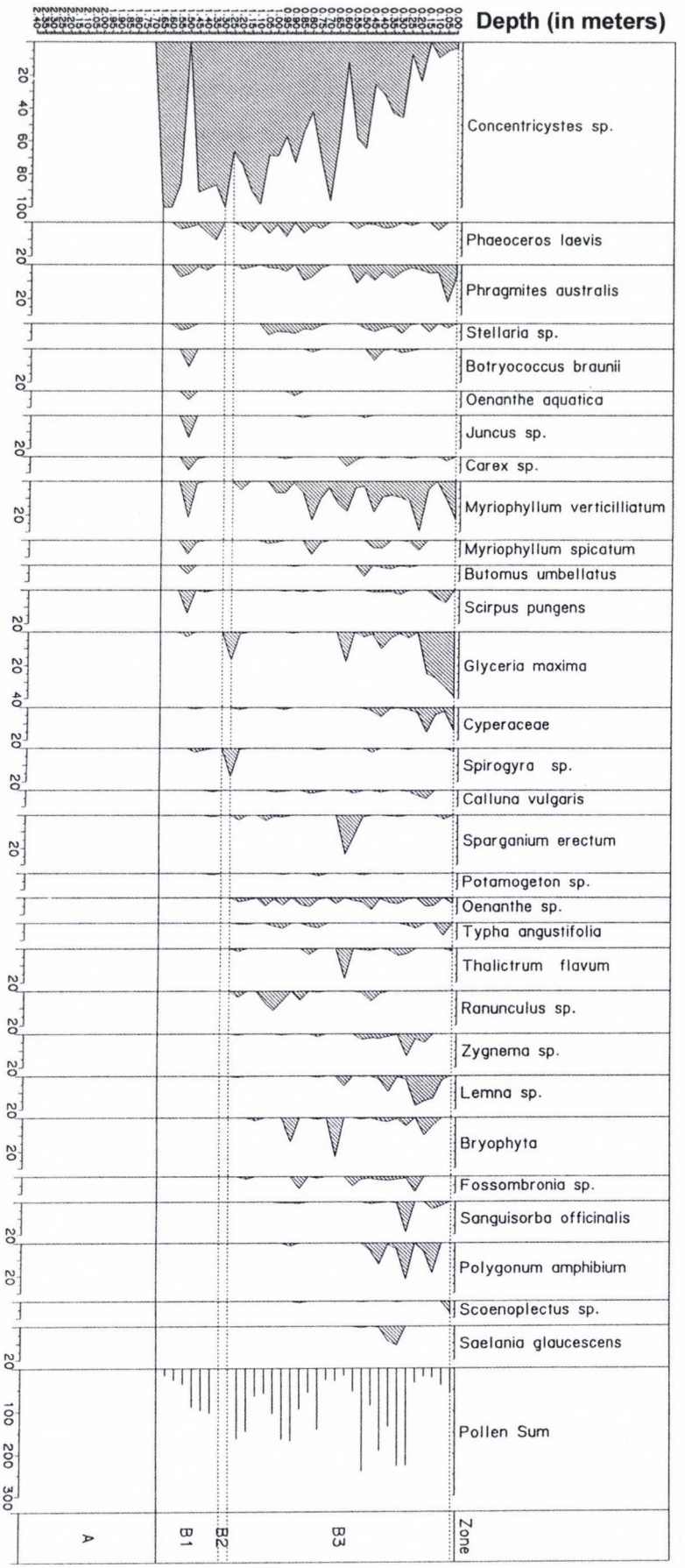


fig. 8. Farkasfa–1, aquatic and swamp plant data (100%=Σ)

is a sign of human activity. None of the layers were suitable for radiocarbon dating, and the pollen composition of the samples did not yield any evidence for early human occupation. This is the reason that we continued our investigation in the Farkasfa bog, near Szentgotthárd.

The Farkasfa peat-moss bog lies on the right bank of the Huszács Brook; the present vegetation consists of broom-willow, Scots pine, sp. *Pseudoacacia,* and hornbeam. The sediment sequence under the 1 m thick floating mat and water was as follows:

Farkasfa/Ffa–1

0.00–0.83 m: Clayey silt, light grey, with peat layers. The clay is quite plastic.

0.83–1.38 m: Silt with peat layers, darker grey than the layer above it. The peat is brown.

1.38–1.60 m: Fibrous peat, light brown, with silt.

1.60–1.93 m: Silt, fine sand, dark grey, with light brown peat layers. Thin gravel layer between 1.65–1.67 m, the gravel is mica-gneiss.

1.93–2.40 m: Silt with oxidised pyrite grains. Dark grey with limonite spots. Harder and denser than the layers above.

Pollen profile of the Farkasfa peat-bog

The Ffa–1 sequence could be divided into two major zones based on the sediment sequence and its varied pollen content *(fig. 6).* The lower section (2.40–1.65 m) contained some sparse older pollen grains, while the overlying section (1.65 m to the top) had embedded younger pollen grains in large numbers. The lower section indicates a humid, periodical water cover, while the upper section suggests a genuine bog-meadow type vegetation. At least three ecological changes occurred in the vicinity of the bog during the later period.

Zone A, 2.40–1.65 m

Scarce stands of coniferous, deciduous trees *(Pinus, Betula, Salix, Corylus)* and herbaceous plants *(Compositae)* grew in the vicinity of the bog. There was no permanent water cover at this time since the pollen grains of aquatic plants were entirely absent from the sample. The few *Concentricystes* remains indicate extreme and periodical water cover, as well as soil erosion.

Zone B, 1.65–0.00 m

The pollen composition of this zone is typical for the uppermost Sub-Atlantic period, beginning ca. 500–1700 yr. BP. The continuous sediment sequence could be divided into three vegetation sub-zones:

Sub-zone B1, 1.65–1.30 m

In the terrestrial environment, *Corylus* and *Fagus* had a consistent presence beside the dominant coniferous trees, *Quercus* and *Betula.* Species tolerating a drier environment, such as *Gramineae, Compositae,* and *Centaurea,* were common among the herbaceous plants. *Juglans* indicates the growing intensity of arable farming, while the expansion of *Plantago major* is an indication of trampling. The increase of trees and shrubs contributed to bog formation (1.50 m, 1.45 m). The remains of algae, mosses *(Phaeoceros leaevis, Bartramia pomiformis),* marsh plants *(Phragmites australis, Stellaria),* and the appearance of open-water reed-weed *(Myriophyllum spicatum, M. verticillatum, Potamogeton)* reflect the deepening of the bog.

Sub-zone B2, 1.30–1.25 m

The Farkasfa bog became temporally shallower, leading to the disappearance of open-water reed-weeds; algae *(Concentricystes, Spirogyra)* and mosses *(Phaeoceros, Riccia)* too declined. Reed also disappeared and was replaced by sparse *Glyceria* patches. Trees became scarce in the vicinity of the bog (only 1–2 pollen grains of *Pinus* and *Corylus*), similarly to herbaceous species, represented by a few ferns.

1,90	1,40	0,90	0,60	0,40	0,20	0,00	Depth (in meters)
3	1						Botryococcus braunii
1							Spirogyra sp.
1	1						Polypodium sp,
1	1			1			Pinus silvestris
1	1					1	Tilia sp.
2	1			1			Chenopodium sp.
	1						Abies sp.
	1					2	Corylus sp.
		1					Carpinus sp.
				2		4	Osmunda sp.
				1		55	Ophiglossum vulgatum
				2		19	Scabiosa sp.
					1	1	Ephedra sp.
						25	Concentricystes sp.
						3	Zygnema sp.
						1	Riccia sp.
						1	Lycopodium sp.
						2	Myriophyllum vert.
						2	Compositae
						4	Polygonum sp.
						3	redeposited

1

0,90	0,60	0,40	0,20	0,00	Depth (in meters)
1					Polypodium vulgarae
1		1	44		Scabiosa sp.
1			1		Compositae
4					Ophioglossum vulg.
		1	5		Pinus silvestris
			1		Zygnema sp.
			3		Oenanthe aquatica
			1		Chenopodium sp.
			1		Heliathemum sp.
			7		Polygonum amph.
			1		Polygonum bistorta
			1		redeposited

2

fig. 9. 1. Csesztreg–2 pollen data, 2. Csesztreg–1 pollen data

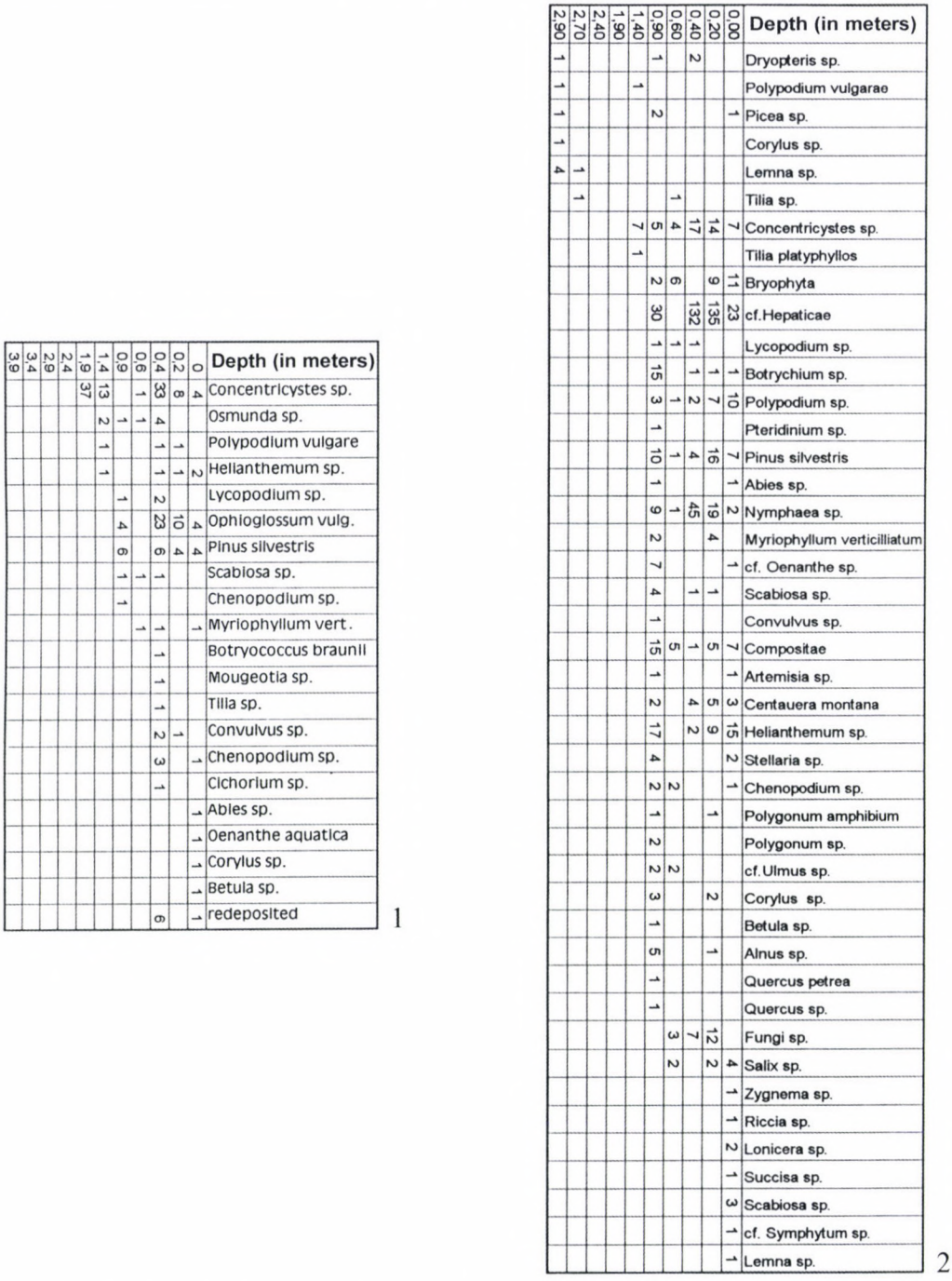
Sub-zone B3, 1.25–0.00 m

Species tolerating a drier climate *(Compositae, Centaurea, Chenopodium, Gramineae)* were common in the vicinity of the bog and an increase in the number of alder trees can also be noted. The bog had a permanent water cover: at first, algae and mosses, and later marsh species and open-water reed-weeds *(Myriophyllum verticillatum)* became typical. The occurrence of *Typha* and *Oenanthe* suggest increasing water trophicity.

In the second half of this local pollen zone (approximately from 0.80 m), the bog became shallower, most probably in consequence of decreasing precipitation. This possibility is confirmed by the gradual disappearance of coniferous species and by the expansion of *Corylus* and *Quercus*. The *Gentiana, Sagina* and *Chenopodium* vegetation too became sparse. Cereal cultivation and, parallelly, the expansion of weeds, reached a maximum during this period. In the bog shore, *Zygnema,* certain types of mosses *(Saelania glaucescens)* and marsh plants *(Sanguisorba, Cyperaceae, Lemna)* expanded, followed by the spread of *Polygonum amphibium, Glyceria maxima,* and *Schoenoplectus.* The consistent presence of *Thalictrum, Zygnema,* and *Sanguisorba* reflects mezotrophic and slightly acidic water.

In sum, we found a poor pollen assemblage in the lower section of the Ffa–1 core (2.40–1.65 m). The pollen sample became richer from the middle part of the core, as shown by the pollen assemblage. The first section can probably be correlated with the late Pleistocene or early Holocene on the testimony of the few pollen grains and the sedimentological features. The sediment is loessy, suggesting redeposition in a gravitational and/or fluvial environment. In the lower section of the second pollen zone (1.65–0.00 m), the numerous *Concentricystes* pollen grains reflect the earlier denudation of the area and a hiatus during the Atlantic phase.[11] The composition of the deciduous forest around the bog resembled the ones at Szőce and Farkasfa. The herbaceous vegetation indicates acidic water (*Sanguisorba officinalis,*

[11] *Morzadec-Kerfourn 1988.*



Depth (in meters)	0	0,2	0,4	0,6	0,9	1,4	1,9	2,4	2,9	3,4	3,9
Concentricystes sp.	4	8	33	1		13	37				
Osmunda sp.			4	1	1	2					
Polypodium vulgare		1	1			1					
Helianthemum sp.	2	1	1			1					
Lycopodium sp.			2		1						
Ophioglossum vulg.	4	10	23		4						
Pinus silvestris	4	4	6		6	1					
Scabiosa sp.			1	1	1	1					
Chenopodium sp.					1						
Myriophyllum vert.	1		1	1							
Botryococcus braunii			1								
Mougeotia sp.			1								
Tilia sp.			1								
Convulvus sp.		1	2								
Chenopodium sp.	1		3								
Cichorium sp.			1								
Abies sp.	1										
Oenanthe aquatica	1										
Corylus sp.	1										
Betula sp.	1										
redeposited	1		6								

1

Depth (in meters)	0,00	0,20	0,40	0,60	0,80	1,40	1,90	2,40	2,70	2,90
Dryopteris sp.			2		1					1
Polypodium vulgarae						1				1
Picea sp.	1				2					1
Corylus sp.										1
Lemna sp.									1	4
Tilia sp.				1					1	
Concentricystes sp.	7	14	17	4	5	7				
Tilia platyphyllos						1				
Bryophyta	11	9	6		2					
cf.Hepaticae	23	135	132		30					
Lycopodium sp.			1	1	1					
Botrychium sp.	1	1	1		15					
Polypodium sp.	10	7	2	1	3					
Pteridinium sp.					1					
Pinus silvestris	7	16	4	1	10					
Abies sp.	1				1					
Nymphaea sp.	2	19	45	1	9					
Myriophyllum verticilliatum		4			2					
cf. Oenanthe sp.	1				7					
Scabiosa sp.		1	1		4					
Convulvus sp.					1					
Compositae	7	5	1	5	15					
Artemisia sp.	1				1					
Centauera montana	3	5	4		2					
Helianthemum sp.	15	9	2		17					
Stellaria sp.	2				4					
Chenopodium sp.	1			2	2					
Polygonum amphibium		1			1					
Polygonum sp.					2					
cf.Ulmus sp.				2	2					
Corylus sp.		2			3					
Betula sp.					1					
Alnus sp.		1			5					
Quercus petrea					1					
Quercus sp.					1					
Fungi sp.	12		7	3						
Salix sp.	2	2		2						
Zygnema sp.	1									
Riccia sp.	1									
Lonicera sp.	2									
Succisa sp.	1									
Scabiosa sp.	3									
cf. Symphytum sp.	1									
Lemna sp.	1									

2

fig. 10. 1. Szentgyörgyvölgy–2 pollen data, 2. Szentgyörgyvölgy–1 pollen data

Symphytum officinale, Polygonum bistorta, P. amphibum etc.). The presence of *Juglans,* cereals, and *Plantago major* is a sign of human activity. *Figs 6–8* show the TILIA pollen diagram of the sequence. The radiocarbon age of the peat, taken from depths between 1.50 and 1.60 m, is 743±50 yr BP.

Discussion

The geological and palynological evaluation of the sediment cores collected in the Szentgyörgy and Kerka valleys, as well as in the vicinity of Resznek Castle and at Feketető did not contribute significantly to the archaeological studies of the region's prehistory. During the greater part of the Quaternary, erosion dominated over the sedimentation in this area. Most deposits consisted of fluvial gravel and Aeolian loess or, in some cases, of loess-type deluvial sediment. In the

0,8	0,6	0,4	0,2		Depth (in meters)
2		6			Concentricystes sp.
		2	8		Scabiosa sp.
		1	4		Gentiana sp.
		1			Betula pubescens
			1		Mougeotia sp.
			1		Botryococcus braunii
			1		Fungi sp.
			2		Sphagnum sp.
			2		Fossomboronia sp.
			1		Ophioglossum sp.
			1		Botrychium sp.
			4		Dryopteris spinulosa
			5		Picea excelsa
			184		Pinus silvestris
			1		Sanguisorba minor
			2		Filipendula sp.
			7		Myriophyllum vert.
			3		Myriophyllum spic.
			12		Sambucus racemosa
			6		Oenanthe aquatica
			3		Salix sp.
			2		Euphorbia sp.
			1		Plantago major
			2		Compositae
			1		Centauera montana
			11		Artemisia sp.
			8		Vaccinium sp.
			1		Polygonum amph.
			1		Polygonum bistorta
			1		Urtica sp.
			1		Ulmus sp.
			2		Alnus sp.
			13		Corylus sp.
			18		Betual pubescens
			11		Quercus robur
			6		Fagus silvatica
			1		cf.Colchicum sp.
			10		Glyceria maxima
			26		Sparganium sp.
			9		redeposited

1

2,6	2,4	1,9	1,4	0,9	0,4	Depth (in meters)
9	11	1			16	Botryococcus braunii
1					4	Polypodium sp.
4	10		4	1	4	Pinus silvestris
1						Nymphaea sp.
2						Lemna sp.
2		2	5	52	64	Myriophyllum vert.
2		2	10	26	43	Myriophyllum spic.
2	15	1			43	Compositae
4	1		2		3	Artemisia sp.
7	1	13				Chenopodium sp.
1			1		80	Polygonum amph.
1			1		8	Polygonum bistorta
7		10	46	13	1030	Quercus robur
1	2	4		1	26	Betula sp.
1						Alnus sp.
	1				2	Picea sp.
	1				5	Scabiosa sp.
	1					Rubus sp.
	2		1		25	Salix sp.
	1					Oenanthe sp.
	1					Utricularia vulgarae
						Quercus sp.
	3			2		Sparganium sp.
		1				cf.Riccia sp.
		2				Pteridophyta
		6	21	1	40	Corylus sp.
		1	3		10	Quercus petrea
		1				Potamogeton sp.
			1			Zygnema sp.
			2		1	Sphagnum sp.
			1			Dryopteris spinulosa
			1		8	Ranunculus sp.
			1		10	Oenanthe aquatica
			2			Plantago sp.
			1			Ulmus sp.
			26	1	1	Carpinus sp.
			2	1		Fagus silvatica
			2			Juglans sp.
				1	1	Quercus cerris
					1	Spirogyra sp.
					18	Concentricystes sp.
					1	Dryopteris sp.
					2	Osmunda regalis
					3	Lonicera sp.
					5	Botrychium sp.
					1	Ephedra sp.
					1	Malva sp.
					55	Hellanthemum sp.
					5	Oenanthe fistulosa
					1	Sagina sp.
					11	Convolvulus sp.

2

fig. 11. 1. Fekete-tó–1 pollen data, 2. Resznek–1 pollen data

lack of a continuous water cover, these sediments did not preserve the originally embedded pollens, which would have allowed a reconstruction of the one-time vegetation and of the climate (temperature and precipitation) which characterised prehistoric and early historic periods. Sedimentation occurred in small lakes and swamps untouched by erosion, in the meanders of river channels and on the surface of impermeable Pannonian sediments. These sediments, however, did not accumulate to a particularly great thickness because they were redeposited several times during Holocene.

The sequences from the Szőce peat-bog and the Farkasfa bog yielded new information on the evolution of vegetation and climate in that area. Both cores contained relatively young sediments, which was also confirmed by the radiocarbon dates for the peat samples from the Szőce peat-bog. The radiocarbon dates provided a useful basis for our research for they indicated that the 40 cm thick peat layer accumulated over five hundred years, which is equivalent to a sedimentation rate of 0.6 mm/year. The overlying bog sediments (clayey silt) had a thickness of approximately 0.5 m, suggesting a sedimentation rate of 1 mm/year. This can be easily compared to the accumulation rate of peat in view of the higher original porosity of peat and, consequently, its higher compaction/consolidation rate.

The extrapolation of the 1 mm/year sedimentation rate to the Szőce peat-bog suggested that the 1.10 m thick sediment began to accumulate 1100 years ago. Even though the Szőce peat-bog is not covered by water at present, the sedimentation rate for this location can be compared to the Farkasfa bog, which has a similar geology and geography. This is especially important since the Farkasfa bog did not yield sufficient organic remains suitable for radiocarbon dating. Still, the 2 m thick pollen rich sequence from the Farkasfa bog provided a sound basis for reconstructing the climate and vegetation history of the area during the past two thousand years. The 1 mm/year sediment accumulation rate correlates well with the national and international data for smaller lakes and bogs, and thus the 1 mm/year accumulation rate was applied to the Szentgyörgyvölgy/Szgyv–1 core, and was compared with the radiocarbon dates for the samples from this location. The radiocarbon dates of *ca.* 8800 yr BP for the three samples at 3 m, as well as the section between 1.50–2.50 m, which was sterile from a palynological point of view, indicated an intensive temporal erosion before 1500 yr BP.

The sequences from the other sampling locations were difficult to evaluate from both a palynological and a chronological point of view. Two major conclusions could be drawn from the sedimentation rate in the bog environment based on the upper, approximately 2 m thick section of the sequences. Firstly, even if intensive sedimentation had occurred in the eastern Alpine foreland, erosion destroyed most of it. Secondly, the smaller bogs and lakes were formed about 1500 yr BP in areas where sedimentation continued to the present, preserving data on the vegetation dynamics of the surrounding area.

Based on the palynological studies, the Szőce peat-bog can be classified as a raised bog, while the Farkasfa bog as a bog meadow.

The successive phases in the formation of the Szőce peat-bog were as follows: first it had a shallow water cover, then it became an undrained bog-meadow and was gradually transformed into a peat-bog, which later became shallower and decreased in size. Simultaneously with the decline of *Sphagnum* and *Dryopteris spinulosa, Concentricytes* expanded. At present, the role of *Sphagnum* and ferns is continuously declining.

Bog-meadow type vegetation survived on the surface of desiccating bogs, and bog plants of wide tolerance, which had previously been unable to keep up with the growth of *Sphagnum,* began to expand, this being the reason that spruce and juniper *(Picea, Juniperus)* became widespread. More recent environmental conditions favour the spread of Scots pine in desiccating bog-forests. The advance of *Quercus robur* was caused by conscious forestation activity.[12]

[12] *T. Pócs – E. Domokosné Nagy – I. Gelencsér Pócsné – G. Vida:* Vegetationsstudien im Őrség (Ungarisches Ostalpenvorland). Die Vegetation Ungarischer Landschaften 2. Budapest 1958, 5–124.

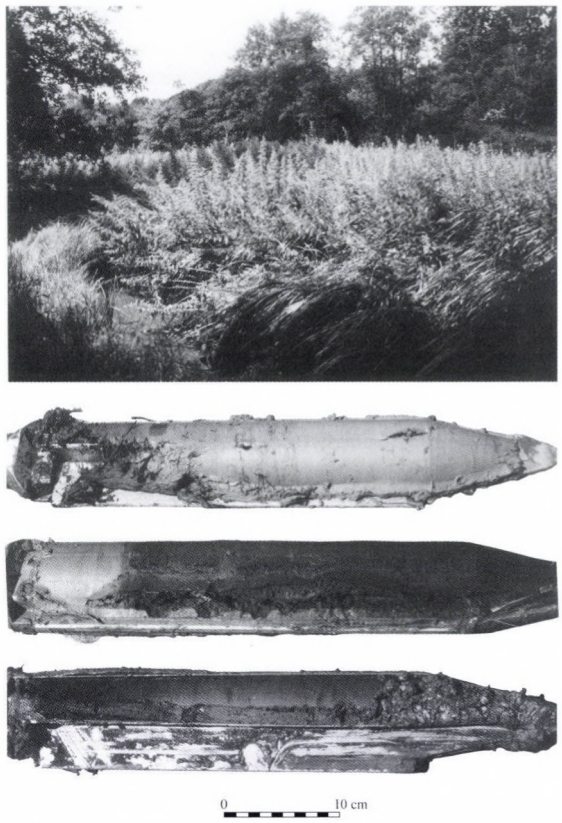


fig. 12. The Szőce peat-bog and the sequence of the Szc–1 core

The water level of the Farkasfa bog was much lower than of the Szőce peat-bog, and in some periods the Farkasfa bog had a periodic water cover only, as shown by the dominance of *Concentricystes*. The water level of the Farkasfa bog had a slightly higher pH value and was more trophic than that of the Szőce peat-bog. At present, the bog is permanently covered with water, the water trophicity is increasing, resulting in the significant decline of *Concentricystes,* and the expansion of *Glyceria, Typha* and Cyperaceae species.[13]

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[13] *Acknowledgements.* We are very grateful to several colleagues of ours, who helped us conduct this research. Our interest in the Kerka Valley was kindled by Dr. Eszter Bánffy. Thanks are due to Dr. László Vándor and Prof. Andreas Lippert for calling our attention to the Resznek earthen fort during the second phase of our research project, and to Dr. Ilse Draxler and Prof. Andreas Lippert for suggesting the Szőce bog as a sampling location, as well as to Márta Havas, Director of the Őrség Nature Reserve Area, for proposing the Farkasfa and Feketető locations. We are indebted to Dr. László Kárpáti, Director of the Fertő National Park, who permitted sampling in protected locations. Finally, we wish to thank Márta Havas and László Bodonczi for professional help in the field.

Eszter Bánffy

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THE EARLY NEOLITHIC SETTLEMENT AT SZENTGYÖRGYVÖLGY-PITYERDOMB[1]

The site and the settlement

One of the westernmost archaeological sites in the Kerka Valley micro-region was identified in 1995 *(fig. 1)*. The still most densely populated part of the village of Szentgyörgyvölgy, one of its hamlets, lies on a longish east–west oriented hill. Its western edge almost extends to the Slovenian border and, at the same time, marks the boundary between Zala and Vas counties. Proceeding eastwards, one first encounters the Reformed church with a boarded ceiling, then the Catholic church decorated with frescoes painted by István Dorffmeister, the famous master of the early 19th century (both buildings are protected monuments). The cemetery lies in the eastern part of the village, together with a small conical mound, the Pityerdomb [Pityer Hill]. The highest point of this mound is 220 m; it slopes towards the west and north and to a lesser extent to the east, while the road cuts through its southern side. The artificial depression dividing the top marks the administrative boundarybetween Szentgyörgyvölgy and Márokföld, meaning that the site's eastern section is in fact part of Márokföld. Since the investigation and excavation of the site was begun in an area belonging to Szentgyörgyvölgy, the site was given this name.

The village hill and the northern slope of Pityerdomb both extend into a waterlogged marshland traversed by the meandering Szentgyörgy Stream, flowing to the east. The stream flows some 120 m from the site and since we did not find any wells during the excavation, it seems likely that the occupants of the prehistoric settlement drew their water from the stream. Although sediment samples were collected from the marshland, these did not contain a sufficient number of pollen grains and thus the one-time environment of the site can only be reconstructed from the macro-botanical finds.[2]

The conical form of the site[3] represents a typical clayey monadrock covered with a thinhumus layer on top. The acidic, clayey sediment destroyed the bones. The white contours of animal bones could often be observed in the excavated pits, but only tiny crumbs of the actual bones survived.

The excavations confirmed the observations made during the field survey, namely that although the shallow ploughing affected the archaeological layers, it did not destroy or disturb them too much. In practice this meant that the first Neolithic features were found at a depth of 25–27 cm from the surface. The virgin soil often lay at a depth of 30 cm, where it had not been disturbed by prehistoric intrusions.

Few settlement features from later periods were found: the earliest of these can be assigned to the classical (Keszthely) phase of the Transdanubian *Linearbandkeramik* culture (LBK) and can be dated to the period following the destruction of the first settlement, as shown by a few stray finds of thin-walled pottery sherds decorated with wide linear patterns from the upper layers *(fig. 2)*. It is noteworthy that later LBK sherds are often found in the uppermost layer of the earliest LBK settlements: this phenomenon has been observed on other LBK sites

[1] A detailed description of the Szentgyörgyvölgy-Pityerdomb site and a discussion of the key issues of the transition to the Neolithic in western Transdanubia, together with a reconstruction of this region's role in the Neolithic transition in Central Europe has been published in a separate monograph: *Bánffy 2004*. The present study was originally planned to be a preliminary report, to be published several years earlier than the monograph. Unfortunately, the present publication on the Kerka Valley Micro-Region Project was delayed owing to several factors.

[2] See the studies by Tibor Cserny, Elvira Nagy-Bodor, Brigitta Berzsényi and Orsolya Dálnoki in this volume.

[3] The GPS coordinates of Szentgyörgyvölgy-Pityerdomb: 46°,43,350; 16°,25,783 (I would here like to thank Zsuzsa Miklós for the data).

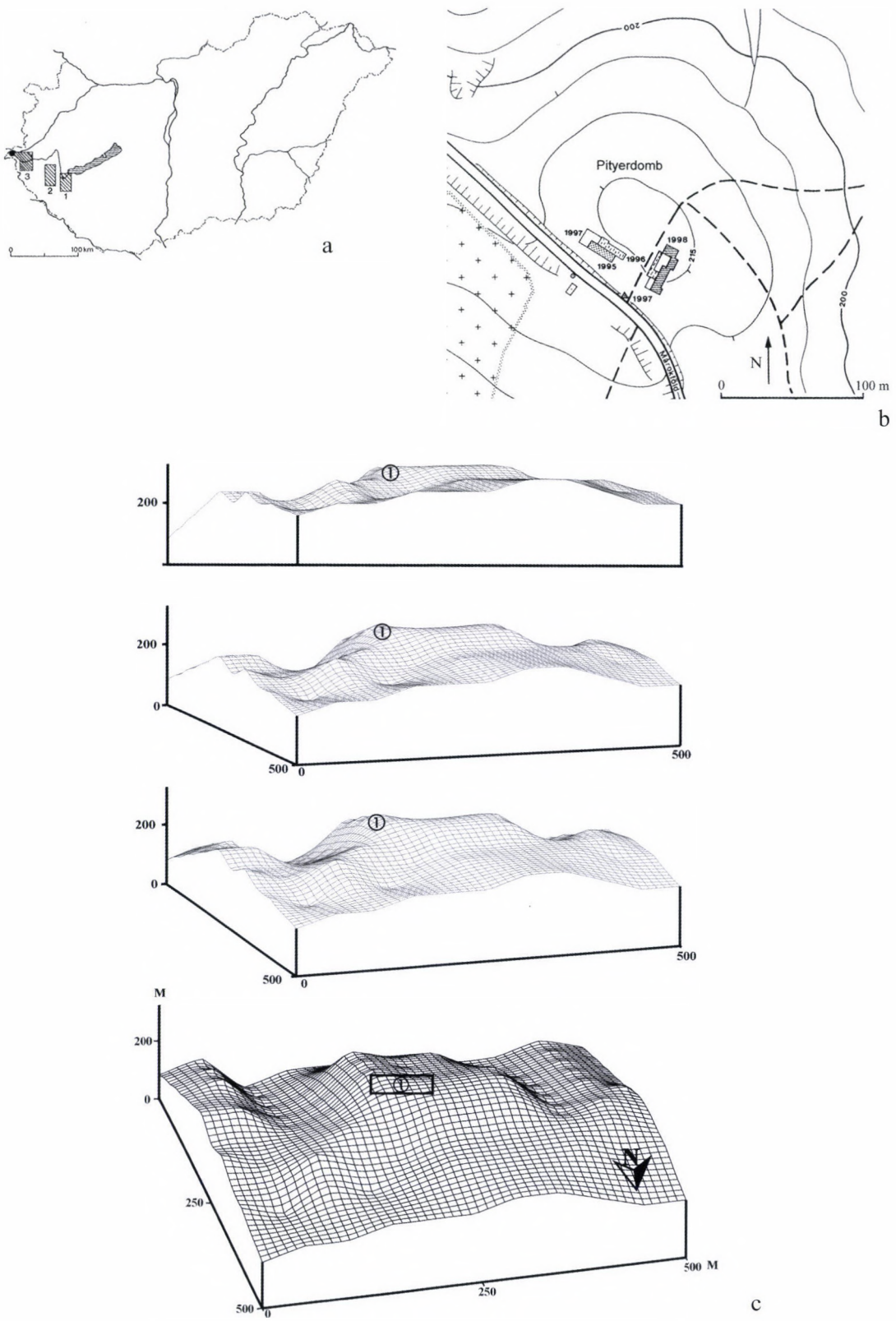

fig. 1. a: Map of Hungary showing the three investigated micro-regions in Transdanubia: 1. The Little Balaton region, 2. The Hahót Valley, 3. The Kerka Valley; b: Szentgyörgyvölgy-Pityerdomb. Contour map showing the excavated area; c: 3D map of the site

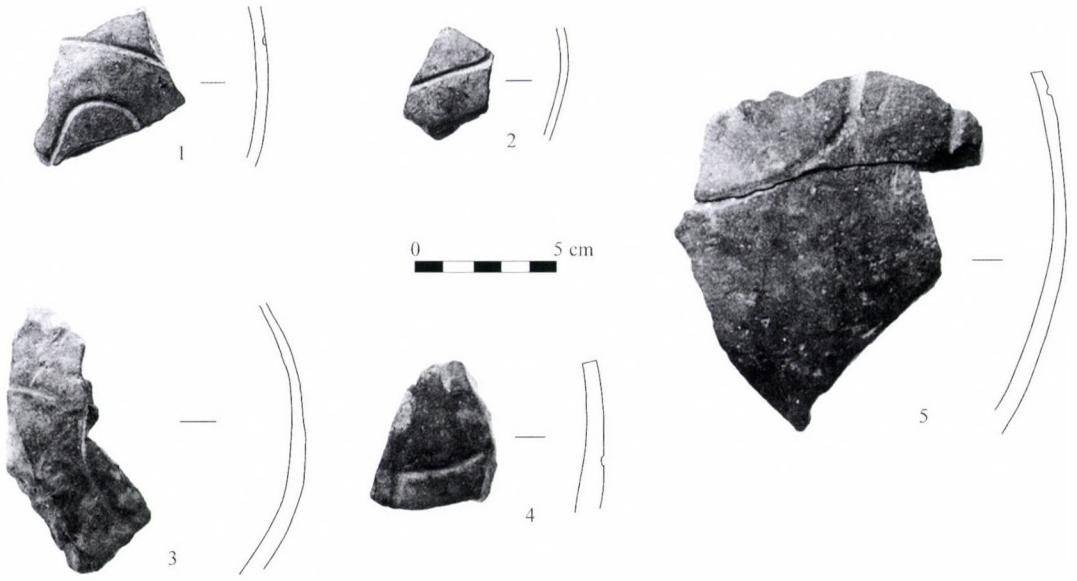

fig. 2. Szentgyörgyvölgy-Pityerdomb. Later LBK pottery, found in a secondary position

in County Zala and, also in more westerly areas, such as Lower Austria, where later LBK sherds were found on seventy per cent of the earliest LBK sites.[4] This would suggest that these locations – including the Pityerdomb site – were not only suitable for settlement, but also that later LBK communities had some recollection of these villages or had perhaps discovered the remains of the burnt houses. Be as it may, these later LBK groups did not establish a permanent settlement either at Pityerdomb or in its close vicinity.

Another interesting phenomenon is that a similar LBK site lay within eyeshot of the Pityerdomb village. The presence of this site and the evidence for "off-site" land use in the area indicates a rather intensive settlement. Although it is impossible to assign sites, which have only yielded a few small sherds and stone implements to a specific sub-phase of the culture, the intensive settlement of the Pityerdomb site suggests a strong presence of the culture on the ridges of the Kerka region.

The stray finds of two other periods were also collected at the Pityerdomb site: two separate settlement features of the Middle Copper Age Balaton–Lasinja culture were identified while clearing the upper 25–28 cm layer in Trenches I and II, indicated by a few pottery sherds and a clay ladle with perforated handle lying scattered over two smaller areas *(fig. 3)*. It is also possible that one of the settlement features can be associated with the Copper Age: Feature 28 was an open-air hearth, whose burnt foundation lay higher than the one-time LBK occupation surface. Even though this feature did not yield any finds, its position suggests that it may have been one of the features of the briefly occupied Balaton–Lasinja settlement.

Late medieval sherds, crushed into tiny fragments by ploughing, were also found in both trenches. These pottery sherds can undoubtedly be interpreted as the legacy of the chain of small medieval hamlets (called "szer" in Hungarian), which played an important role in the late medieval life of the Szentgyörgyvölgy village: they can perhaps be associated with the hamlet called Kerámia [pottery] lying some 150 m to the west, so named after its pottery workshop. It is also possible, however, that these scanty pottery finds merely indicate medieval land use in the area and had gotten mixed up in the manure taken to the ploughland.

The Neolithic site lay around the highest point of the western part and on the northern–north-western slope of the longish east–west oriented Pityerdomb. No settlement features were found on the cone itself, although this may be due to the strong erosion, which could easily

[4] Kind personal communication of Katalin H. Simon. See also *L. A. Horváth – K. H. Simon:* Das Neolithikum und die Kupferzeit in Südwest-transdanubien. (Siedlungsgeschichte und Forschungsstand). IPH 9. Budapest 2003; *Harrer – Lenneis 2001* 34.

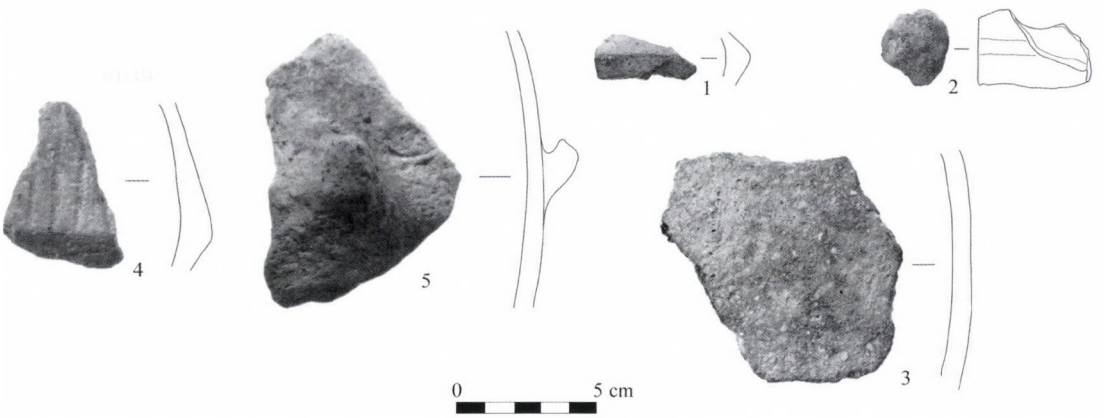

fig. 3. Szentgyörgyvölgy-Pityerdomb. Pottery fragments from the Middle Copper Age Balaton–Lasinja culture, found in a secondary position

have destroyed any settlement debris and shallow pits. The Neolithic features in the areas lying 2–3 m lower had survived more or less intact, undisturbed by erosion and ploughing.

An intensive survey was conducted over the entire area of the site. Every square metre was surveyed at least five times, during different times of day and under diverse weather conditions, and every surface find was collected. The observations made during the survey complement the results of the excavations.

The settlement features observed during the survey were restricted to two distinct areas; this was also confirmed by the excavations. These two areas, marked by discoloured patches, each contained the remains of a house and the clay extraction pits, refuse pits and fireplaces around them. The two settlement concentrations – or houses – lay at a distance of 33 m from each other and neither the repeated intensive surveys, nor the sounding did not reveal additional archaeological features between the two *(fig. 4)*.

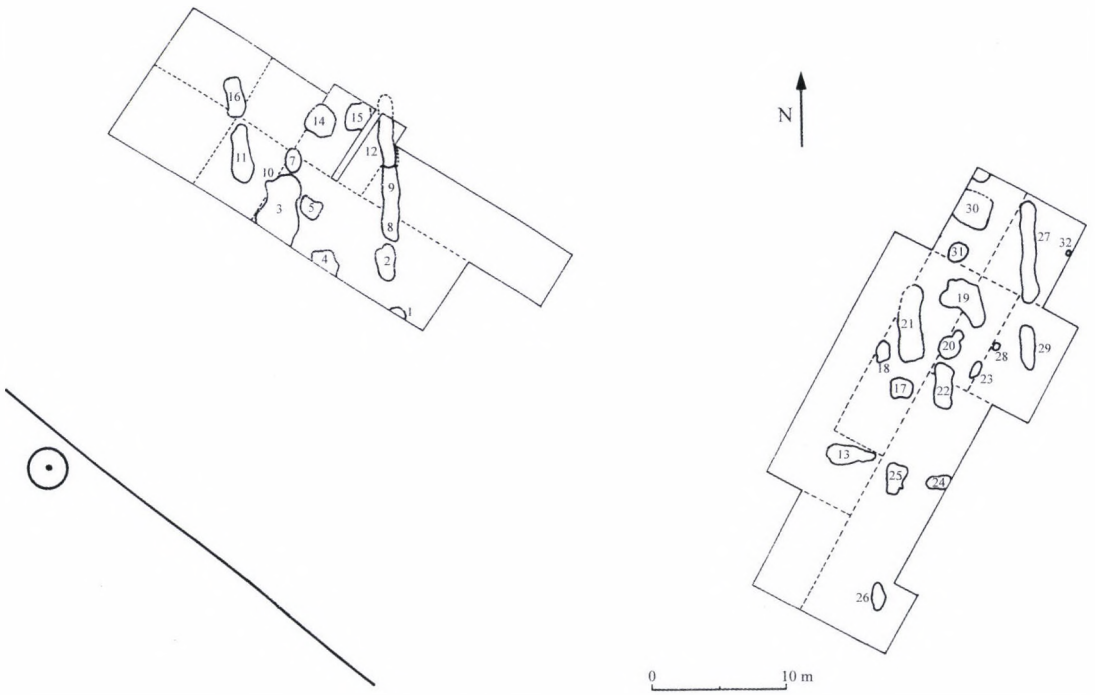

fig. 4. Szentgyörgyvölgy-Pityerdomb.Trenches I and II

A total of thirty-two settlement features – thirteen in Trench I, nineteen in Trench II – were uncovered during the four seasons of excavation, extending over an area of some 1000 m^2. We may say that we managed to uncover the greater part of the settlement, in spite of the rather meagre funds obtained for the excavation (meagre even in comparison to other planned excavation projects), and in spite of the difficulties caused by the damaged and often inadequate equipment, as well as by the rainy weather almost causing floods during the last three campaigns. There may be a few smaller pits to the east, where we did not find the settlement's boundary, as well as to the south, where the settlement is traversed by the road, although possible settlement features in both directions can only be very sporadic. We did not find any settlement features in the area south of the road during our survey, meaning that the settlement did not continue in that area.

We could not open a trench in the south owing to the macadam road. However, we monitored the area, when the embankment flanking the road was cleared. It became clear that House I, a feature we could not excavate completely owing to the road, did not continue across a distance of 2 m from the excavated area, and neither were there any settlement features, pits or even stray finds indicating Neolithic settlement in the area.

Similar surveys indicate that the settlement section uncovered in Trench I had no continuation to the north and neither did there remain a large unexcavated section of the settlement towards its northern boundary in Trench II since we registered a decreasing scatter of finds during the field survey, in spite of the natural erosion. Even if a few pits remained unexcavated, these hardly contained much "information". It would naturally have been better if we could have determined the settlement's boundaries with certainty, but in view of the difficulties outlined above, we may say that we can hardly be dissatisfied with these results.

The findings of the intensive survey and the excavation of the site indicate that the Pityerdomb settlement consisted of two houses and the associated refuse pits, clay extraction pits and other features *(figs 5–8)*. The two buildings and their yards were separated from each other by a 33 m wide open area without any settlement features or finds.

The relative chronology of the two houses could not be established on the basis of the finds recovered from them and from the features around them. However, this does not necessarily imply that the buildings were used contemporaneously. It has been repeatedly suggested that the houses of the earliest LBK settlements were not occupied for more than two generations. The use-life of these houses is estimated at 15 to 20 years. It is therefore theoretically possible that a new house was built near the first one after its destruction at Pityerdomb too. Still, it seems more likely that the two houses were contemporary and that both were inhabited by a nuclear family. This is also confirmed by the typical settlement pattern of the formative LBK period: a loose string of farmsteads, often lying quite far from each other, rather than larger closed settlements.

The distance between the two houses does not exclude their contemporaneity, even more so, since we know that the early LBK settlements were characterised by fairly large open areas between the houses. At the Langweiler 8 site, for example, two contemporary houses were spaced 66 m apart; at Mohelnice, the distance between the earliest houses ranged between 10–25 m; at Holohlavy in eastern Bohemia, the three earliest LBK houses lay 30 and 45 m from each other.[5] In the light of the above, the 33 m distance between the houses at Pityerdomb was not particularly large.

Another argument for the contemporaneous use of the two houses is the manpower needed for their construction. According to Paul Halstead's estimates, an average living space of 10 m^2 per person was the norm on permanent settlements, or a little less if close relatives

[5] *Lüning 1982* 147–148; *Coudart 1998* 108; *H. Stäuble:* Häuser und absolute Datierung der ältesten Bandkeramik. UPA 117. Frankfurt/Main 2005; *Stäuble 1997; R. Tichy:* The context of the early LBK-well at Mohelnice, in: H. Koschik (hrsg.): Brunnen in der Jungsteinzeit. Internationales Symposium in Erkelenz. Köln 1998, 50; *I. Pavlů:* Altneolithische Häuser in Böhmen. AR 33 (1981) 534–543; *I. Pavlů – V. Vokolek:* Early Linear Pottery culture in the East Bohemian Region. PA 83 (1992) 83–84.

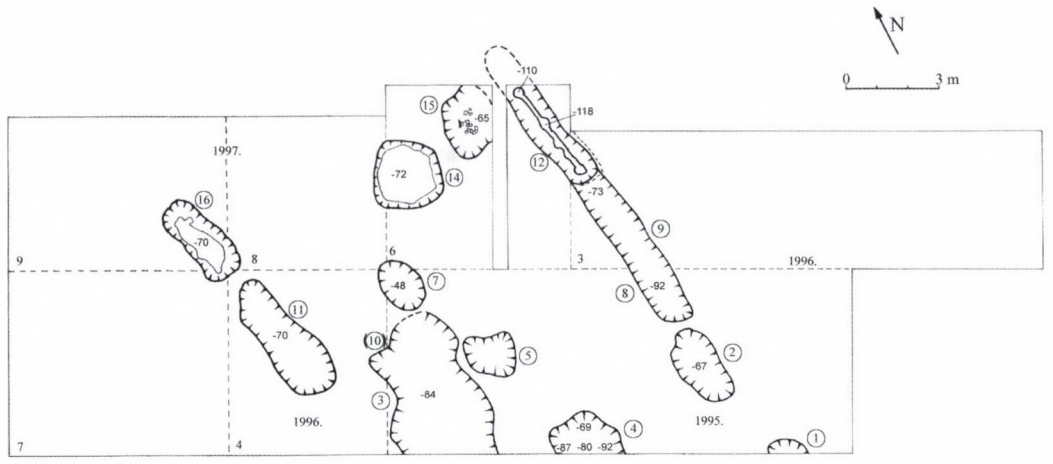

fig. 5. Szentgyörgyvölgy-Pityerdomb. Features of Trench I.

lived under the same roof.[6] At Pityerdomb we may assume that each house was occupied by about 8–10 individuals (see the section on the size of the houses). The occupants undoubtedly included children, a few elderly persons and women, meaning that there were about three or four able-bodied men to each house. Jens Lüning made different calculations concerning the construction of LBK houses.[7] According to his estimates, the weight of a horizontal beam was around 840 kg and he assumed that the strength of twelve men was necessary for lifting the beam. He suggested that at Pityerdomb, where only the middle section of the houses survived, the beam weighed about 500 kg, meaning that about seven or eight men were needed for lifting it.

Accepting these calculations, it would appear that the construction of a house exceeded the capabilities of its future occupants. However, the number of able-bodied men in the families inhabiting the two houses at Pityerdomb was enough for the construction of these structures. A similar workpower was needed for digging the clay extraction pits. The labour investment necessary for the construction of the two houses too suggests that the two houses of the Pityerdomb settlement were built at the same time.

In spite of the lack of settlements with houses from the same period in Transdanubia, it is quite obvious that the small settlement with the two houses and the associated workshops and pits uncovered at Pityerdomb does not differ from other early LBK settlement sites. The field surveys conducted as part of the Kerka Valley Micro-Region Project suggest that most LBK settlements in this area were of a similar size, although – in the lack of excavations – this is more of an impression based on the surface finds.

The houses

House I (fig. 5)

A total of fifteen settlement features were uncovered in Trench I. With the exception of Feature 1, the position of which is uncertain, all features can be associated with a single building: Features 2, 8, 9 and 12, as well as Features 11 and 16 were part of a long north oriented pit *(fig. 6b–f)*. These features probably mark the longitudinal extent of the house, in other words, the living space of the house lay in the area bordered by these pits. Since the distance between the inner walls of these pits was 9.5 m, the width of the house cannot have been greater, although a width of 8–8.5 m seems more likely. Its entrance lay on the southern side, not too far from a triple post-hole (Feature 4).

[6] *P. L. J. Halstead:* Strategies for Survival: an Ecological Approach to Social and Economic Change in the Early Farming Communities of Thessaly, N. Greece. PhD Dissertation, University of Cambridge. Cambridge 1984, 187–189.

[7] *Lüning 1982; A. Zimmermann:* Austauschsysteme von Silexartefakten in der Bandkeramik Europas. UPA 26. Bonn 1995, 71.


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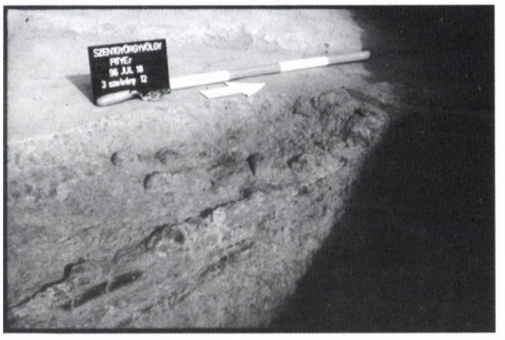
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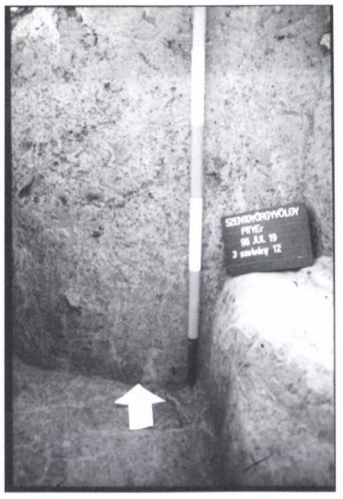
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f

fig. 6. Szentgyörgyvölgy-Pityerdomb. a: the site; b–f: Feature 12

The depth of the pits varied, ranging between 67–92 cm even within a single feature. They did not deepen in any direction (for example, the similar pits of the earliest LBK houses in Germany deepened towards the south). A deep, narrow trench running parallel to the pit, and widening in some spots, was observed in Feature 12. These wider sections were deeper on the outer side and the greatest depth of 118 cm was measured in one of these spots.

A deep, irregular pit was uncovered on the southern side of the building (Feature 4). Its average depth was 65–69 cm and there were three smaller, round pits inside it (86 cm, 87 cm and 86 cm deep, the latter was the outermost pit towards the west, which had a depth of 92 cm in one spot). These smaller pits could be interpreted as post-holes for thick timber posts. Carbonised wood remains were recovered from the fill of these post-holes. Unfortunately, the area to the south could not be investigated owing to the trees and shrubs flanking the road and we could only hypothesise that these three post-holes could be associated with the southern end of the house. This assumption was confirmed in the spring of 1999: in the course of earth-moving operations along the road leading to Szentgyörgyvölgy, we could monitor the removal of the earth from the area: no archaeological levels, intrusions, discoloured patches or finds were brought to light, confirming that Feature 4 and the post-holes marked the southern end of the house.

The northern end of the house was destroyed by erosion. The northern, rounded end of Feature 12 lay some 10–12 cm under the present surface: the burnt debris and the larger pottery fragments were visible on the surface. In contrast, nothing was found or observed in the area to its north during the repeated field surveys, meaning that the estimated length of the house could be no more than 15 m. It seems likely that the house was about 8 m wide and 13–14 m long.

The stratigraphy of the long pits was the following. A thick burnt debris, about 30 cm thick on the average, covered the surface by the four long pits along the eastern side. The most intensively burnt daub layer was uncovered in the middle of the house and lay above Pits 8 and 9. The position of the debris in the latter pit revealed that the larger wall fragments fell lengthwise into the pits outside the house and covered them. One indication of the extent to which these daub fragments had been burnt was that while clearing the burnt debris covering Feature 8, we had initially assumed that we had found the baking plate of a hearth.

The burnt house remains had fallen onto a granular, whitish-grey soil mixed with organic substances in each pit. In Features 8, 9 and 12, this layer differed markedly from the layer of burnt daub fragments at a depth of 56–68 cm. In some spots we also observed that this layer had been stamped. Only the greyish layer in Feature 2 contained finds, the same fill in the other features did not contain any artefacts.

The situation was slightly different as regards the pits along the western side of the house. A considerably smaller amount of burnt debris fell onto both features and Feature 16 did not contain the granular, greyish layer mixed with organic substances noted in the other pits. The fill of this pit was wettish soil mixed with iron concretions and specks of charcoal, containing few finds. In Feature 11 we found a hard, stamped layer, perhaps also levelled by water, at a depth of 45 cm that overlay a fill of granular, greyish earth with many finds, including an assemblage that can be interpreted as being cultic in nature. This assemblage lay at a depth of 55 cm and was oriented to the north. Since it lay under the stamped layer, it is suitable for conclusions concerning chronology.

Features 3, 5, 6, 14 and 15 lay within the zone formed by the two long pits. Their form was irregular and their depth also varied. However, they did share one similarity with the long pits, namely that the stamped layer overlying the grey mixed layer observed in the long pits could also be observed in these pits. Interestingly enough, fewer – and generally smaller – burnt daub fragments were found on top of Features 3, 5, 7 and 14. An intensive layer of burnt daub fragments was only noted above Feature 15; this can be explained by the fact that this pit lay closest to the feature on the eastern side. An impressive amount of finds was uncovered under this burnt debris layer: a large number of stone tools and pottery sherds, as well as a few intact vessels, all of which were found in a horizontal position on the stamped layer.This stamped layer can thus perhaps be interpreted as a floor level or an occupation surface of the settlement. Unfortunately, the floor was not burnt except for a few 1–2 m^2 large patches and it survived in a rather poor state of preservation. The horizontal position of the pottery sherds and stone tools indicated this level even in the areas where the stamped layer could not be observed in spite of the most careful clearing techniques. Only in Feature 14 could we observe two separate, superimposed stamped layers. It seems likely that water had flown across the

floor and that it had been replastered or stamped again. It is unclear whether the entire floor was renewed or whether the floor was only repaired in this spot.

The phenomena described above can be interpreted in the following manner. Before the construction of the house, a series of north-south oriented, long, rounded pits with uneven floor was dug at a distance of 8.5 m from each other for clay extraction (Features 9–12). On the testimony of the burnt daub fragments, the walls were erected around a framework of a 1 cm thick wattling daubed with clay, which was carefully plastered on both sides. We did not find any evidence for a timber framework, except for the three post-holes at the southern, shorter end of the house, which perhaps supported the purlin; another feature, which can possibly be interpreted as a post-hole, was uncovered inside Feature 3. Triple post-holes have also been reported from other early LBK sites, one of the best examples being the early houses unearthed at Strögen in Lower Austria where – similarly to House I of the Pityerdomb site – only the triple post-holes survived together with the long pits.[8] The roof structure cannot be reconstructed, although the known analogies would suggest that the saddle roof was covered with thatch or reeds thriving along the stream.

The lower section of the pits (40–60 cm) dug for clay extraction were probably infilled during the construction of the house. The rather uniform fill was mixed with organic substances and did not contain any finds. It is possible that a certain amount of clay had fallen back into the pits where it was treaded over by the men constructing the house and a part of the wet clay may also have fallen into them. The upper level of the pits lay slightly lower than the one-time occupation surface. The known analogies suggest that these open pits also functioned as drainage pits for rainwater and it is possible that they also kept the animals away from the house.

It would appear that the small post-holes found beside House I at Pityerdomb too held posts supporting the eaves.[9] Although Jens Lüning does not mention obliquely dug post-holes in his study, the ones found at Pityerdomb definitely support his arguments. The posts set into the long pit beside the house probably supported the roof, which extended beyond the walls in the north-eastern part of the house. One possible interpretation of the fact that only one part of the roof was supported by extra posts is that this section had perhaps been damaged or sagged dangerously and was in need of repair.[10] This damage possibly occurred not when the house was built, but during its use.

There is little evidence for how long the house was occupied. One of these is that some sections of the occupation surface were not renewed, another is the reparation of the eaves, and a third is the burnt debris covering the finds lying on the occupation surface, suggesting that the occupants abandoned the house after it had burnt down. One interesting observation was that the burnt daub layer was much thicker on the eastern side, meaning that considerably more debris had fallen on that side than on the western side. This can perhaps be explained by the prevailing wind direction. It seems likely that the wind also played a role in that the entire roof caught fire owing to a stray spark. The burnt debris indicates a very intensive and rapid conflagration. Many of the vessels on the floor were secondarily burnt and a few stone implements too showed traces of burning. There was no time for the occupants to salvage their belongings, this being the reason that many vessels, quernstones and stone implements were found *in situ*. This is quite understandable if we assume that the weather was windy at the time the fire broke out and spread to the entire building. The strong westerly–north-westerly wind probably knocked the burning and collapsing roof, as well as part of the burning wall into the pits along the eastern side. The burnt debris survived undisturbed until the 1995 excavation as shown also by the direction in which the burnt daub fragments had fallen.

House II (fig. 7)

The patch of House II lay 33 m east of House I. As has already been mentioned above, no settlement features or finds were found between the two houses. It seems likely that the two buildings were separated by a shrubby area with trees.

[8] *Lenneis 1989* fig. 9.

[9] *Lüning 1988* 290–292.

[10] *Lüning 1988; Lüning 1997.*

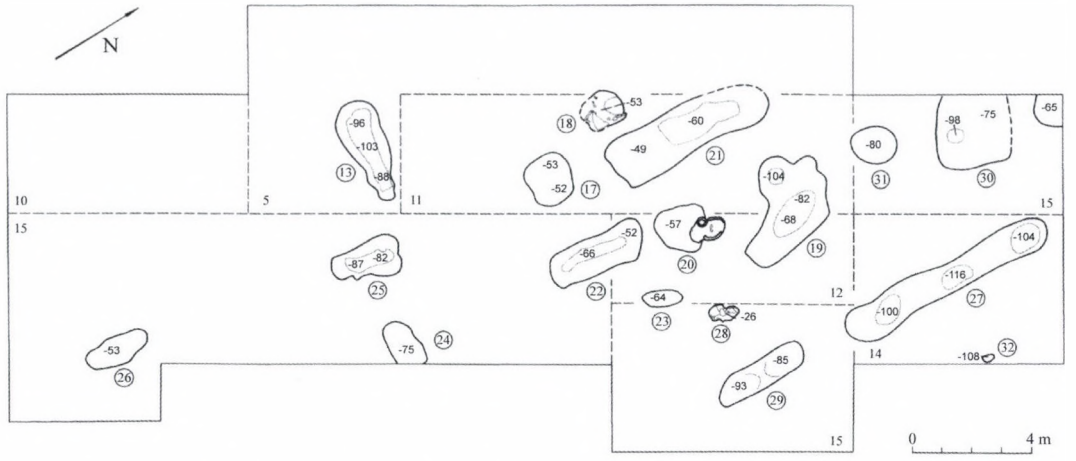

fig. 7. Szentgyörgyvölgy-Pityerdomb. Features of Trench II

The interpretation of the second house is slightly more problematic, especially as regards four features, which could not be associated with the house. Their position, however, does not allow the assumption that they can perhaps be associated with a third house. In contrast to the other long pits, Features 13 and 24 were oriented to the east. Feature 25, oriented to the north, lay between these two pits, while Feature 26, also oriented to the north, lay less than 10 m to its south on the highest point of the hill. One possible interpretation of these features was that a third building, originally erected on the highest point of the hill, had been destroyed by erosion. However, this possibility is contradicted by the following observations.

The first is a settlement feature from the Middle Copper Age. Similarly to Trench I, in which Balaton–Lasinja sherds were found in a secondary position over Feature 9, a clay ladle with perforated handle and pottery fragments of the same culture were found in the southern part of Trench II, no doubt marking the one-time presence of a few features of a temporary Copper Age campsite. These finds were recovered from the mixed earth of the uppermost 20 cm of the trench; at the same time, this level did not contain any Neolithic sherds. This contradicts a strong, all-destructive erosion since if the soil level covering the uppermost part of the hill had been eroded to the extent that even pits were destroyed in the process, how could the higher-lying Copper Age features have survived? The same question can be posed in the case of Feature 26. This pit was 53 cm deep and survived intact and we did not observe any destroyed features in its vicinity.

Another observation concerns the distance between House II and an assumed third house. In view of the fact that no chronological differences can be established between the finds from the individual features using archaeological methods, the close proximity of two contemporaneous buildings – with the assumed third house lying less than 10 m from the southern end of House II where we found a hearth and workpit for stone tool production – seems unlikely in the light of the currently available evidence. Obviously, we cannot entirely exclude the possibility of a new house built twenty years after the destruction of House II. However, it seems more likely that Features 13, 24, 25 and 26 represent workpits perhaps protected by a windscreen in the yard of House II. These features can be better interpreted as an activity zone, part of the yard around the house, described as *"Haus und Hof"* by Jens Lüning – in other words, the features of the house's yard, which survived exactly because they were in part dug into the ground.[11]

It has already been mentioned above that Feature 28 cannot be associated with a specific period since it did not contain any finds. We interpreted the strongly burnt patch as the remains of a hearth. Since it lay higher than the other features we cannot exclude the possibility that a few herdsmen of the Balaton–Lasinja culture had chosen to build a fire in the centre of House II.

[11] *Lüning 1997* 29, 37–40.



fig. 8. Szentgyörgyvölgy-Pityerdomb.
1. a: Trench II, b–c: Feature 19; 2. a–c: Feature 20; 3. a–b: Feature 20

Features 17, 18 and 32 must also be mentioned separately since they lay beyond the walls of the house. Feature 18 was a fireplace near the western side of the house. The thick and hard red burnt baking plate lay under an ashy fill mixed with charcoal. Feature 17 was a rounded shallow pit not far from the south-western corner of the house. One side had a series of small, deep holes, perhaps for the feet of some sort of stand or a smaller bench. The rather uniform fill contained much charcoal and a high number of stone implements, as well as a few cores and a conspicuously high number of small chips. It would appear that this feature was a workpit or a workshop. Eva Lenneis has already noted that workpits often lay near the south-western corner of many early LBK houses.[12]

Feature 32 was one of the most unusual pits of the Pityerdomb settlement. It lay some 3 m east of the long pit (Feature 27) by the eastern wall of House II. The round post-hole with a diameter of *ca.* 27–30 cm did not contain any finds; its fill was fairly uniform: the loose clayey soil contained the occasional piece of charcoal and organic materials. Its flat floor lay at a depth of over 1 m. A small sherd lay on the floor of the post-hole. The purpose of this post-hole, lying outside the eastern side of the house, remains enigmatic.

[12] For example beside House 2 of the Strögen site: *Lenneis 1989* 33, and her kind personal communication.

The features which can be associated with House II are the following: Feature 21 on the western side, Features 29 and 27 on the eastern side – these long north-oriented pits marked the long sides of the building –, while Feature 22 probably indicated the southern end of the building. Due to the lack of adequate funding and the chronic shortage of time, we could not investigate the area to the north, a part of the settlement which on the testimony of the surface finds was one of the settlement sections damaged by erosion. This was the reason that we decided not to investigate that area. It is thus possible that Feature 21 continued to the north, perhaps as a long, ditch-like pit, and it is also possible that there was another long pit north of Feature 27. The surface finds and the scanty scatter of burnt daub fragments nonetheless suggest that the length of the building was no more than 13–15 m, while its width was about 7 m, judging from the distance of 7.60 m between the pits outside the house.

Features 19, 20, 23, 30 and 31 lay inside the house *(fig. 8),* although they did not always resemble the shallow depressions inside House I. Features 30 and 31 were shallow depressions, the latter continuing to the north, where it was more like an unevenness in the occupation surface. Feature 23 was a small pit without any finds. Feature 20 was a carefully constructed hearth, which was probably used for quite a long time. Its strongly burnt plate had a roughly 6–8 cm high raised rim and there was a large deep ash pit in front of it.

House II and the associated features can be interpreted as follows. A series of long, north-oriented pits were dug for clay extraction, positioned at 7.6 m from each other, before the construction of the house. These indicate that the width of the house was roughly 7 m. These clay extraction pits later served as draining pits for rainwater and they also protected the house walls against rodents and other animals. Interestingly enough, a series of smaller posts set within a larger pit were also noted along a smaller section, similarly to House I. A small, narrow ditch with round, widening sections was observed in the middle of Feature 27; there were smaller depressions in it at a depth of 110 cm, the deepest one lying at 127 cm. These can be again be interpreted as having held posts, which supported the roof section extending beyond the house wall (some 5–6 posts were set into Feature 27). Again, it was the north-eastern side of the building, which needed extra support. This can perhaps be explained by the direction of the prevailing wind, which caused more damage to the roof on this side, or by assuming that the rainwater damaged the roof and the walls to a greater extent. Alternately, the construction of a support for the eaves on the north-eastern side may simply have been an architectural custom or tradition.

One major difference between the two houses was that we uncovered two hearths, one in the yard west of the house, the other near the southern entrance of the house. The latter was "open" towards the entrance, i.e. to the south: a raised rounded rim encircled the strongly burnt baking plate, indicating a long use. The spark, which set fire to the wooden furnishings, causing the destruction of roof and the house perhaps came from this hearth. A high number of charred wood fragments, perhaps the remains of the roof, lay in the lower layer of the burnt daub debris. One of the wood samples taken from Feature 20 was determined as wild cherry, suggesting its use for a smaller piece of furniture such as a bench, rather than as a roof beam (although it might have been used as firewood for the last fire). Oak and beech were also represented among the samples collected from the area around Feature 20; these may indeed have originated from the collapsed roof structure.

Feature 19, lying roughly in the middle of the house, had a rather peculiar form. It was unusual in that some parts were deeper than the other pits inside the house. This is especially true of the wider, rounded sections on its south-eastern side, where we noted an ashy, burnt patch under the occupation surface. The depth of the pit in this area was 109 cm. Since the occupation surface could be traced more or less continuously in Feature 19 at a depth of 55–60 cm, it seems possible that this pit had been dug before the construction of the house and had then been filled up. The deep pit in the middle of the house may have been dug for the post(s) supporting the purlin. While no such feature had been found in House I, a feature similar to the triple post-hole of House I was not uncovered in House II. The stamped earth above the pit, the unusually rich assemblage of finds on the floor and the traces of intensive burning do not

exclude the interpretation of Feature 19 as a post-hole. Accepting this possibility means that evidence for some sort of roof structure is also known from House II.

The large, strongly burnt daub fragments allow the reconstruction of the wall structure. The wall had been smoothed both on its inner and outer side; the daub fragments also preserved imprints of the wattling. The burnt debris of House I had fallen mostly on the eastern side; in House II, the thickest layer of burnt debris was uncovered in the middle of the building, covering Features 19 and 20. These two features were overlain by the thick, uniform debris to such an extent that when it was cleared, the two features first appeared to be a single feature.

The conflagration destroying the house had been rapid and very intensive. The collapsing roof and the walls fell onto the vessels and the stone implements used by the occupants. Owing to the conflagration, the stamped greyish occupation surface – detected also in House I – was burnt over a rather extensive area in the middle of the house and could be traced over a 1.5 m^2 large patch between Features 20 and 21. The occupation surface (floor) lay at an average depth of 55 cm. The less well preserved sections of the occupation surface were also outlined by the density of the finds on them; many of the vessels had apparently been crushed by the collapsing roof and walls. The 15–40 cm thick mixed layer underlying the occupation surface hardly contained any finds. It seems likely that the pits had been filled up shortly after the construction of the house. Only the south-eastern widening part of Feature 19 yielded a few larger pottery fragments from the layer underlying the occupation surface; the importance of these finds lies in that traces of black painting were preserved by the damp soil.

The size of the two houses, calculated from the area enclosed by the long clay extraction pits, was roughly the same: House I measured 8–8.5 m by 13–14 m, while House II was about 7 m by 14–15 m. On the basis of their size, these buildings can be assigned to medium sized *"Bauten"* or the small sized *"Kleinbauten"* in Pieter J. R. Modderman's typology of the Central European LBK.[13] Their length corresponds more to the second category, while their groundplan has more in common with the houses of the third category since the *"Bau"* type usually has a central timber structure and a room with a bedding trench adjoining it to the north, while the *"Kleinbau"* type is characterised by a single room without any post-holes.[14] The closest parallels can be quoted from the Rosenburg, Strögen and Brunn/Gebirge-Wolfholz II sites in Lower Austria.[15] Good analogies to the longish clay extraction pits aligned along the walls have been reported from Brunn II, as well as from Schwanfeld, Wang and Bruchenbrücken in Germany.[16]

In the light of the above, the houses uncovered at Pityerdomb correspond to the buildings of the earliest LBK horizon in Central Europe.

Countless studies and monographs have been devoted to the construction techniques of Neolithic houses, their structure and their use.[17] These were very helpful for understanding the different construction phases of the houses at Pityerdomb, even if many details remain unknown in the lack of direct architectural remains. After choosing the location, a series of long, narrow pits were dug along the long walls of the house. The depth of these pits, or rather the volume of the clay gained from these pits, provides an indication of the size, thickness and massiveness of the walls, even assuming that a small portion of the clay was perhaps used for plastering the floor. The 10–15 cm thick walls were covered with wattling both on their interior and exterior side. We have no idea of how high the walls actually were. Several reconstructions of the LBK longhouses of Central Europe have been made, both on paper and as part of experimental archaeology projects; the best known among these is the reconstruction of one

[13] *Modderman 1972.*

[14] See *Lenneis 1995* 16–17; *Lenneis 1997* 147; *Lenneis 2000* 386.

[15] *E. Lenneis – P. Stadler – H. Windl:* Neue 14C-Daten zum Frühneolithikum in Österreich. Préhistoire Européenne 8 (1996) 97–116; *Lenneis 1995; Stadler 1999.*

[16] *Lenneis 1995; Stadler 1999; Lüning – Modderman 1982; J. Lüning:* Neolithische Hausgrundrisse in Schwanfeld. Das archäologische Jahr in Bayern 1983. Stuttgart 1984, 31–32; *J. Lüning:* Ausgrabungen zur ältesten Bandkeramik. Das archäologische Jahr in Bayern 1986. Stuttgart 1987, 33–34; *Stäuble 1997* 5–66.

[17] *R. J. Elia:* A Study of the Neolithic Architecture of Thessaly, Greece. PhD Dissertation, Boston University. Boston 1982; *Mattheußer 1991; Luley 1992; Lichter 1993; Stäuble 1997; Coudart 1998.*

of the houses uncovered at Schwanfeld in Bavaria.[18] These reconstructions typically have the heavy roof resting on barely 1 m high walls. The almost complete absence of post-holes at the Pityerdomb site perhaps indicates that the roofing of these buildings did not resemble the sophisticated structure of the early LBK houses uncovered on Austrian and German sites. In this case the walls may have been slightly higher.

The most uncertain element as regards the Pityerdomb houses is the reconstruction of the roof structure. The LBK houses of Central Europe all had a gable roof resting on heavy timbers arranged into three or, more often, five rows. The occupants of these houses lived in a veritable forest of posts and even the concept of internal space acquires a new meaning since a space carved up to such an extent was more suited to storage than to a communal living space. At Pityerdomb, however, only one triple post-hole *("Querjoch")* was found at the southern end of House I (Feature 4) and it is possible that the 84 cm deep round intrusion in Feature 43 was also a post-hole. The deep intrusion of Feature 19 in the middle of House II may have been dug for the posts supporting the purlin (no such feature was uncovered in the other house). We also uncovered a post-hole east of House II (Feature 32), but it seems likely that this thick timber, set in a very deep post-hole, was not an architectural element. What kind of roof should we conceptualise? Helmut Luley and Anick Coudart have proposed a number of reconstructions with cross-beams,[19] but it is uncertain how a gable roof could have been constructed without a row of at least three upright posts. House I of the Pityerdomb site can be assigned to Lichter's type A IIa,[20] which was widespread in Transdanubia and to its north-west during the Neolithic, and in this sense it corresponds to his reconstruction.[21] However, neither author offers an accurate and reliable reconstruction of LBK houses without a row of timbers. There must at least have been a row of central posts for supporting the roof. Although Clemens Lichter mentions roof types supported by the walls, he does not quote a single scrap of evidence for the existence of this type from the Neolithic. He quotes Walter Meier-Arendt's opinion, according to whom this roof type could hardly have existed before the early Middle Ages since the timbers of this type could not have been mortised.[22] Clemens Lichter's views are challenged by some prehistorians. In his sceptic overview of this issue, Clemens Lichter admits that the only reason for his suggestion of a self-supporting gable roof in the Neolithic was that there was no other apparent explanation for the lack of internal post-holes. Helmut Luley and Anick Coudart did not devote much attention to this contradiction.

It must here be noted that flat roofs for which internal supporting posts were unnecessary, resembling the ones in South-East Europe, would have been most impractical in the wet, Alpine climate of Transdanubia. This climate brought long rainy spells in summer and heavy snow in winter. Buildings are only protected against damage caused by water if the roof has an inclination angle of at least 30–40 degrees according to Helmut Luley's calculations.[23] A roof of this type usually extends beyond the house walls in order to protect the wattle and daub walls. In the case of House I, the small, obliquely dug post-holes interpreted as supports for the eaves, suggest a roof extending beyond the walls. Since a number of relatively well-preserved Neolithic houses have been uncovered, in which the post-holes of a timber structure have not been found, it is to be hoped that future excavations will bring to light finds and features which, together with their careful observation, will provide an explanation for the roof structure of buildings resembling the ones at Pityerdomb.

We do have evidence for the wood used for the roof timbers. The analysis of the radiocarbon samples sent to Vienna revealed that ten samples came from oak, eight from beech, two from cornel cherry and one from elm.[24] The frequency of beech is also important for the environmental reconstruction and shall be discussed separately. What is noteworthy in this context is that both oak and beech were used for the construction of the house since they occur in roughly the same proportion inside the house.

[18] *Modderman 1972; Lüning – Modderman 1982; Mattheußer 1991; Lenneis 1997; Lenneis 2000.*

[19] *Luley 1992* 65, 84; *Coudart 1998* 64.

[20] *Lichter 1993* 51.

[21] *Lichter 1993* 60, fig. 10.

[22] *Lichter 1993* 63, with an overview of the debate and further references.

[23] *Luley 1992* 62–63.

[24] I would here like to thank Angela Carneiro, who performed the analyses.

Both species were excellent for house construction. Helmut Luley has pointed out that oak, a hard and durable species that is particularly well suited to carving, occurred in the environment of all Central European Neolithic settlements.[25] This distinguishes it from beech, a similarly good construction timber, which is less available and thrives on higher plateaus with a cooler micro-climate. Beech can be cut well, this being the reason that it is excellent for cutting into planks according to Luley. The Pityerdomb site apparently lay within the beech boundary,[26] meaning that this tree species was present in the cool hilly region adjoining the eastern Alpine foreland. The high proportion and joint occurrence of oak and beech in the charcoal samples suggest that both came from the burnt, collapsed roof structure. This, in turn, offers indirect archaeological evidence for the roof structure of the houses uncovered at Pityerdomb.

It has already been mentioned above that the entrance to House II probably lay on the narrower, southern side since this would be logical in view of the southern features – interpreted as outbuildings – and Feature 17, most likely a workshop, lying near the south-western corner of the house. Stepping out of the house, the occupants entered the yard with the workshops, the area of various outdoor activities and the area where perhaps pens and stalls for the animals had also been built.

The floor of the house was of stamped clay. It proved impossible to determine the fabric of the greyish, granular occupation surface – we did not receive any analytical results for the samples we collected. We can therefore only rely on the observations made during the excavations: the tiny bone fragments in the stamped clay may have been the remains of household refuse destroyed by the acidic clay, although their fairly even distribution suggests that these bone fragments had been mixed into the clay in order to prevent muddying. The practice of "tempering" the floor is also mentioned by Helmut Luley, according to whom not only bone, but tiny pebbles were also mixed and stamped into the clay of Neolithic house floors.[27]

We know next to nothing about the internal furnishings. Two of the charcoal samples from near the hearth were identified as cornel cherry and probably represent the last bundle of brushwood. Another sample was determined as elm; this was also found in House II, in Feature 19 north of the hearth, and perhaps came from a wooden bench or a table. There interior of both houses was rather spacious. Smaller depressions, perhaps used for setting storage vessels for liquids or foodstuff inside them to prevent them from falling, were noted around the hearth in both houses.

The Pityerdomb settlement after the destruction of the houses (later Neolithic, Copper Age and late medieval occupation)

The archaeological record reveals that the occupants of the early LBK settlement at Pityerdomb abandoned the settlement after their houses had burnt down and their possessions had perished. It seems likely that they built their new houses a few kilometres away, perhaps at the Szentgyörgyvölgy-Haraszti erdő site or on the outskirts of Ramocsa, where we identified similar settlement features. The Pityerdomb site was briefly occupied during the classical LBK period (Keszthely phase), as shown by the scanty archaeological finds (a few pottery sherds in a secondary position). This brief occupation occurred some 80–120 years later and, as has been mentioned above, it is uncertain whether the choice of location was accidental or whether the settlers had some memory of the one-time village.

The hill remained unoccupied during the later centuries of the Neolithic and the Early Copper Age. A few sherds (and perhaps two hearths) found on the contemporary surface and the

[25] *Luley 1992* 27–29.

[26] Beech is an important species of the so-called southern Alpine Boreal climatic zone in the Alpine foreland. *Z. Kárpáti:* Die pflanzengeographische Gliederung Transdanubiens. Acta Botanica Academiae Scientiarum Hungaricae 6 (1960) 45–53; *R. Soó – A. Borhidi – M. Kovács – I. Csapody – T. Pócs:* Die Wälder und Wiesen West- und Südtransdanubiens und ihre Böden (Nyugat- és Délnyugat-Dunántúl erdei és rétjei). Acta Botanica Academiae Scientiarum Hungaricae 15 (1969) 137–165.

[27] *Luley 1992* 25.

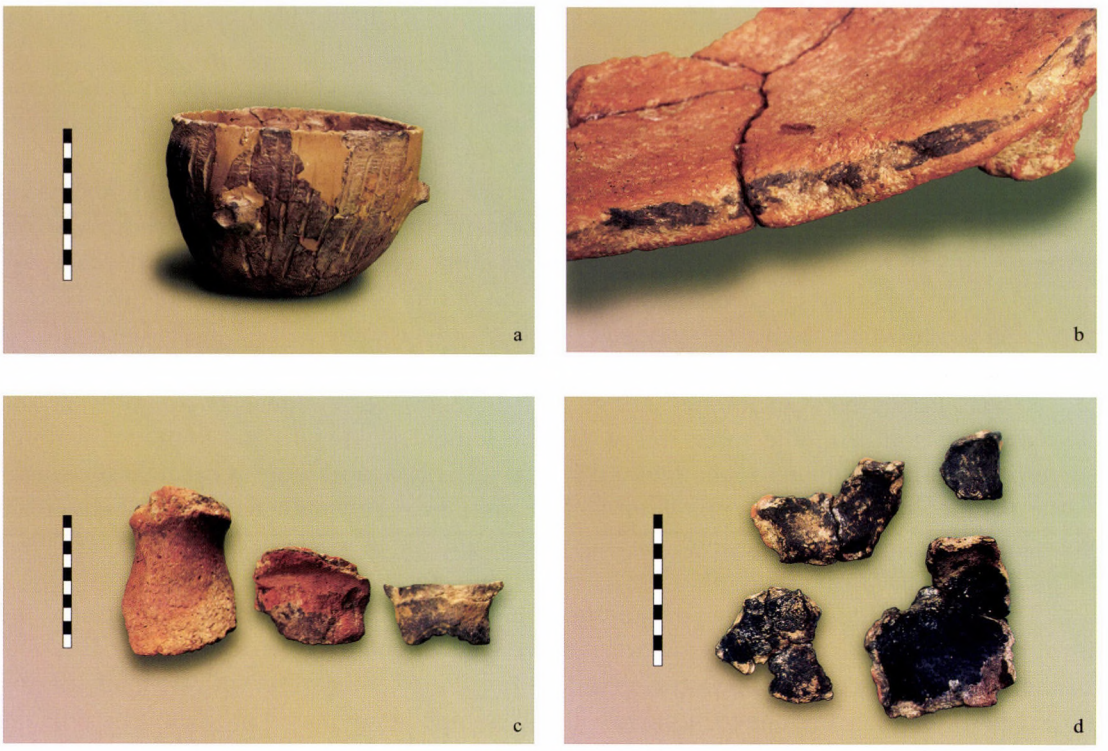

fig. 9. Fabric of the Pityerdomb pottery

upper mixed humus layer the indicate that a group of the Middle Copper Age Balaton–Lasinja culture settled here briefly. This settlement was hardly mere chance since smaller campsites of the culture have been identified on almost every ridge along the Szentgyörgyvölgy Stream and its broader area. The next closest settlement was identified a few hundred meters away, on the hill on which the Catholic church was built. The Pityerdomb remained uninhabited from the late 4th millennium BC until the Middle Ages, the arrival of the occupants of the medieval hamlet with pottery workshops, whose pottery fragments have been found scattered over the site – however, in the light of the medieval antecedents of Szentgyörgyvölgy, these finds are rather insignificant.

The taphonomy of the Pityerdomb site thus indicates that the reason for the bad state of preservation of the settlement features can be attributed to the frequent precipitation and the acidic soil, rather than to destruction caused by later occupations or ploughing, which was in any case shallow and not too intensive.

The finds

The firing technique and fabric of the pottery finds (figs 9–10)

The pottery finds from the two trenches indicate that the vessels were made using the same technique. Most vessels were tempered with chaff and sand, although the potters of the settlement occasionally also mixed a little crushed pottery into the clay. The use of the latter tempering agent is not typical for the pottery from Pityerdomb – elsewhere, for example in Austria, the use of pottery tempered with crushed pottery (chamotte) is considered characteristic during the early LBK phase.[28] Smaller pebbles were noted in three cases only, and in view of the size of the ceramic sample, it is possible that these pebbles were mixed up with the clay accidentally. The number of pottery sherds tempered with chaff only is minimal (16) and it is unclear how many pots they represent. These pots were of an inferior quality compared to the average: they were hardly fired and appear to have been dried in the sun. Ten fragments come from carefully made, well fired vessels, whose fabric did not contain organic tempering agents. In view of the size of the pottery finds, numbering

[28] *Harrer – Lenneis 2001* 34.

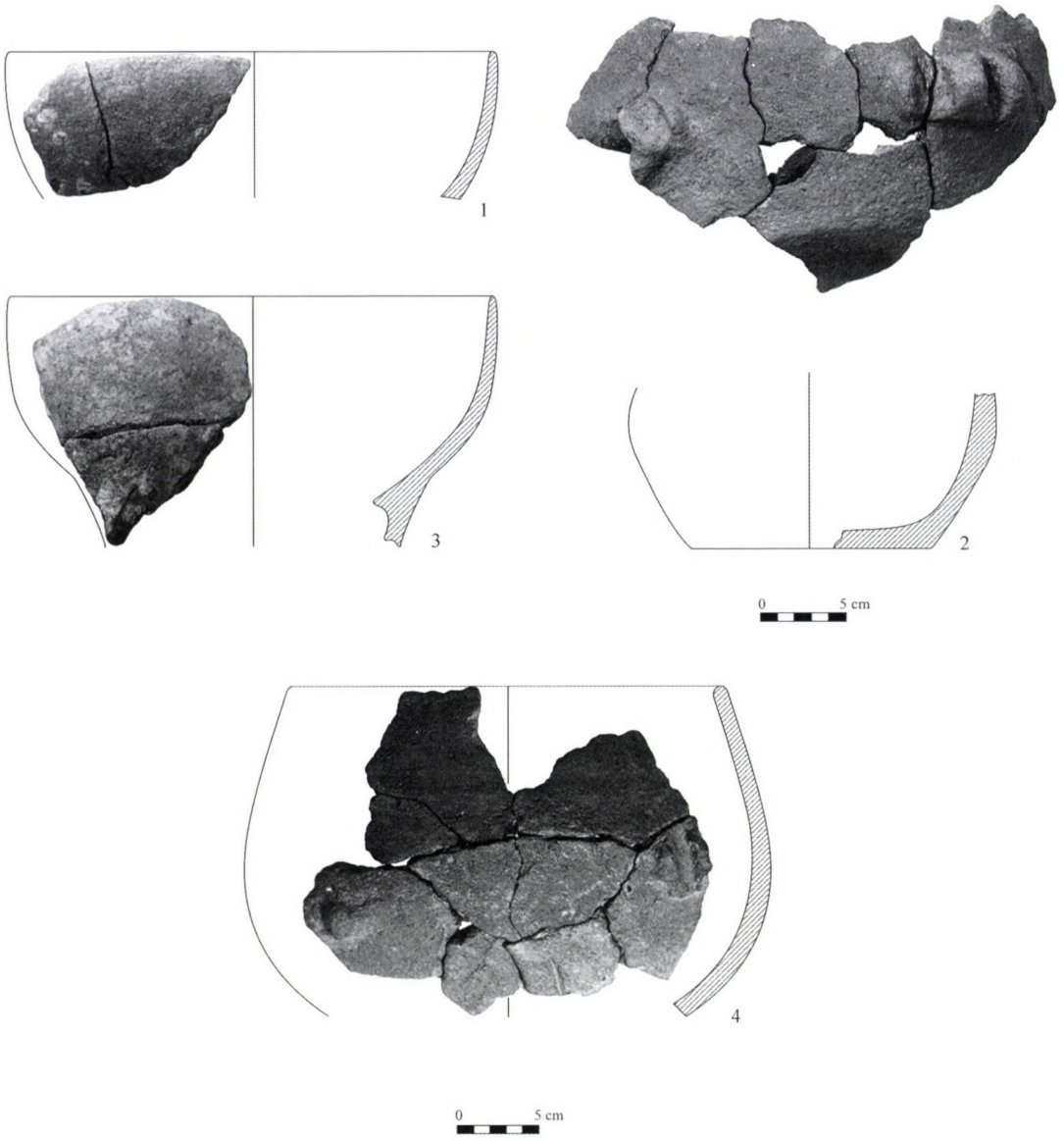

fig. 10. Szentgyörgyvölgy-Pityerdomb. Finds from Feature 2

about fifteen thousand pieces, we may say that the overwhelming majority of the pottery from the site was tempered with sand and organic chaff.

Chaff was not used as a tempering agent in the Early Neolithic of South-East Europe, for example in Greece; its use can only be noted in the Körös–Criş and Starčevo cultures in the northern region of the culture province. The tempering agents used in pottery manufacture changed both in time and space.[29] The Early Neolithic pottery of Bulgaria, which has much in common with the vessels of the Starčevo culture, was tempered with sand as shown by the finds from Galabnik and Kovačevo; in terms of the use of tempering agents, this region resembles the Greek Early Neolithic.[30] The use of organic tempering agents decreased on many sites during the late phase of the Starčevo culture,[31] while in Slavonia and Transdanubia, chaff tempering remained dominant until the final, Spiraloid B phase, except for a few red slipped sherds.[32] On the northern fringes of the Starčevo distribution, both chaff and sand were

[29] For the distribution of chaff temper in South-East Europe, cf. *Kalicz 1990* 49–53.

[30] *L. Perniceva:* Le site de Kovačevo, Neolithique ancien, dans le department de Blagoevgrad. SP 10 (1990) 102.

[31] *I. Radovanović:* Mesolithic/neolithic contacts: a case of the Iron Gates region. Poročilo 23 (1996) 39.

[32] *Dimitrijević 1974; Kalicz 1990* 49.

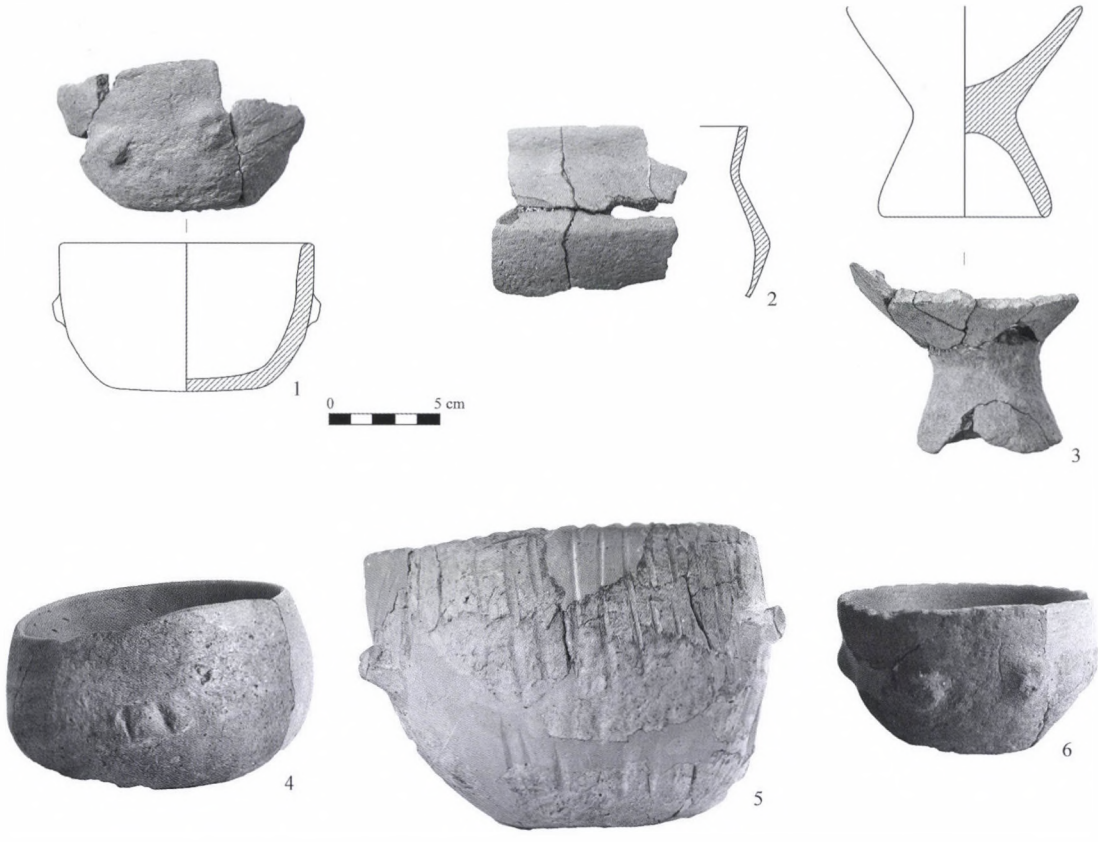

fig. 11. Szentgyörgyvölgy-Pityerdomb. Finds from Feature 8

used as tempering agents in the pottery found on late Starčevo sites in western Transdanubia: to a lesser extent at Vörs-Máriaasszony-sziget, and to a greater extent at the Gellénháza-Városrét site.[33] At the same time, chaff tempered pottery was recovered in greater proportion at the Andráshida-Gebárti-tó settlement, contemporary with the Vörs and Gellénháza sites, but showing already certain features of the transition to the earliest LBK.[34] Although chaff temper dominated the earliest LBK vessels from Transdanubia, it seems likely that the Pityerdomb site has more affinities with northern Croatia in this respect, a link supported also by the bright red colour of the Korenovo pottery.

One of the most distinctive traits of the pottery from Pityerdomb is its bright red or brick red colour, indicating that the vessels had been fired in an oxidising atmosphere. Early Neolithic pottery was usually fired using this technique, although pottery was fired both in a reducing and in an oxidising atmosphere during the early LBK period.[35] They greyish-black colour of some vessels, observed also in Starčevo assemblages from Transdanubia,[36] indicates that the smoke was choked back for a few minutes during the last phase of firing. The black patches were the result of contact between the fuel and the vessel surface[37].

The various techniques of Neolithic pottery firing have been described in detailed by Paraskevi Yiouni in a recent study.[38] Pottery could be fired either in a firing pit or in a kiln.

[33] *Kalicz – M. Virág – T. Biró 1998* 160; *H. Simon 1996* 60.

[34] *L. A. Horváth – K. H. Simon:* A neolithikum és a rézkor Zalaegerszeg környékén [Neolithic and Copper Age in the Zalaegerszeg area], in: I. Kapiller (ed.): Zalaegerszeg évszázadai. Várostörténeti tanulmányok. Zalaegerszeg 1997, 18; *K. H. Simon:* Das Fundmaterial der frühesten Phase der Transdanubischen Linienbandkeramik auf dem Fundort Zalaegerszeg-Andráshida, Gébárti-tó, Arbeitsplatz III, in: *Prehistoric studies 2002* 189–203.

[35] *R. Kalicz-Schreiber – N. Kalicz:* Die erste frühneolithische Fundstelle in Budapest, in: M. Garašanin – D. Srejović (eds): Hommage à Nikola Tasić. Balcanica 23 (Belgrade 1992) 51.

[36] *Kalicz 1990* 53.

[37] *Kalicz – M. Virág – T. Biró 1998.*

[38] *Yiouni 2000* 206.

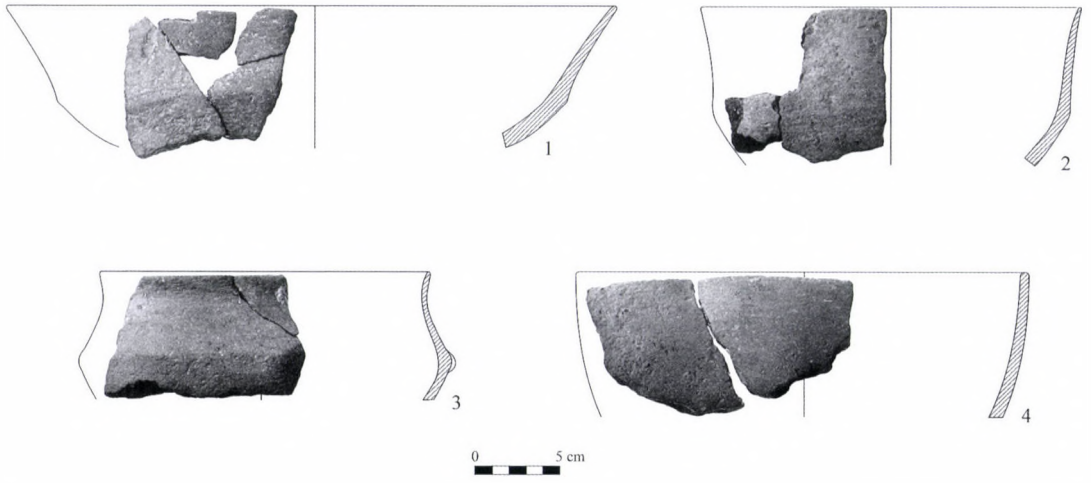

fig. 12. Szentgyörgyvölgy-Pityerdomb. Finds from Feature 9

In the former, the fuel and the vessels share the same area, while in a pottery kiln they are separated from each other. The former procedure obviously allowed a lower firing temperature and less control over the firing. In another study Yiouni discussed whether pottery kilns had been used for firing vessels in the Early Neolithic of South-East Europe.[39] A number of pottery kilns are known from the Starčevo distribution in the north. Marin Nica uncovered kilns with one or two firing chambers at Cîrcea, while Kornelija Minichreiter interpreted one of the pits as a pottery firing pit at the Zadubravlje site. She suggested that the potters had a separate activity area within the settlement.[40] No pottery kilns have yet been found in Transdanubia; in view of the smoky patches on vessel surfaces and the relatively low temperature at which the pottery was fired, as well as the lack of features that could be interpreted as kilns, it seems likely that pottery was fired in pits at Pityerdonb.

The fact that most sherds had a sandwich core, with the exterior and interior of the vessel fired to a red colour, the core remaining black, too indicates a low firing temperature of no more than 550–650 °C.[41] The firing temperature of Early Neolithic pottery is generally put below 700 °C.[42]

A rather high proportion of the pottery was covered with a red slip, often carefully polished. The original proportion of this pottery type was higher since the acidic soil often destroyed the entire vessel surface. In many cases, we may assume not only the destruction of the red slip, but also of black painted patterns since the original red colour on the vessel interior and exterior was worn to such an extent that only the black core of the vessel survived. In addition to pottery categorised as fine ware, a red slip often covered the exterior (and sometimes the interior) of cooking pots and storage jars. The reason for coating these vessels with a slip was not simply aesthetic, but also practical: the slip applied onto vessels before firing, either by immersion in semiliquid clay or (in the case of larger pots) by splashing the vessel with this wash, hid the traces of smoothing after the vessel was built, the vessel surface became smoother and its porosity also decreased, meaning that it became more watertight.

Experimental firings have shown[43] that the colour of the slip depends both on firing temperature and the duration of firing. A brownish slip turns bright red after being fired for forty minutes at 800 °C. The iron contents of the clay usually enhance a reddish slip. The local clay with iron contents at Pityerdomb was especially well suited to creating a dark, occasionally mauve-red slip. Obviously, cultural traditions also played a role in the application of this dark

[39] *Yiouni 1996* 70.

[40] *Minichreiter 1992* fig. 2.

[41] *Minichreiter 1992.*

[42] *Yiouni 1996* 70; *J. L. Manson*: Starčevo pottery and neolithic development in the Central Balkans, in: W. Barnett – J. Hoopes (eds): The emergence of pottery. Washington 1995, 65–77.

[43] *Yiouni 2000; Yiouni 1996* 63.

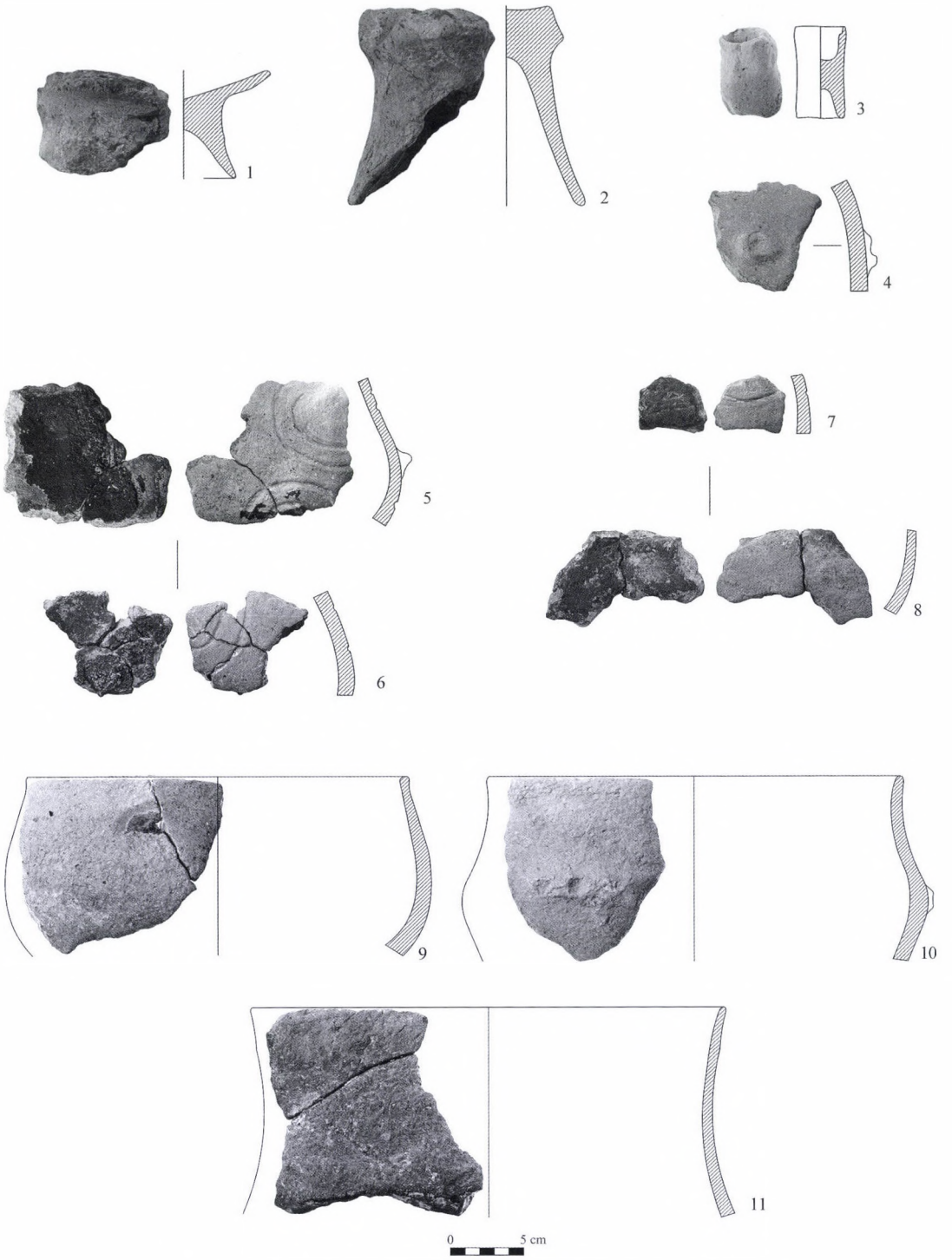

fig. 13. Szentgyörgyvölgy-Pityerdomb. Finds from Feature 11

red slip; the roots of this tradition can be sought in the Early Neolithic of South-East Europe. We cannot therefore claim that the presence of this red slip can be attributed to the properties of the locally available clay. The practice of polishing the slip can also be explained by the traditions of early Balkanic pottery manufacture, rather than with practical considerations.

The finds from House I

The long pits and their finds

The fill of the long, north–south oriented pits was generally made up of a 20 cm thick humus layer under the present surface, under which lay a uniform, strongly burnt ashy layer mixed

with strongly burnt charcoal, large red burnt daub fragments and a high number of finds. The finds were not concentrated in one particular part or depth of the long pits. The number of pottery fragments is noteworthy; some of them lay in a horizontal position on top of the greyish, granular hard layer.

Lying by the western side of House I, Feature 11 was one of the most remarkable pits of the settlement. The burnt daub fragments lay *in situ,* as they had fallen when the house was destroyed. One of the burnt wall fragments crushed a larger vessel. A greyish, granular, mixed layer containing many finds was uncovered at an average depth of 45 cm under the burnt debris. In addition to various vessels which could be assembled from their fragments, we also found a large burnt clay plaque, which we interpreted as the base of a large storage bin and a body fragment, which perhaps came from the same bin. Another thick clay plaque was not part of a vessel, but perhaps a baking platter. In addition to a number of chipped stone implements, one of the most important assemblages of the settlement came from this feature: lying at a depth of 50–55 cm we found a long river pebble in the burnt debris, its tip pointing to the north. The wear traces suggest that it had been used as a whetstone. Another flat, oval pebble lay beside it; this pebble also showed traces of wear. Beside the two pebbles stood an almost completely intact clay animal figurine, whose head faced north. The assemblage appears to have been consciously arranged in this manner. Under this assemblage we found the remains of a roughly 5 cm thick organic substance, probably the remains of a wooden plank covered with resin,[44] which could be clearly distinguished from the greyish, granular, hard layer. Another interesting feature of the fill was that it contained finds almost down to the subsoil, meaning that this pit had not been immediately filled up by the occupants, but had remained open for some time after the house had been built.

The pottery finds from the house include several carefully made pieces, such as the fragment of a dark red pedestalled vessel with a chalice shaped bowl, tempered with chaff and sand. The rather worn, red slipped surface had originally been polished (Feature 2: *fig.10*). Other vessel types are represented by the body sherds of large, thick-walled storage jars with large, horizontally placed lugs, three small, bright red cups decorated with knobs (Feature 8: *fig. 11*), the lower part of a pedestalled vessel and a slightly asymmetrical gourd shaped deep bowl. The latter was decorated with a "rain pattern" of incised vertical stabs. Some fragments came from biconical bowls with a concave upper part (Feature 9: *fig. 12*), one decorated with small knobs on the carination line. The finds also included vessel handles with a linear pattern (Feature 12: *fig. 15*). One unusual assemblage was made up of small clay feet, which had no doubt been part of vessels set on feet. Three of these perhaps came from the same vessel. One of these clay feet was decorated with black paint. The paint also covered the fracture surface and the side, suggesting that it had been re-used secondarily as a pintadera after it had broken off from the vessel. One remarkable find from Feature 16 was a fine, small bowl coated with a red slip polished to a bright lustre *(fig. 21)* and a similarly fine biconical bowl with the carination under the rim, decorated with a pattern of smoothed-in, curved lines.

Feature 11 was extremely rich in finds, yielding almost a thousand pottery fragments. A number of larger body sherds came from bowls: these included both curved and biconical forms, some decorated with a finger impressed rib on the carination *(figs 13–14),* rim and shoulder fragments of storage jars, fragments from low and high pedestalled bowls, as well as one of the typical find types from the settlement: a clay loom or net weight with an impression on its upper and lower end. Fragments of a vessel used for storing paint decorated with a spiral meander pattern and a body sherd with a hand shaped lug, similarly decorated with a spiral meander pattern, was found beside the several centimeters thick fragments of a large storage jar. The pit also yielded a carefully made, red suspension vessel. One of the most outstanding finds from the Pityerdomb settlement was also recovered from this pit: an almost intact animal figurine, whose red colored, carefully polished bodywas decorated with a meander pattern. Four other sherds outlined the profile of a vessel, which had originally contained resinous black paint, whose remains were smeared over the sherds. This finds is all the more noteworthy since

[44] The samples were analysed at the Hungarian State Geological Institute. I would here like to thank Károly Brezsnyánszky and Tibor Cserny for their determination of the sample.



fig. 14. Szentgyörgyvölgy-Pityerdomb. Finds from Feature 11

it perhaps indicated that the black painted spiral motifs of the Starčevo culture were still used to decorate pottery.

The two most remarkable finds, part of the assemblage described above, which can perhaps be interpreted as a cult assemblage, were the following:

Fragment of a vessel with hand shaped lug[45] *(fig. 14)*
The fragment measures 17.4 cm by 12.6 cm, its wall thickness is 0.7 under the rim, 1.4 cm under the fracture and slightly thicker under the hand shaped lug. Although the rim is missing, the estimated diameter of the mouth was ca. 24–26 cm. The vessel was tempered with chaff

[45] *E. Bánffy:* Emberkezes edény a vonaldíszes kultúra kialakulásának idejéből (Ein Gefäß mit Menschenhand-Darstellung aus der Entstehungsphase der Linienbandkeramik). ZalaiMúz 10 (2001) 45–52.

and sand and it has a sandwich core, being red on the exterior and black in the centre. The poorly levigated clay was fired at a rather high temperature; the mauve-reddish, porous vessel surface indicates firing in an oxidising atmosphere.

In view of its fabric, firing and wall thickness, this biconical vessel can be assigned to the category of household pottery, especially if compared to the abundance of polished, thin-walled pottery made from well levigated clay tempered with sand recovered from the Pityerdomb site. The decoration of this vessel nonetheless calls for caution, indicating that one cannot draw a distinction between household pottery and fine wares based on fabric and wall thickness alone. The indrawn upper part of the vessel is decorated with a deeply incised, 5.7 cm by 7.8 cm large spiral meander merging into another spiral meander motif, judging from the slightly circular fracture surface. A roughly 1 cm wide finger impressed rib was set on the carination line. The lug rising from this rib has a 3 cm by 4.3 cm large oval terminal decorated with four deep grooves. These grooves divide the rim into five parts, which probably symbolised the five fingers of the human hand.

Although the vessel with a human hand from Pityerdomb is by no means unique among the contemporary earliest LBK assemblages, or among the finds from the preceding South-East European Early Neolithic cultures, it is nonetheless a rare find.

Animal figurine[46] *(fig. 14)*

The figurine was found standing on its feet with its head facing north, corresponding to the orientation of the pit, as part of the cult assamblage, described above. It is 12.2 cm long, the width of the back is 4.45 cm. Its head is 6.40 cm high, the height of the back is slightly smaller, 5.35 cm. The figurine is almost intact, only the tips of the horn have broken off and a small part, no more than 1–1.5 cm, is missing from its legs, but this does not significantly change the figurine's proportions. It is regrettable that the horns are incomplete for this makes the determination of the animal species rather difficult.

The figurine was modelled from the red clay used for pottery making at Pityerdomb and it was tempered with chaff and sand. The surface is slightly worn, but even so, remains of the dark red, polished slip can be made out on the head, the chest and under the tail. It seems likely that the entire surface of the figurine had originally been covered with the dark red slip and then polished to a bright lustre. The worn surface and the smaller fractures on the figurine's protruding parts are all indications of its one-time use.

The animal body is rounded and robust, even considering the missing ends of the legs. The nose protrudes from the triangular face and a barely visible straight line marks the mouth. The eyes are indicated with triangular incisions, the eye sockets with finger impressions. The tiny incisions around the triangles perhaps symbolise the eyelashes.

The most conspicuous feature of the animal head is that the nose is pierced. This would suggest a domesticate. For the time being nothing more can be concluded from the fact that the animal's nose was pierced, especially as regards a period for which there is no conclusive evidence that draught animals had been used. Aside from the Pityerdomb figurine, I only know of one other Early Neolithic animal figurine with a visibly pierced nose: a coffee bean-eyed animal head from Magoula Mezil near Larissa, the fragment of a larger, hollow-bodied, bovid-like animal.[47] It seems likely that cattle were used as draught animals in the later, developed phase of the Neolithic.[48] It is possible that in addition to other archaeological evidence, these

[46] See also *E. Bánffy:* Eine Tierfigur aus der Entstehungsphase der Bandkeramik, in: *Prehistoric studies 2002* 205–219.

[47] *G. A. Papathanassopoulos (ed.):* Neolithic Cultures in Greece. Athens 1996, Cat. No. 257; *G. Toufexis:* Neolithic animal figures from Thessaly, in: J. C. Decourt – B. Hely – K. Gallis (eds): Thessalia – la Thessaly. Colloque international d'archéologie: 15 années de recherches (1975–1990). Athens 1994, 163–168; *G. Toufexis:* Zoomorphic Figurines, in: G. A. Papathanassopoulos (ed.): Neolithic Cultures in Greece. Athens 1996, 159–160.

[48] *S. Bökönyi:* Környezeti és kulturális hatások késő neolitikus Kárpát-medencei és balkáni lelőhelyek csontanyagán [Environmental and cultural impacts in the bone material from sites in the Carpathian Basin and in the Balkans]. Budapest 1988, 18, 47.

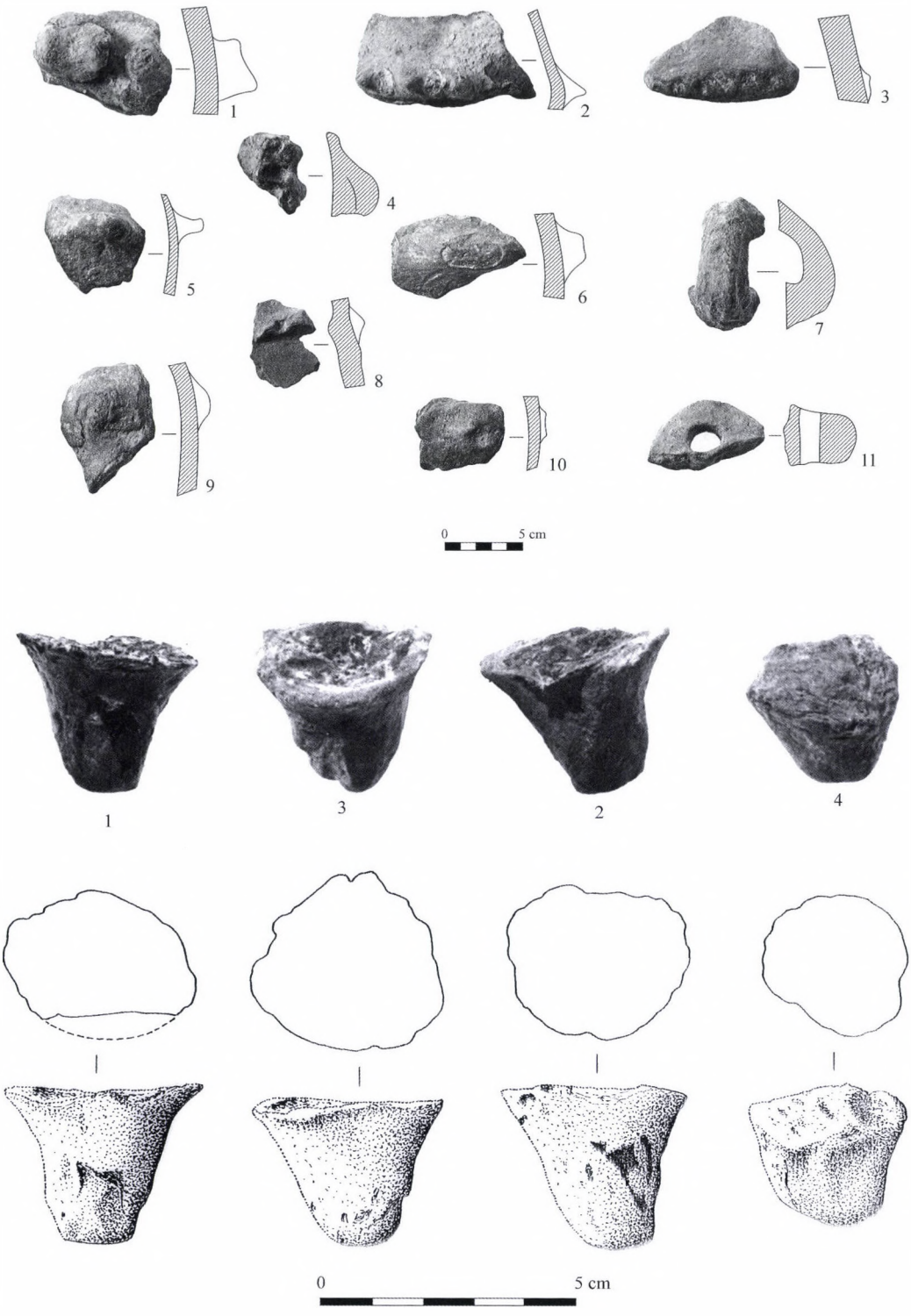

fig. 15. Szentgyörgyvölgy-Pityerdomb. Finds from Feature 12

animal figurines with pierced nose will also confirm the use of cattle as draught animals already in the Early Neolithic.

The lightly incised lines covering the figurine's body are especially noteworthy. One part of the belly is decorated with an angular pattern resembling a meander, while the other side has bundles of three zig-zag lines, one in the middle of the belly, the other near the neck.

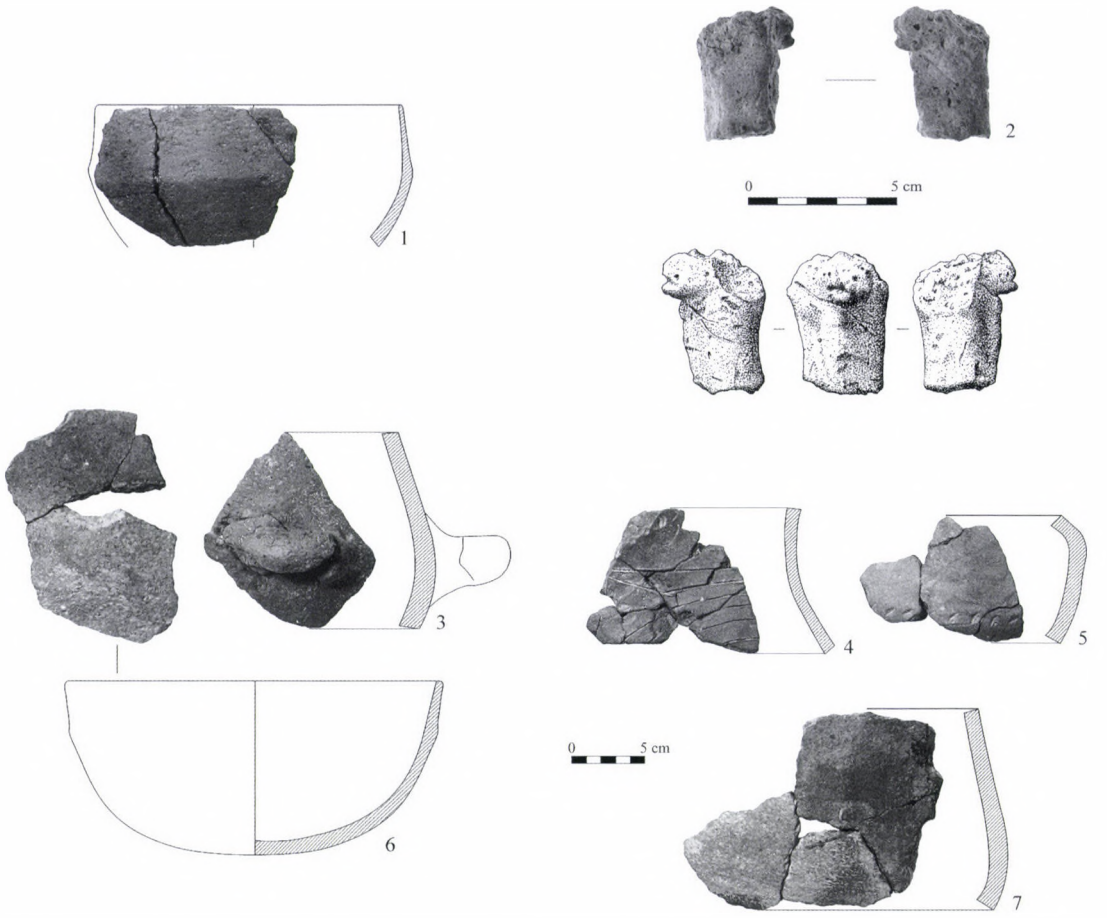

fig. 16. Szentgyörgyvölgy-Pityerdomb. Finds from Feature 3

Similar decoration can be quoted from the Körös culture,[49] and two recently investigated early Alföld LBK (Szatmár II) sites also yielded animal figurines with a human head decorated with asymmetric patterns.[50]

The two most obvious questions in the case of animal figurines is the determination of the species and the gender of the animal. After eliminating all other possibilities, we determined the species as cattle since none of the anatomical features contradicted this definition.[51]

In the light of the above it seems likely that the figurine depicts a bull, even though the features indicating gender are practically negligible. It is therefore also possible that the animal figurine represents an ox.

Figurines resembling the one from Pityerdomb were fairly rare in the Early and Middle Neolithic of Central and South-East Europe. Even so, several typological traits can be

[49] *P. Raczky:* A Körös-kultúra újabb figurális ábrázolásai a Közép-Tiszavidékről és történeti összefüggéseik (New figural representations of the Körös culture from the Middle Tisza region and their historical connections). SzMMÉ 1979–80 (1979–80) fig. 8. 1.

[50] Mezőkövesd-Szentistván-Mocsolyás: *N. Kalicz – J. Koós:* Eine Siedlung mit ältestneolithischen Hausresten und Gräbern in Nordostungarn, in: M. Lazić (ed.): Antidóron. Completis LXV annis Dragoslavo Srejović ab amicis collegis discipulis oblatum. Centre for Archaeological Research/ University of Belgrade, Faculty of Philosophy 17. Belgrade 1997, 125–135, fig. 5. 6–7. Although only one side of the animal figurines from Füzesabony-Gubakút can be seen on the published photos, some were covered with a similar incised pattern. *L. Domboróczki:* Füzesabony-Gubakút. Újkőkori falu a Kr. e. VI. évezredből – Neolithic Village from the 6th Millennium B.C., in: *Raczky – Kovács – Anders 1997* 19–25; *L. Domboróczki:* The excavation at Füzesabony-Gubakút. A preliminary report, in: R. Kertész – J. Makkay (eds): From the Mesolithic to the Neolithic. Proceedings of the International Archaeological Conference held in Szolnok 1996. Budapest 2001, fig. 9, and László Domboróczki's kind personal communication.

[51] I am grateful to László Bartosiewicz for his help.

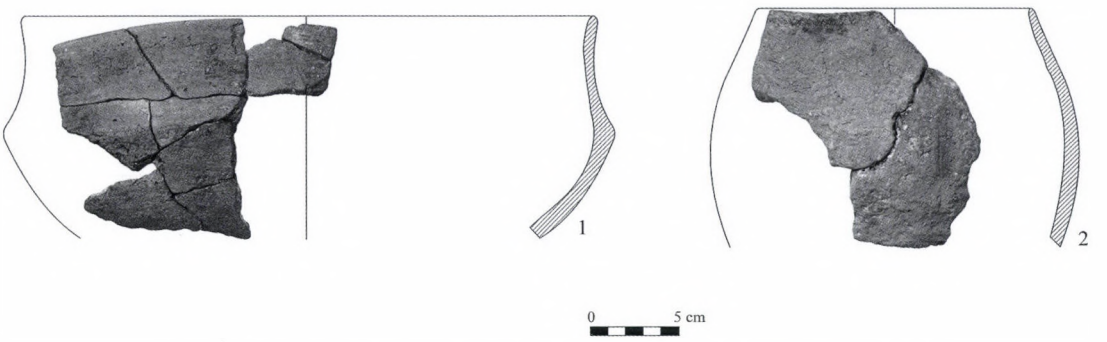

fig. 17. Szentgyörgyvölgy-Pityerdomb. Finds from Feature 4

distinguished, which allow a comparison with the zoomorphic figurines dating to roughly the same chronological horizon in other regions.

Even more important is the fact that this mode of depiction reflects the survival of Körös–Starčevo traditions in the figural art of both the LBK and the Vinča culture. In view of the overall nature of the pottery from the Pityerdomb settlement this is hardly surprising since the analysis of the ceramic assemblage indicated the dominance of Starčevo traits. Even though the Pityerdomb figurine does not have exact analogies, its stylistic traits can be fitted into the Balkanic and South-East European Neolithic figural art.

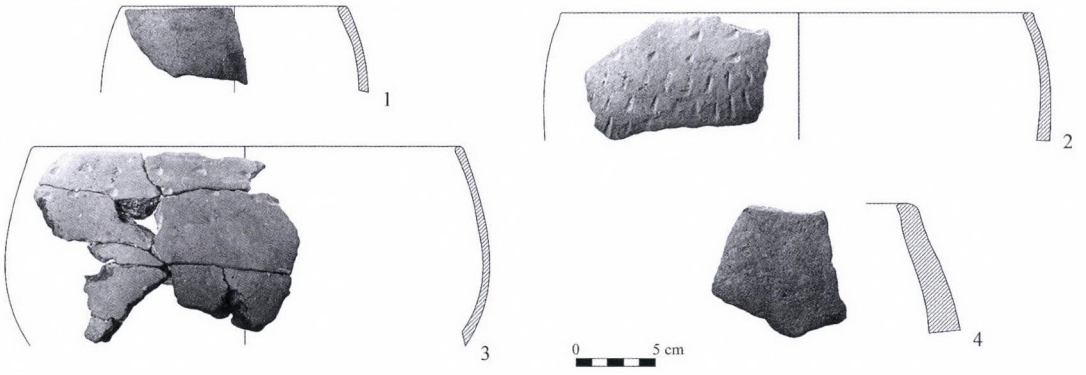

fig. 18. Szentgyörgyvölgy-Pityerdomb. Finds from Feature 14

Finds from the interior of the house (figs 16–19)

Features 3, 14 and 15 were shallow pits or depressions lying in the western part of Trench I, oriented to the north. The upper layer mixed with charcoal and large burnt daub fragments overlay a hard, greyish, granular layer at a depth of 50–55 cm, which was interpreted as an occupation surface on the basis of the horizontal position of the finds lying on it. Feature 4, a 65–69 cm deep pit, contained three round, deep intrusions reaching to a depth of 92 cm. These three intrusions may be interpreted as post-holes. Below this occupation surface was a layer devoid of any finds to a depth of 60 cm, although one spot in Feature 3 reached to a depth of 84 cm. The latter may also have been a post-hole, although it must in all fairness be noted that we did not observe other depressions, which could be interpreted as post-holes lying either crosswise *(Querjoch)* or parallel to the long wall of the house.

Noteworthy among the pottery finds are two fragments from a red polished, slightly biconical deep bowl tempered with sand and covered with a dark red slip (Feature 3: *fig. 16*) and the shoulder fragment of a thick-walled large vessel (Feature 3: *fig. 16*). Feature 3 also yielded a rather badly preserved human figurine fragment, on which the chin and the coiffure were indicated with incised lines (Feature 3: *fig. 16*). A fragment of a large carinated bowl has a rim diameter of 32 cm. It upper part is concave (Feature 4: *fig. 17*). Bowls with inturned rim alo occur, one of which was decorated with a row of finger impressions under the rim (Feature

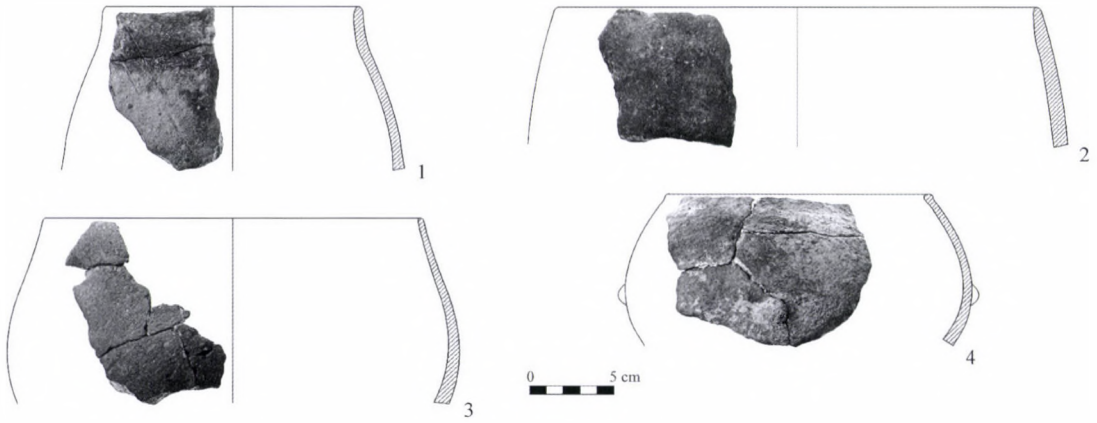

fig. 19. Szentgyörgyvölgy-Pityerdomb. Finds from Feature 15

14: *fig. 18*), another with rows of finger impressions and pinched ornaments (Feature 14: *fig. 18*). Noteworthy among the bowls with inturned rim was a black topped specimen; the black band under the rim was about 5 cm wide (Feature 15: *fig. 19*)

Figurine head

The human figurine came to light in Feature 3 *(fig. 16)*. The fragment did not lie on the occupation surface, but in the fill. It is a light yellowish-red, poorly fired, 4.2–4.5 cm high cylindrical object with a diameter of 2.7 cm and a roughly circular section, made from poorly levigated clay tempered with chaff. Imprints of larger cereal grains and chaff can be seen on the fracture surface.There is an oblique incision on the rather worn surface, probably marking the contour of the tilted-back head. Aside from this incision, probably symbolising the chin, the fragment has one other characteristic trait: the head is elongated above the face and a series of tiny clay globules can be made out on the rear side, perhaps an indication of the coiffure.

The finds from House II

The long pits and their finds

A series of long pits were excavated outside the eastern wall of House II (Features 29 and 27), one lay by the western wall (Feature 21), while the house's southern end was probably marked by Feature 22.

The notable finds from these features include fine bowls with a lustrous polish, ranging from curved and globular forms with inturned rim to biconical types (Feature 29: *fig. 25*). Large storage jars were decorated with finger impressed or pinched ribs, sometimes arranged into rows on the vessel body (Feature 29: *fig. 25*). Lug handles with one or more deep notches were also quite frequent (Feature 29: *fig. 25*). Over one thousand pottery sherds were recovered from Feature 29. Household pottery was represented by the body fragments of storage jars decorated with rows of finger impressions, knobs and delicate lines (compared to the size of these vessels). Thick-walled storage jars were often decorated with finger impressed ribs and finger impressed or notched knobs. Handles decorated with finger impressions or deeply incised lines probably also came from large storage jars.

The pottery finds from these longish pits include fragments from carefully made bowls and smaller vessels covered with a lustrous dark red slip both on the exterior and interior, biconical bowls (Feature 27: *fig. 24*) and the rim fragment of a globular bowl with inturned rim. Lightly incised lines running parallel to each other decorated fragments of less well preserved vessels. One noteworthy find was the fragment of a miniature pedestalled bowl, which can be assigned to the vessels made from finely levigated clay. Another is the rim and body fragment of a carinated bowl with concave upper part (Feature 21: *fig. 21*). Other fragments represented the handles of large storage jars, some of which were decorated with finger impressions. One body sherd came from a large, thick-walled, globular vessel, whose rather worn surface was

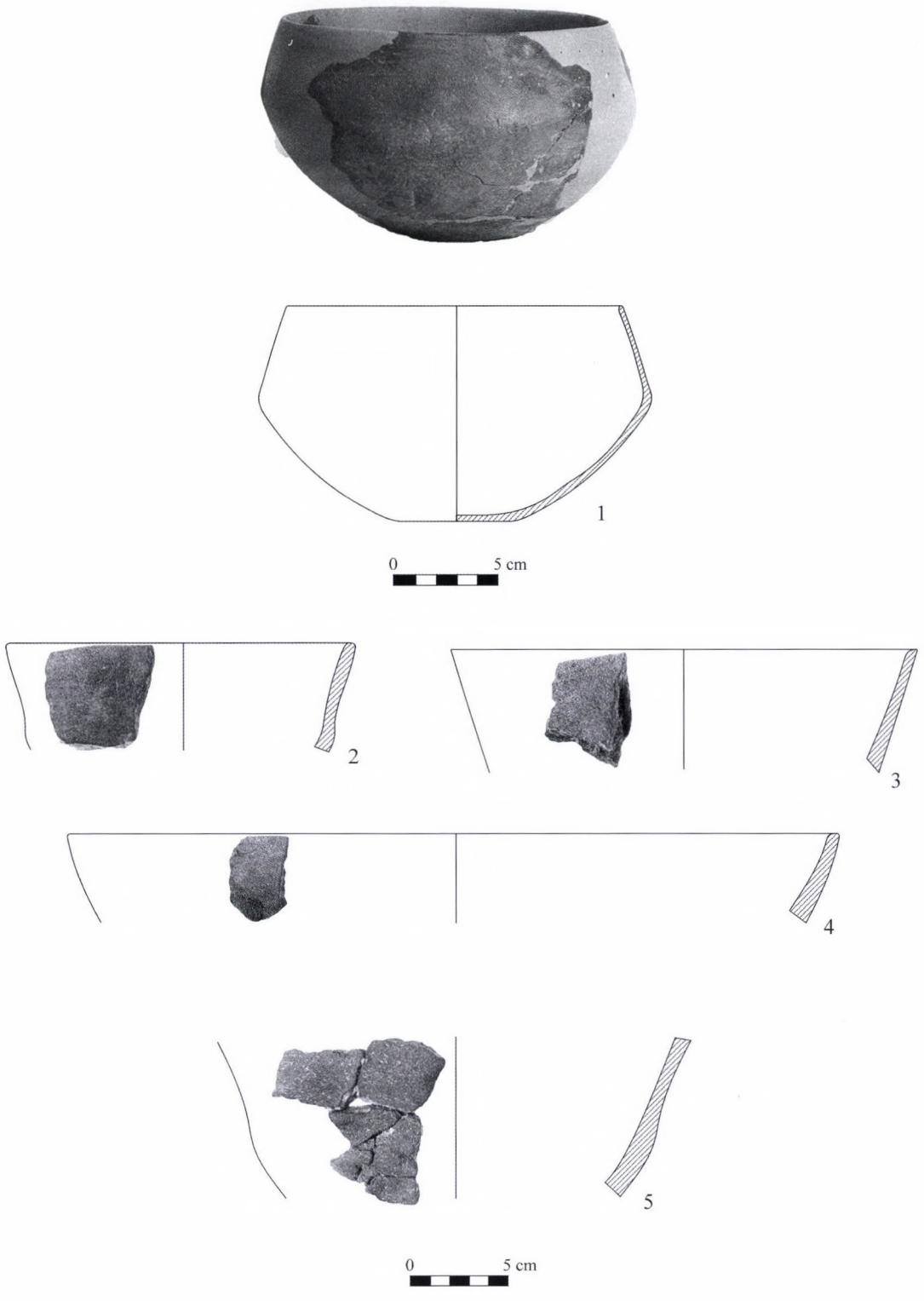

fig. 20. Szentgyörgyvölgy-Pityerdomb. Finds from Feature 16

decorated with a pattern of two spiral meanders (Feature 22: *fig. 22*). The finds included a rather worn biconical bowl covered with a dark red slip and a lustrous polish, which only survived in a few spots over the black core, and a thick-walled, deep, globular bowl decorated with a finger impressed knob and an oblique line of finger impressions, as well as the rim sherd of a black topped smaller storage jar or pot.

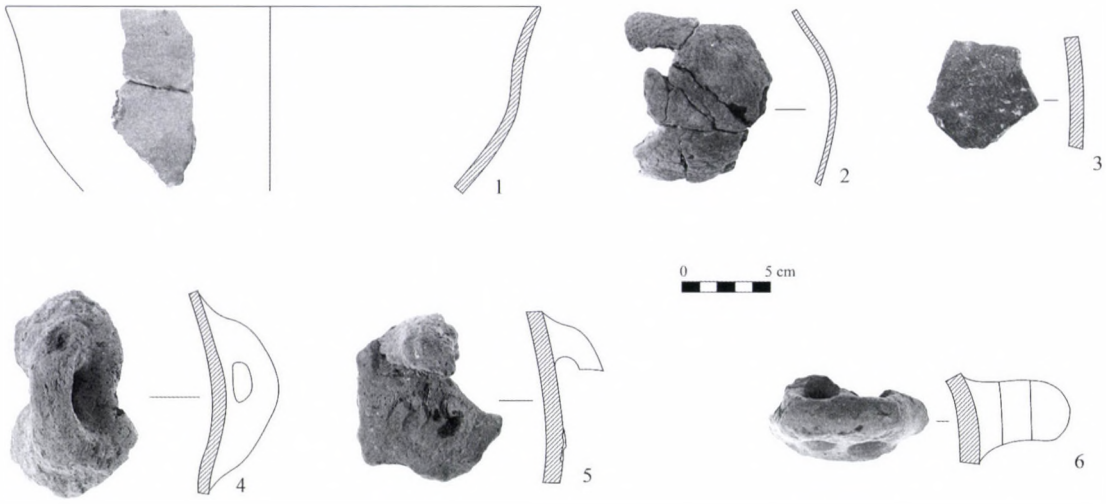

fig. 21. Szentgyörgyvölgy-Pityerdomb. Finds from Feature 21

Finds from the interior of the house

Features 19, 20 and 30–31 lay inside House II. Feature 19 was a north oriented, longish pit with two separate depressions in it and another round depression adjoining it in its south-western part. The wall of the latter could not be distinguished either during clearing, or in the sections made of the north oriented pit, this being the reason that we regarded it as part of the same pit and did not give it a separate feature number. The upper part was covered with large daub fragments burnt to a red colour. Underneath the daub fragments we found a greyish-white granular layer, which was hard-packed in some spots. Countless finds lay scattered on this layer, interpreted as an occupation surface; as a matter of fact, this pit yielded one of the richest find assemblages from the site. The deeper sections of the pit yielded an abundance of vessel fragments with traces of black paint. No such sherds were found in the upper 60–70 cm and it seems likely that the survival of this black paint can be attributed to the soil dampness. In many cases, the vessel wall "cast off" the black paint, which survived as an imprint in the soil under the sherd. In some cases this painting survived in a well discernible form and even some sort of circular pattern could be made out on one of these sherds. We photographed these fragments *in situ,* before they dried out since this was the only means of documenting the black paint on these pottery fragments.

A small, shallow feature covered with a rich assemblage of finds was the first indication of Feature 20. Its patch first appeared under the burnt debris. The thick debris layer merged with the burnt debris covering Feature 19 to its north and thus it only became obvious that this was a separate feature after the debris had been cleared. The burnt debris contained numerous large pottery sherds and vessels, which could be assembled from their fragments. Their position revealed that they had been crushed by the collapsing, burning walls. Lying beside the vessel fragment was a human foot shaped clay fragment, no doubt part of an anthropomorphic vessel standing on a human foot. The fill was made up of alternating red burnt and ashy patches, under which lay a burnt, porous baking plate bordered by 10–12 cm high and 8–10 cm thick porous clay walls. A strongly burnt, black layer was uncovered underneath this baking plate. This feature was interpreted as a hearth.

Feature 30 was a flat, slightly rectangular feature lying between Features 27 and 21. Its fill and the earth in it was burnt in many spots and it yielded countless pottery sherds and chipped stone implements. The greater part of the finds lay at this depth on a greyish, stamped level that can most likely be interpreted as an occupation level.

The pottery and the flint material found in these shallows depressions inside the house was extremely rich, especially the upper third of the fill. The pottery numbered over a thousand sherds, many of which could be joined, indicating that the everyday household articles had been

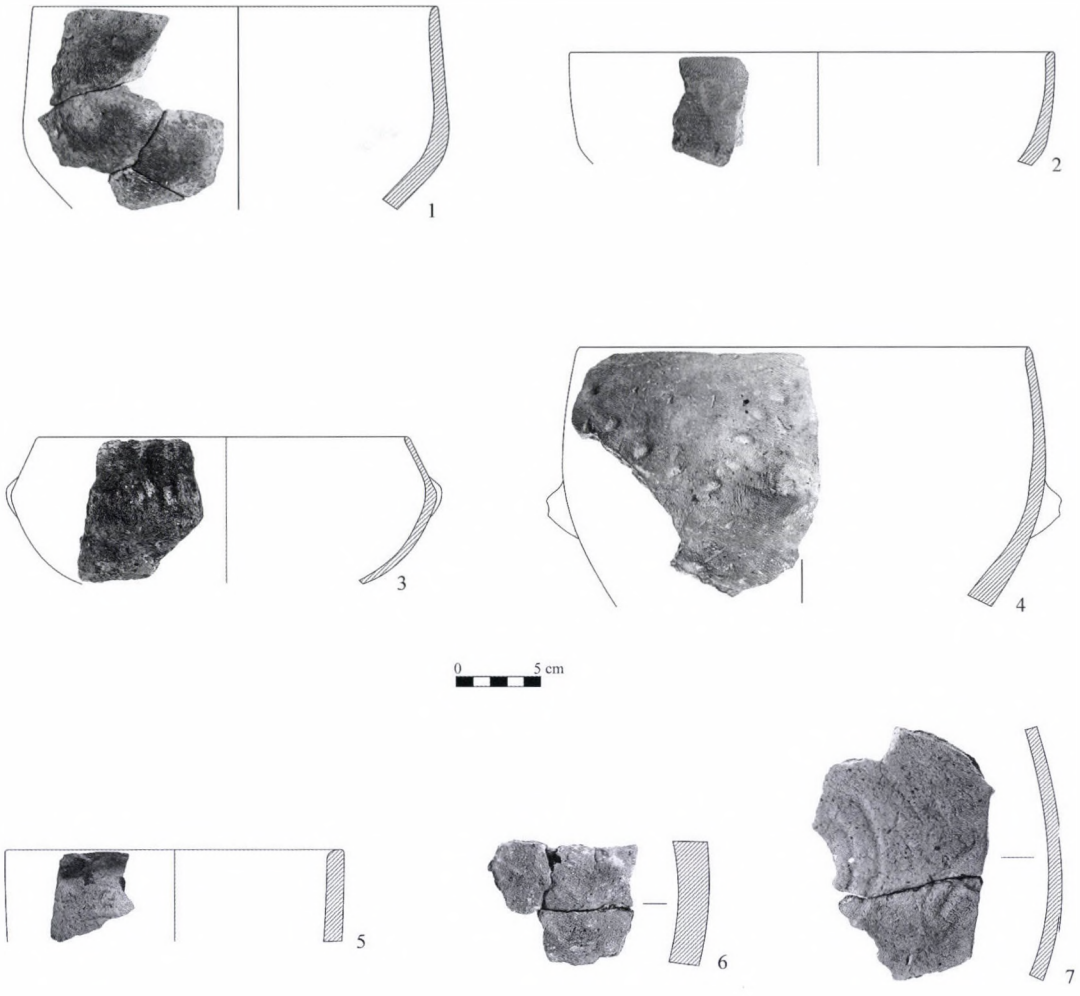

fig. 22. Szentgyörgyvölgy-Pityerdomb. Finds from Feature 22

destroyed by the fire and the collapsing roof and walls. The more noteworthy finds included a gourd shaped deep bowl decorated with a finger impressed knob on its lower part (Feature 19: *fig. 26*), the upper part of a deep bowl, a bowl with inturned rim and the rim sherd of a biconical bowl. Base fragments were represented by the fragment of a rounded vessel decorated with an irregular linear pattern, the fragment of a storage jar and a badly preserved, but almost intact small cup. The lower third of this feature (interpreted as a post-hole) yielded a low, curved pedestal that survived in an extremely bad state of preservation: only the black core survived of the vessel body, which had originally been fired to a red colour. Although the burnt debris covering Features 19 and 20 was continuous, considerably fewer finds were recovered from this part. Outstanding among the pottery finds was a biconical bowl, which could be assembled from its fragments. It carination ran some 5 cm under the rim (Feature 20: *fig. 27*). The fragments of two pedestalled vessels were also found among the debris of the hearth: one was a pedestal fragment with a flat base, the other came from a pedestalled globular bowl covered with a dark red slip polished to a bright lustre. One of the most interesting finds from this feature was a vessel foot modelled on a human left foot, decorated with a deeply incised line along the rear part. The pit was especially rich in pottery finds: over two thousand sherds were recovered from its fill. The vessel fragments included a black topped vessel, a pot or smaller storage jar with outturned rim. Storage jars were ornamented in a variety of ways, ranging from divided knobs and ribs with pinched decoration to pinched decoration arranged into a row. Some body fragments were ornamented with both finger impressions and pinched decoration, others still had the finger impressed handle attached to them. Two low pedestals resembled ring bases.

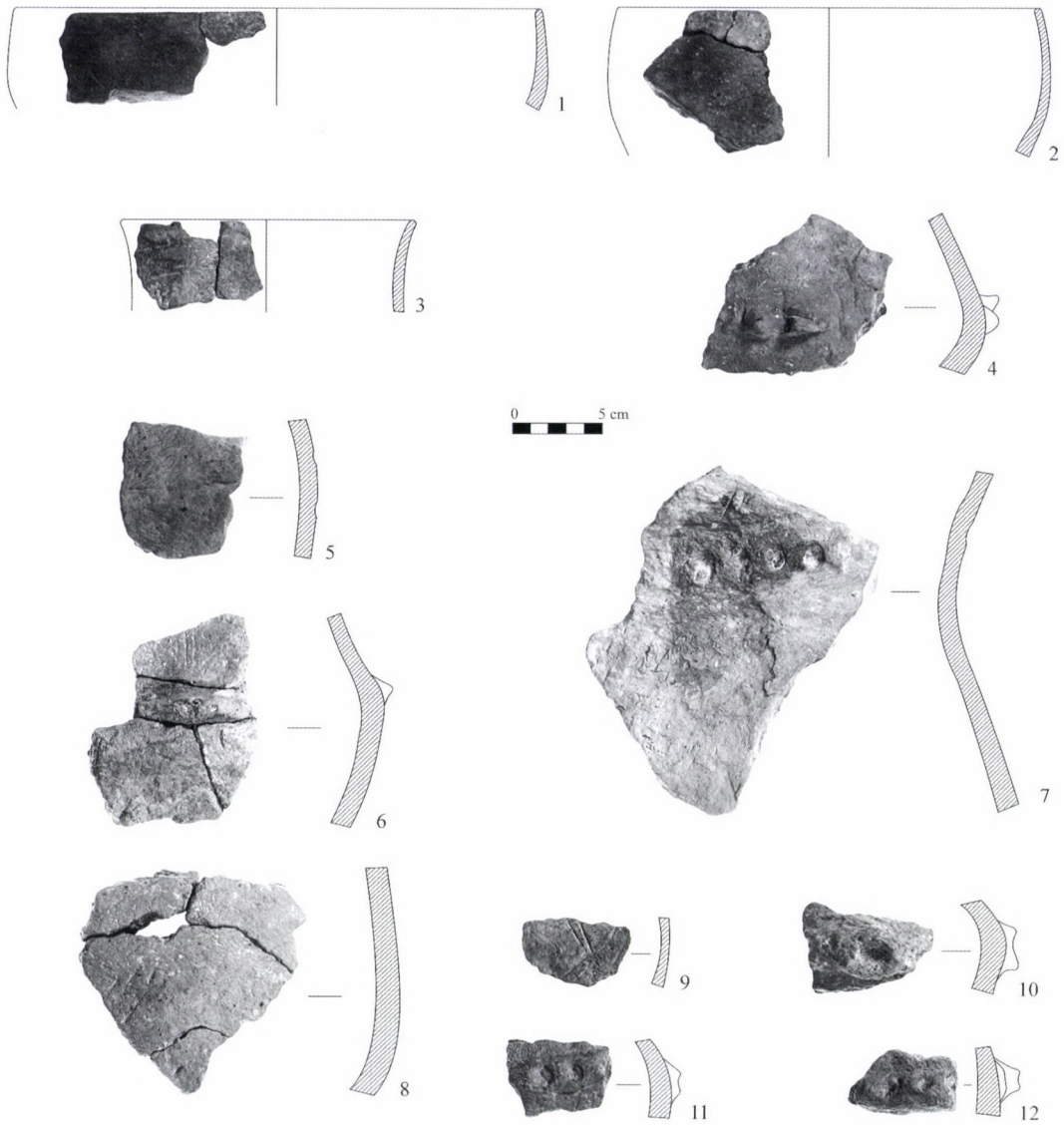

fig. 23. Szentgyörgyvölgy-Pityerdomb. Finds from Feature 27

A few sherds were ornamented with linear patterns. One had a wavy line, another bore two deeply incised, vertical, parallel lines under the handle, a third was decorated with zig-zag lines, while others with a pattern of triangles or a design divided into panels.

One of the more uncommon finds from this pit was a spout from a fairly large vessel (Feature 30: *fig. 29*). Spouted vessels are rather rare in the Early Neolithic of the Carpathian Basin. Two such vessels are known from Starčevo contexts: one was found at Vinkovci-Marketplace, the other at Lánycsók.[52] Spouted vessels are unknown from the entire Transdanubian LBK sequence; the few known specimens from the Great Hungarian Plain date to the Szatmár II period.[53]

The more notable finds among the numerous fragments from storage jars and pots included the rim and body sherd of a pot with inturned rim and a squat, vertical handle (Feature 31: *fig. 30*). Another thick-walled storage jar was decorated with several finger impressed ribs. Linear ornamentation is represented by three sherds bearing rather shakily incised lines.

[52] *Dimitrijević 1974* fig. 18. 12; *Kalicz 1990* fig. 12. 2.

[53] *Raczky – Kovács – Anders 1997* fig. 163. 44, showing a miniature spouted vessel.

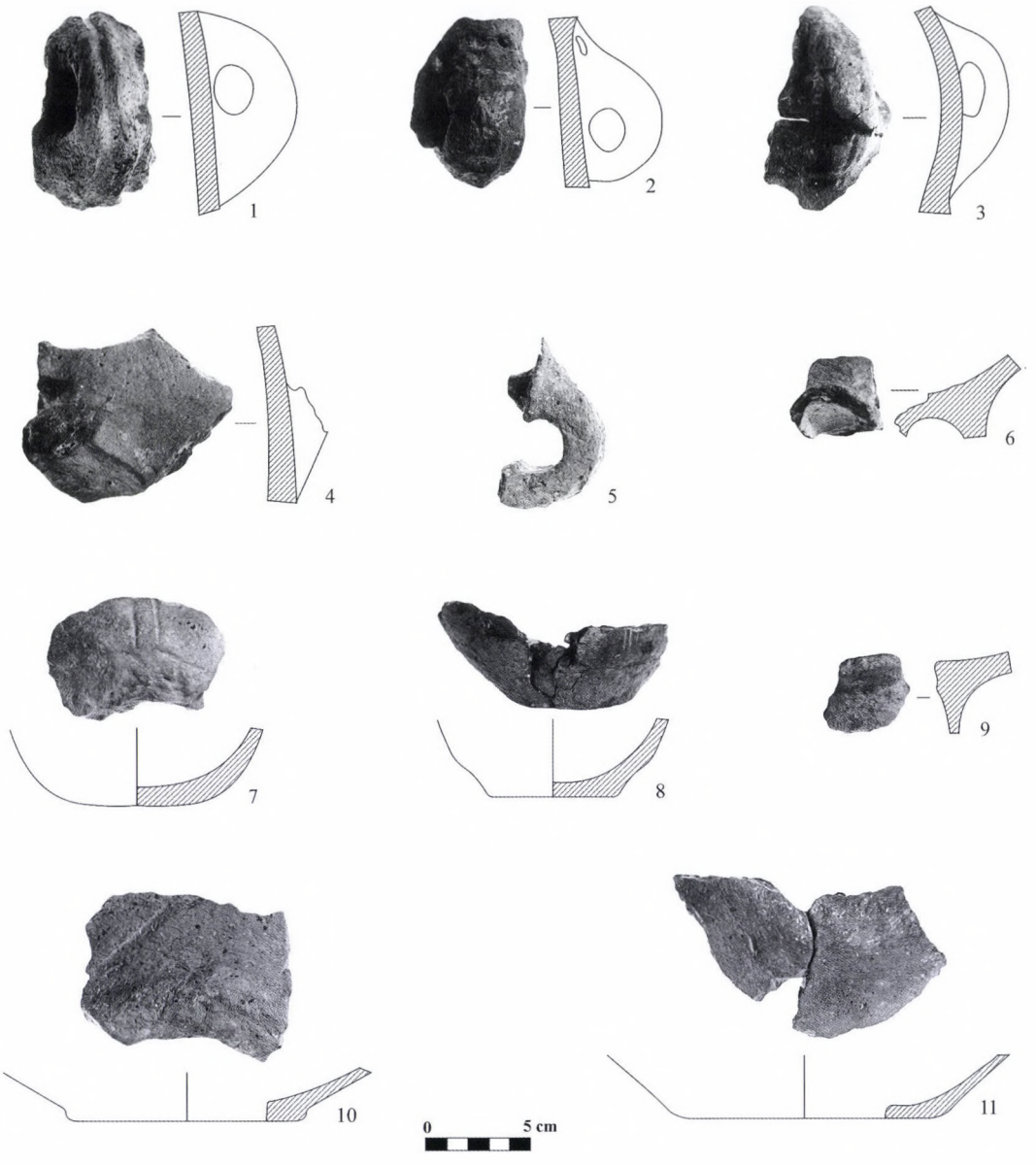

fig. 24. Szentgyörgyvölgy-Pityerdomb. Finds from Feature 27

A wide variety of base fragments were also recovered from the pit. These are dominated by strongly profiled forms, although straight cut bases also occur, together with more rounded forms.

Two other finds can also be assigned to the category of more unusual clay objects. Both were carefully modelled from finely levigated clay and had a polished surface. One is the fragment of a downward curving, round object, perhaps a vessel lid (Feature 30: *fig. 29. 10*). The function of the other remains elusive: it probably comes from a round object, whose convex surface had a perforation with a diameter of 4–5 cm in the centre (Feature 30: *fig. 29. 12*). It is possible that this was not used in day to day life, but in the lack of analogous finds it cannot be interpreted as an altar.

Two finds from House II can perhaps be interpreted as cult finds.

Human foot representation (fig. 27)

The 7.1 cm high fragment modelled on a human foot lay on the debris covering Feature 20, the hearth of House II. It probably fell there together with other pottery and burnt daub fragments when the house perished and its roof and walls collapsed. The findspot therefore reveals little

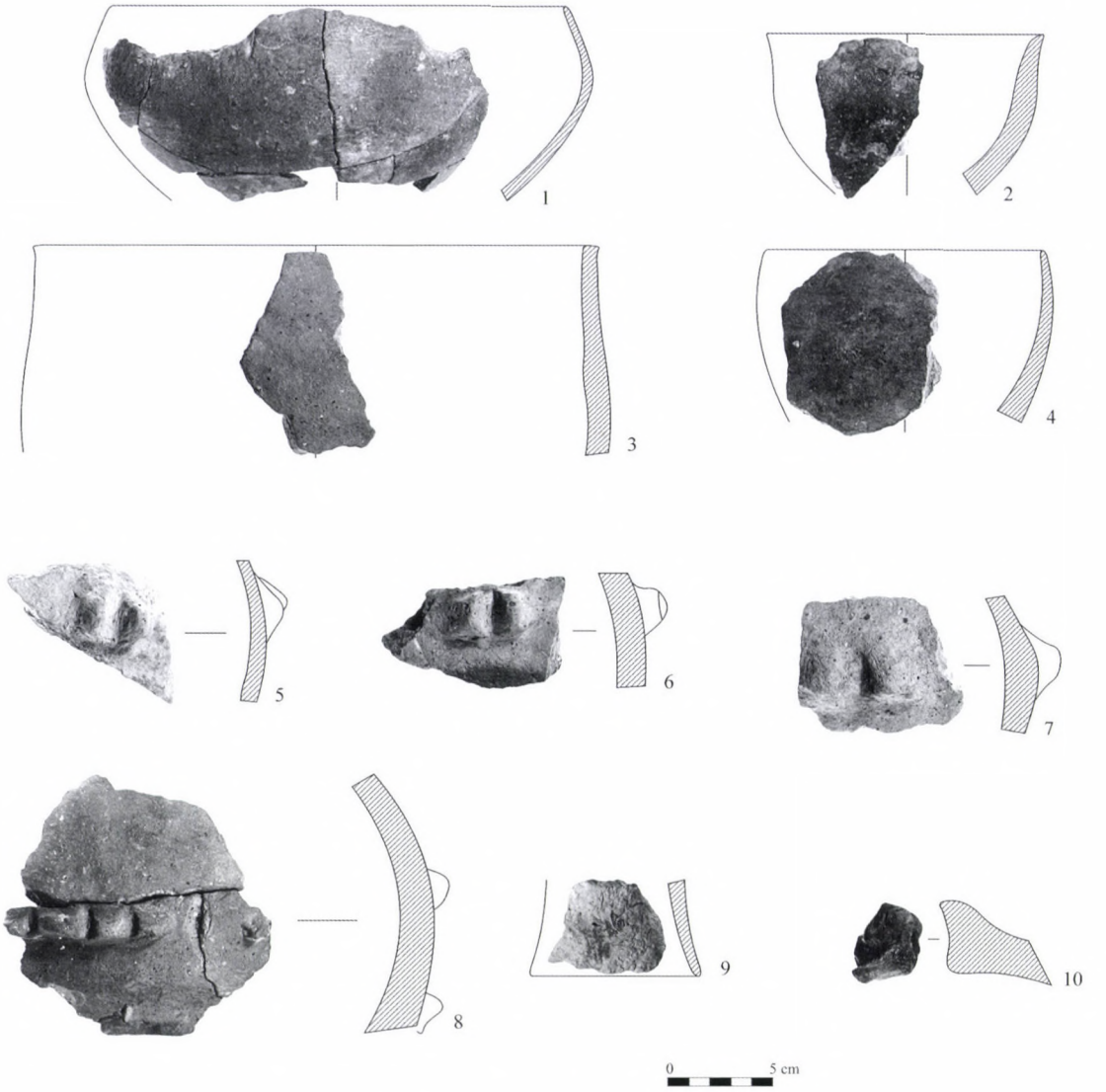

fig. 25. Szentgyörgyvölgy-Pityerdomb. Finds from Feature 29

about its original use. We did not find the other foot or any fragments from the same object (a human figurine or an anthropomorphic vessel).

The well-fired, blackish-red clay foot was made from finely levigated clay tempered with chaff, sand and crushed pottery. Its curve reveals that it was a left foot, indicated also by the fact that it was decorated on the back part and on the exterior. It is ornamented with a straight line at the heel and with a deeply incised curved line on the outer side. The toes were not depicted. The sole is flat, meaning that the object to which it belonged stood firmly on the ground.

Although it is quite possible that the fragment came from a solid figurine, its proportions also allow another reconstruction. It is my belief that the rather massive and stable foot comes from the lower part of an anthropomorphic vessel.

Altar fragment

A fragment, which can be interpreted as an altar fragment, is a rather problematic piece. The fragment recovered from Feature 30 comes from a well-fired, reddish and greyish-brown clay object of unknown form and function made from poorly levigated clay tempered with chaff and sand (Feature 30: *fig. 29, 12*). Its side is curved and it has a hole with a diameter of 5–6 cm in its centre, allowing the reconstruction of a curved, convex clay object with a diameter of

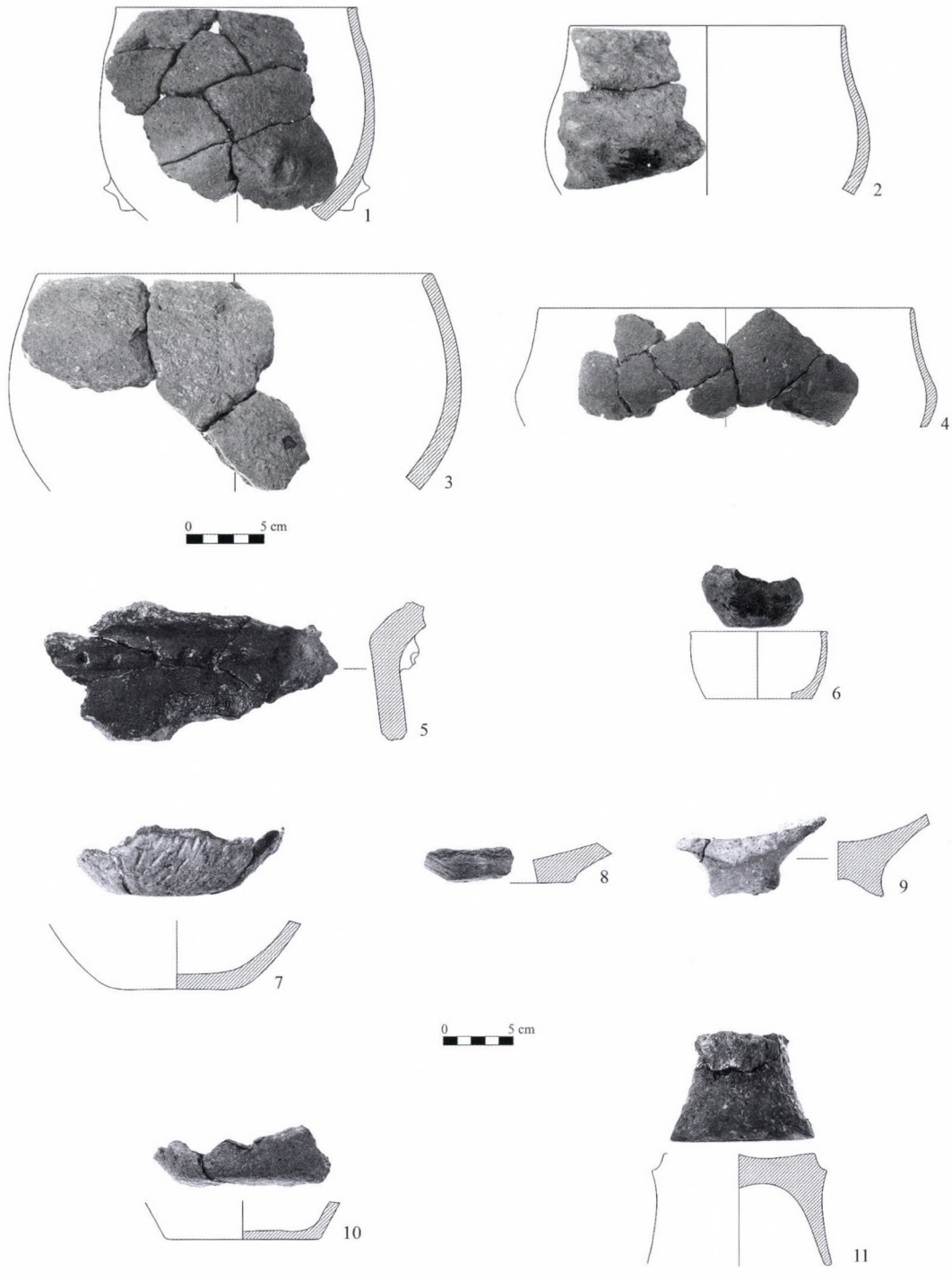

fig. 26. Szentgyörgyvölgy-Pityerdomb. Finds from Feature 19

roughly 25 cm and a cylindrical hole in its centre. It is exactly the presence of this hole or perforation, which precludes an interpretation as a vessel or a lid. One characteristic feature of the rectangular and triangular altars modelled on realistic or mythical creatures is the round depression or hole on their top. A discussion of the possible function of this hole has been recently published.[54]

[54] *E. Bánffy:* Cult Objects of the Lengyel Culture. Connections and Interpretation. Budapest 1997, Chapters 4 and 5. See also *H. Simon 1996.*

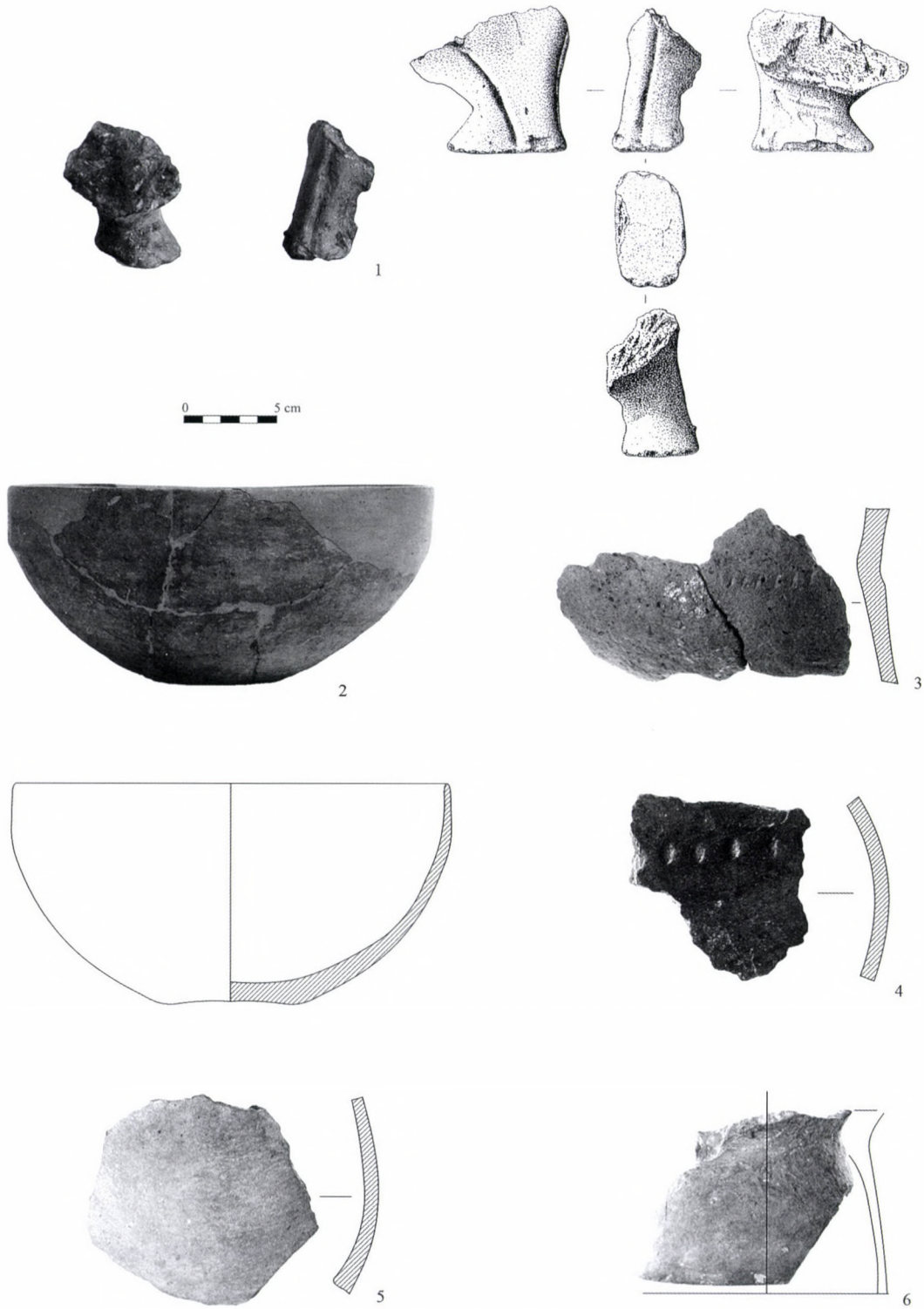

fig. 27. Szentgyörgyvölgy-Pityerdomb. Finds from Feature 20

In spite of their fragmentary condition allowing few far-reaching conclusions, the altar fragment from Pityerdomb can be regarded as cult objects reflecting Starčevo, rather than LBK traditions.

Finds from the area outside the house

A few features were uncovered south and south-west of House II, each of which probably had a different function.

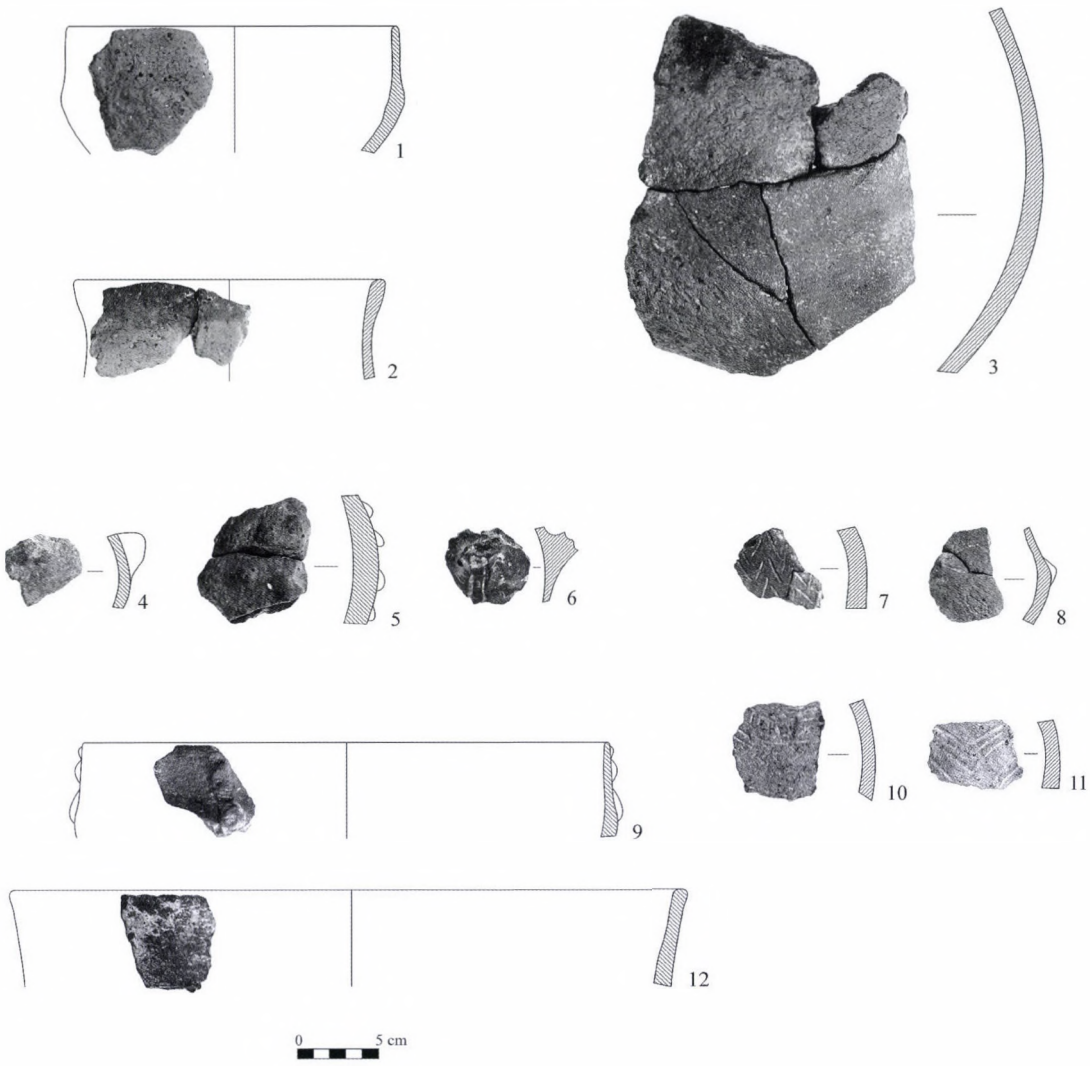

fig. 28. Szentgyörgyvölgy-Pityerdomb. Finds from Feature 30

Features 13 and 24 were long pits lying south of the entrance. It has been shown above that the possible presence of a third house can be excluded. These pits were probably part of a fence in the yard. Feature 17, a round, shallow pit, also lay in the yard. Its deepest point lay at a depth of 53 cm. The small, deep holes in its upper part perhaps held the feet of a stand or a bench. The rather uniform fill contained an abundance of charcoal, countless stone implements and a conspicuously high number of 1–2 mm large flint chips, suggesting that the pit can be interpreted as a workpit or a workshop.

The last feature, lying west of House II, may perhaps be interpreted as a fireplace. Feature 18 is a north oriented, strongly burnt, small pit. One side was strongly burnt with a more a less circular baking plate, the other had an ashy fill that was also strongly burnt.

The finds from these features support the interpretation of their suggested function. Feature 13 yielded the rim fragment of a black topped large storage jar with finger impressed decoration along the rim (Feature 13: *fig. 31*), as well as the fragments of globular storage jars with large, horizontally set handles. A few pottery sherds came from large bowls with concave upper part (Feature 24: *fig. 32*), others represented carinated variants.

The finds from the workshop were dominated by stone implements and the debitage of stone tool manufacture. The fill contained an abundance of charcoal. The pottery finds included a few carefully made, fine fragments coated with a dark red slip with polished exterior and interior. More noteworthy finds include the fragment of a large biconical bowl with concave

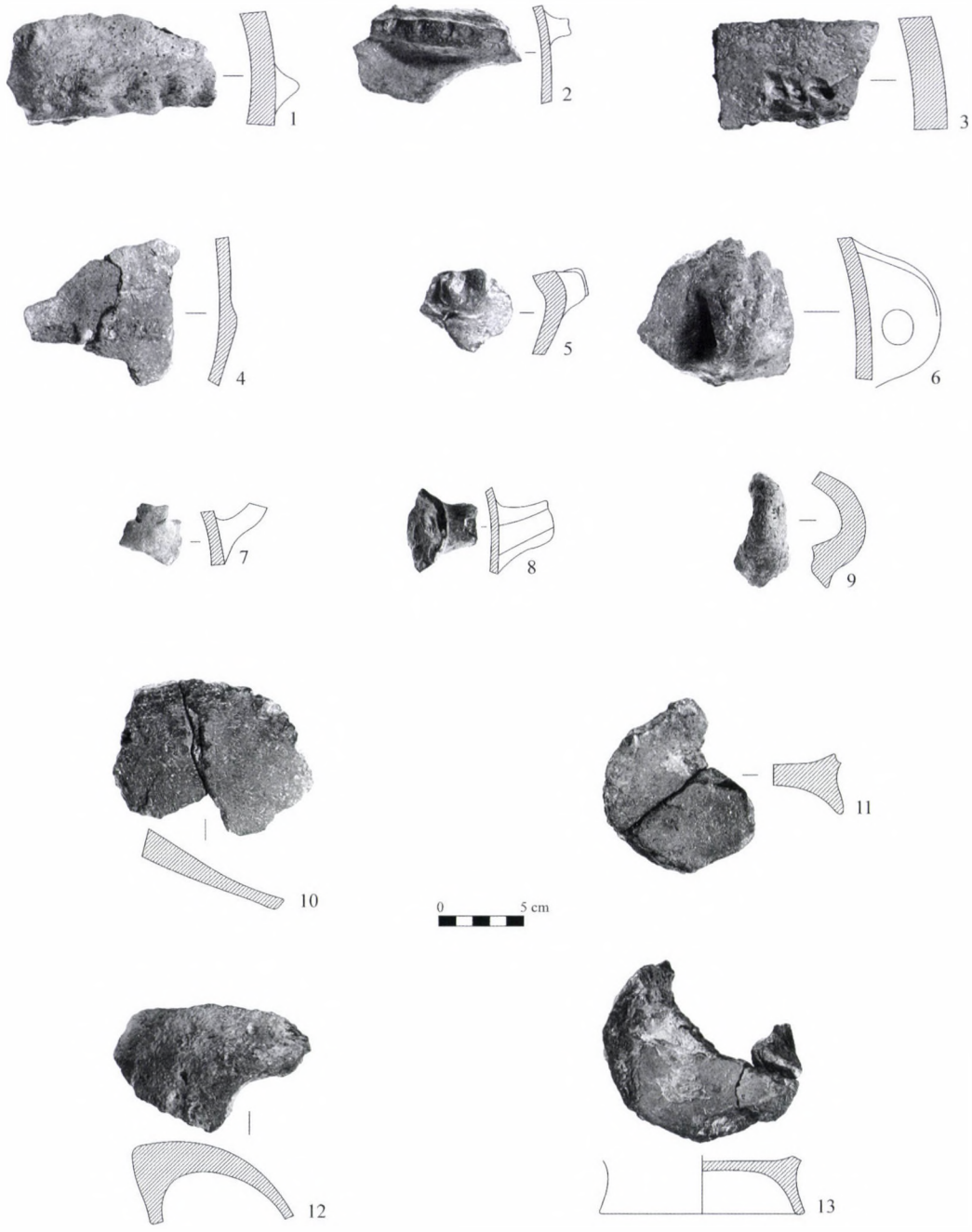

fig. 29. Szentgyörgyvölgy-Pityerdomb. Finds from Feature 30

upper part (Feature 17: *fig. 33*), a small cup with a similar profile, the body sherd of a biconical cup with a lustrous polish, and the fragment of a pot or smaller storage jar with outturned rim, decorated with a finger impressed rib on the shoulder and an incised spiral meander pattern. Feature 18, a small fireplace, yielded some two hundred pottery sherds, including the fragments of a bowl with a rounded carination (Feature 18: *fig. 33*), the rim fragment of a fine bowl with inturned rim polished both on its exterior and interior and a rounded cup whose wall thickened towards the base.

Afterword

This short report is restricted to the description of the settlement features, the two buildings and their architectural details, as well as the pottery and the cult finds from the Pityerdomb

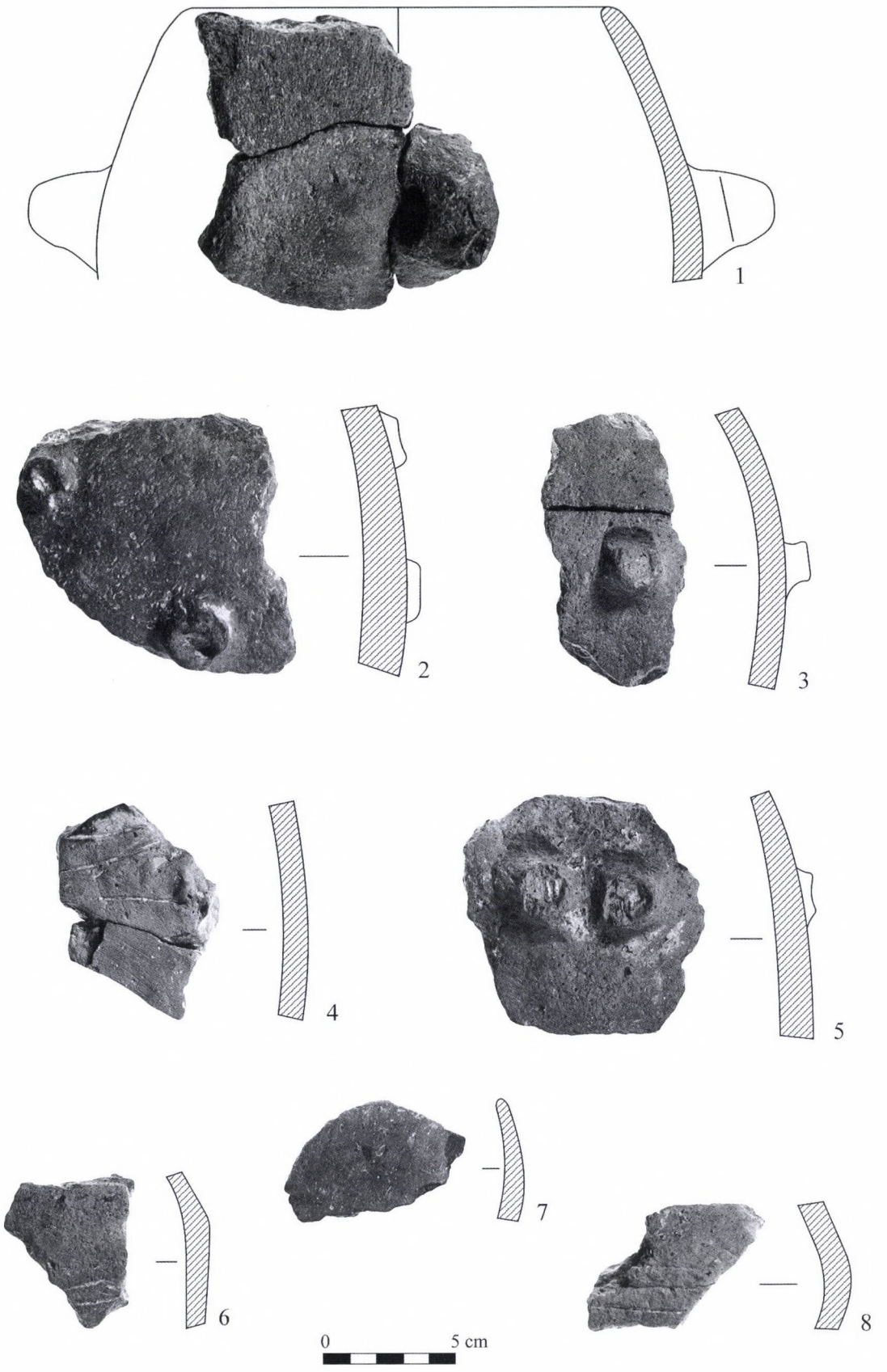

fig. 30. Szentgyörgyvölgy-Pityerdomb. Finds from Feature 31

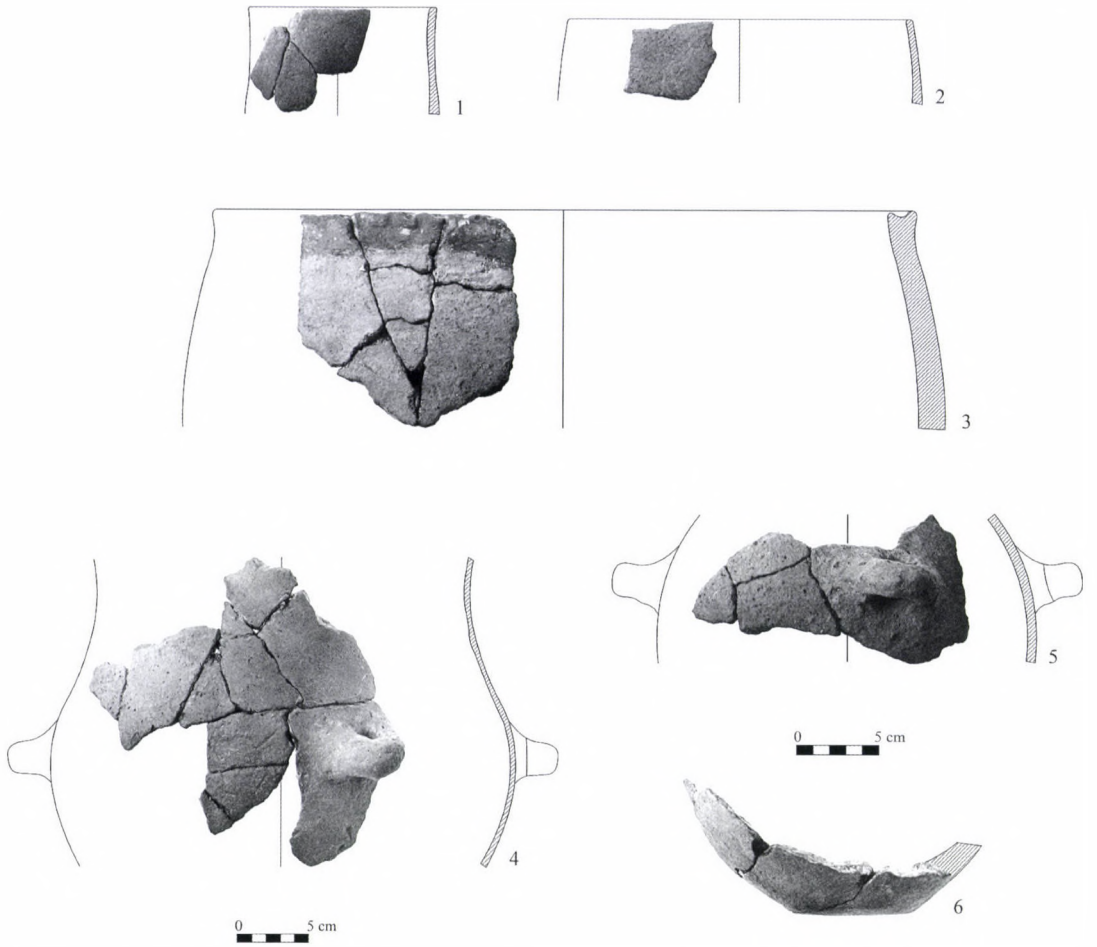

fig. 31. Szentgyörgyvölgy-Pityerdomb. Finds from Feature 13

settlement. Together with the study on the palaeoenvrionmental research conducted in the Kerka Valley, the next three studies in this volume underline the importance of the information, which can be gained from the lithic finds and the macrobotanical remains. This chapter was intended to provide a useful introduction to these analyses. These studies and the monographic publication of the Szentgyörgyvölgy site will hopefully contribute to a better understanding of the Neolithic transition and the Early Neolithic in western Transdanubia.

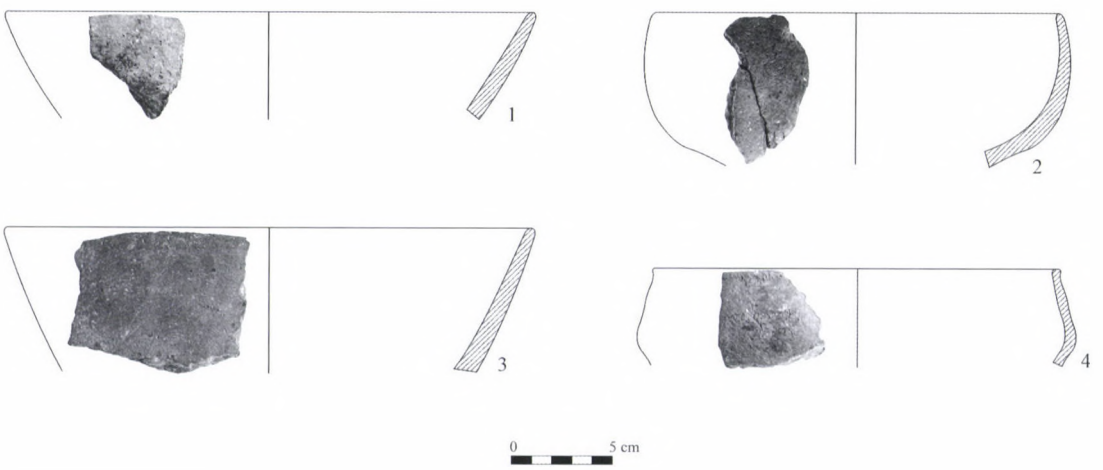

fig. 32. Szentgyörgyvölgy-Pityerdomb. Finds from Feature 24

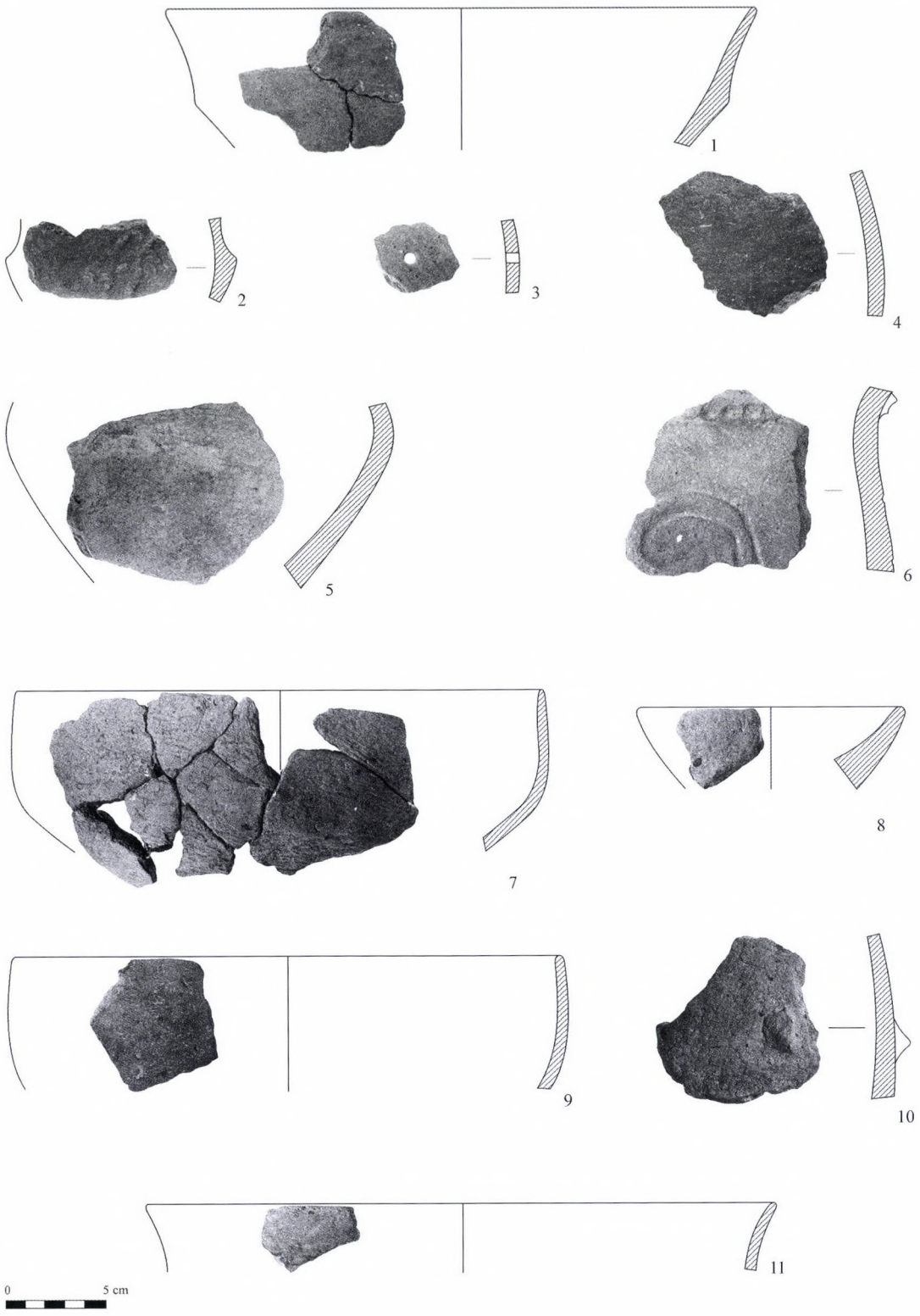

fig. 33. Szentgyörgyvölgy-Pityerdomb.1–6. Finds from Feature 17;
7–11. Finds from Feature 18

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Katalin T. Biró

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THE LITHIC FINDS FROM SZENTGYÖRGYVÖLGY-PITYERDOMB

Szentgyörgyvölgy-Pityerdomb became one of the key sites for the study of neolithisation in Transdanubia, following the site's excavation and the evaluation of its finds by Eszter Bánffy and a team of interdisciplinary research specialists.[1]

The relatively large lithic inventory from the site (a total of 710 stone tools were found over a surface of ca. 1000 m^2) is an especially valuable category of finds. Knowing that the Szentgyörgyvölgy-Pityerdomb site is one of the earliest settlements in the region, whose pottery and other finds have much in common with the Early Neolithic Starčevo culture and foreshadow numerous traits of the *Linearbandkeramik* culture (LBK), which played a decisive role in the emergence of the Neolithic cultures of Central Europe, it is especially important to study the lithic material in detail, especially the chipped stone industry.

Chipped stone industries are fairly conservative, changing at a relatively slow pace; they represent the most important element of continuity between the archaeologically yet "invisible", but genetically certainly existing local population in the Carpathian Basin and the relatively populous Neolithic farming communities.[2]

Catalogue of lithic finds

All too often, the lithic finds are identified in the inventory practice only in bulk (one box, same features etc.). While this labelling is sufficient for identifying provenance in the context of the site (different pits, levels etc.), petroarchaeological provenancing requires a piece-by-piece identification. The description of individual pieces therefore includes a four-digit number (given in brackets) in addition to the inventory number given by Eszter Bánffy, which is the author's personal ID number, enabling the secure identification of each piece, and eliminating possible mistakes, differences in opinion etc. The dates, where available, correspond to the day of excavation and can be used to check intra-site topography.

Type and raw material codes are given in **bold,** and resolved in full text. The "weight" values were not actually measured, but calculated by maximal tangential volume, a practice which will reflect actual quantities better than simple occurrence by pieces.

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[1] *E. Bánffy:* The 6th Millennium BC Boundary in Western Transdanubia and its Role in the Central European Neolithic Transition (The Szentgyörgyvölgy-Pityerdomb settlement).VAH 15. Budapest 2004.

[2] Early Neolithic lithic assemblages have been studied mainly as a result of archaeological activities during the past few years: *E. Bácskay – K. Simán:* Some remarks on chipped stone industries of the earliest Neolithic populations in present Hungary. Archaeologia Interregionalis 240. Warsaw – Cracow 1987, 107–130; *K. T. Biró:* The problem of continuity in the prehistoric utilization of raw materials. Antaeus 19–20 (1990–1991) 41–50, 335–339; *K. T. Biró:* Mencshely-Murvagödrök kőanyaga (Steinartefakte aus neuen Grabungen von Mencshely). TapolcaVMK 2 (1991) [1992] 51–72; *Biró 2001; Biró – Simon 2003; E. Starnini:* Typological and technological analyses of the Körös culture chipped, polished and ground stone assemblages of Méhtelek-Nádasd (North-Eastern Hungary), in: Atti della Societá per la Preistoria e Protostoria della regione Friuli Venezia Giulia. Trieste 1993, 29–96.

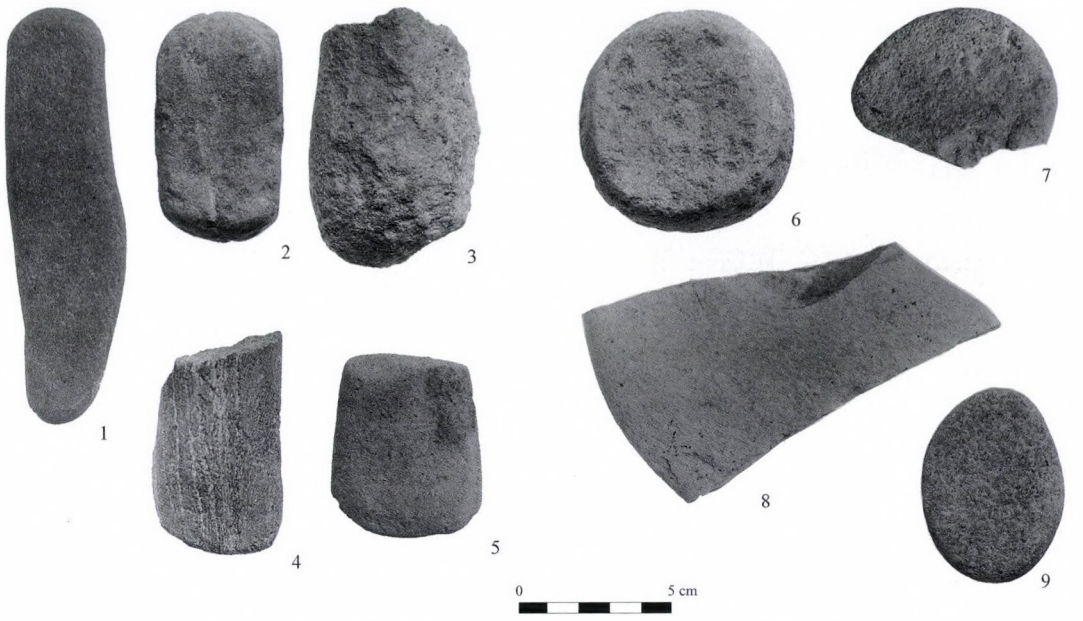

fig. 1. Lithic implements from Szentgyörgyvölgy

1. (0595) ret. retoucher with traces of use on the edges; 2. (0379) üt. hammerstone pestle-form, longish pebble, used on both ends; 3. (0598) őrl9 fragment of grinding stone, with narrowing end; 4. (0026) P9 fragment of polished stone tool bulky chisel; 5. (0169) P polished stone tool, small, bulky asymmetrical chisel-blade; 6. (0593) dör. grinding stone, with biconically rounded disc-shape form; 7. (0592) kav9 pebble fragment with traces of ochre, flat; 8. (0590) csi9 fragment of polisher: flat, worn oval grinder or polisher; 9. (0601) kav. pebble, flat polisher

Inventoried pieces
Abbreviations: Trench = T, Feature = F

93.94–95. (0021) T. I. F. 2. –60–65 cm, **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 16 × 4 × 3 mm 0.19 'g'

93.94–95. (0022) T. I. F. 2. –60–65 cm, **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, with porcelanite phase 10 %, 7 × 6 × 1 mm 0.04 'g'

93.94–95. (0085) Middle of T. I. F. 2. –45 cm, **D5** truncated blade **9** Transdanubian radiolarite – Szentgál type, 31× 12 × 4 mm 1.49 'g' (*Biró 2001* fig. 2. 22)

93.94–95. (0086 1–3) Middle of T. I. F. 2. –45 cm, **B4** chip (glued) **15** Transdanubian radiolarite, others with porcelanite phase, probably belonging to Szentgál type radiolarite 100 %, 20 × 16 × 3 mm 0.96 'g' refitted fracture (*Biró 2001* fig. 2. 26)

93.94–95. (0087) Middle of T. I. F. 2. –45 cm, **B7/9** fragment of blade-like flake, medial part **9** Transdanubian radiolarite– Szentgál type, burnt, 13 × 10 × 2 mm 0.26 'g'

93.94–95. (0088) Middle of T. I. F. 2. –45 cm, **B4** conchoidal chip **9** Transdanubian radiolarite – Szentgál type, 22× 18 × 6 mm 2.38 'g'

93.94–95. (0089) Middle of T. I. F. 2. –45 cm, **C7** retouched blade-like-flake **11** Transdanubian radiolarite – Hárskút type, with porcelanite phase 25 %, 25 × 13 × 5 mm 1.63 'g' (*Biró 2001* fig. 2. 21)

93.94–95. (0090) Middle of T. I. F. 2. –45 cm, **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 10 × 6 × 2 mm 0.12 'g'

93.94–95. (0593) T. I. F. 2. –30–40 cm, **dör.** grinding stone, with biconically rounded disc-shape form **951** medium sandstone? volcanite? ash-grey, with dull, coarse surface texture, 73 × 73 × 30 mm 159.87 'g') *(fig. 1. 6)*

93.94–95. (0594) T. I. F. 2. –30–40 cm, **csi.** polisher with negative forms of polishing **951** medium sandstone? volcanite? ash-grey, with dull, coarse surface texture, 56 × 56 × 32 mm 100.35 'g'

93.94–95. (0080) T. I. F. 2. –22–40 cm, **B2** core remnant **9** Transdanubian radiolarite – Szentgál type, with porcelanite phase 20 %, 31 × 20 × 10 mm 6.20 'g'

93.94–95. (0081) T. I. F. 2. –22–40 cm, **B4** chip **9** Transdanubian radiolarite – Szentgál type, with porcelanite phase 90 %, 23 × 17 × 3 mm 1.17 'g'

93.94–95. (0082) T. I. F. 2. –22–40 cm, **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 11 × 8 × 3 mm 0.26 'g'

93.94–95. (0083) T. I. F. 2. –22–40 cm, **B9w** micro-fragment **9** Transdanubian radiolarite – Szentgál type, burnt, 10 × 8 × 3 mm 0.24 'g'

93.94–95. (0084) T. I. F. 2. –22–40 cm, **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 5 × 5 × 2 mm 0.05 'g'

93.94–95. (0111) Middle of T. I. F. 2. –45 cm, **B5** blade with visible traces of use-wear **9** Transdanubian radiolarite – Szentgál type, 22 × 11 × 5 mm 1.21 'g'

93.94–95. (0112) Middle of T. I. F. 2. –45 cm, **B4** chip **9** Transdanubian radiolarite – Szentgál type, 18 × 23 × 4 mm 1.66 'g'

93.94–95. (0113) Middle of T. I. F. 2. –45 cm, **I3w** end-scraper on micro-flake with straight, slightly arched retouch **9** Transdanubian radiolarite – Szentgál type, 15 × 14 × 6 mm 1.26 'g' (*Biró 2001* fig. 2. 16)

93.94–95. (0114) Middle of T. I. F. 2. –45 cm, **B8w** micro-blade-like chip **9** Transdanubian radiolarite – Szentgál type, 15 × 4 × 2 mm 0.12 'g'

93.94–95. (0115) Middle of T. I. F. 2. –45 cm, **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 14 × 13 × 1 mm 0.18 'g'

93.94–95. (0116) Middle of T. I. F. 2. –45 cm, **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 15 × 12 × 4 mm 0.72 'g'



fig. 2. Lithic implements from Szentgyörgyvölgy

1. Large quartzite pebble, worn, resembling in forn to a polished axe (0378); 2. Pestle-form hammer-stone made of quartzite (0379); 3.Quernstone, made of pink sandstone (0382)

93.94–95. (0117) Middle of T. I. F. 2. –45 cm, **B8/9** fragment of blade-like chip **9** Transdanubian radiolarite – Szentgál type, with porcelanite phase 60 %, 13 × 7 × 1,5 mm 0.14 'g'

93.94–95. (0118) Middle of T. I. F. 2. –45 cm, **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 8 × 8 × 2 mm 0.13 'g'

93.94–95. (0119) Middle of T. I. F. 2. –45 cm, **B2** core remnant **15** Transdanubian radiolarite, others orange-brown, 26 × 20× 15 mm 7.80 'g'

93.94–95. (0120) Middle of T. I. F. 2. –45 cm, **B3w** microflake **11** Transdanubian radiolarite – Hárskút type, 13× 14 × 4 mm 0.73 'g'

93.94–95. (0121) Middle of T. I. F. 2. –45 cm, **P9** fragment of polished stone tool 936 "cinopel"? hematite lump, 18 × 18 × 5 mm 1.62 'g'

93.96.1–3 (0122) Middle of T. I. F. 3. –40–55 cm, **B5w** microblade with visible traces of use-wear on the edge **9** Transdanubian radiolarite – Szentgál type, 20 × 8 × 2 mm 0.32 'g' (*Biró 2001* fig. 2. 19)

93.96.1–3 (0123) Middle of T. I. F. 3. –40–55 cm, **B7w** micro-blade-like flake **9** Transdanubian radiolarite – Szentgál type, 22 × 14 × 3 mm 0.92 'g'

93.96.1–3 (0124) Middle of T. I. F. 3. –40–55 cm, **B4** chip **15** Transdanubian radiolarite, others orange-brown, 15 × 9 × 2 mm 0.27 'g'

93.96.1–3 (0125) Middle of T. I. F. 3. –40–55 cm, **B2** core remnant **9** Transdanubian radiolarite – Szentgál type, 24 × 15 × 8 mm 2.88 'g'

93.96.1–3 (0126) Middle of T. I. F. 3. –40–55 cm, **B3w** microflake burin-tip. **9** Transdanubian radiolarite – Szentgál type, 16 × 16 × 8 mm 2.05 'g'

93.96.1–3 (0140) W end of T. I. F. 3. –45–50 cm, **L/D5** trapeze form truncated blade **9** Transdanubian radiolarite – Szentgál type, 12 × 9 × 4 mm 0.43 'g' (*Biró 2001* fig. 2. 02)

93.96.1–3 (0141) W end of T. I. F. 3. –45–50 cm, **L/D5** trapeze form truncated blade double **9** Transdanubian radiolarite – Szentgál type, 15 × 10 × 2 mm 0.30 'g' (*Biró 2001* fig. 2. 01)

93.96.1–3 (0142) W end of T. I. F. 3. –45–50 cm, **B4** chip **9** Transdanubian radiolarite– Szentgál type, 15 × 14 × 8 mm 1.68 'g'

93.96.1–3 (0143) W end of T. I. F. 3. –45–50 cm, **B4** chip **9** Transdanubian radiolarite – Szentgál type, 16× 12 × 3 mm 0.58 'g'

93.96.1–3 (0144) W end of T. I. F. 3. –45–50 cm, **B4** conchoidal chip **9** Transdanubian radiolarite – Szentgál type, 13 × 18 × 3 mm 0.70 'g'

93.96.1–3 (0145) W end of T. I. F. 3. –45–50 cm, **I4w** end-scraper on small chip **9** Transdanubian radiolarite – Szentgál type, with porcelanite phase 10 %, 14 × 9 × 4 mm 0.50 'g' (*Biró 2001* fig. 2. 07)

93.96.1–3 (0146) W end of T. I. F. 3. –45–50 cm, **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 8 × 8 × 2 mm 0.13 'g'

93.96.1–3 (0147) W end of T. I. F. 3. –45–50 cm, **B3** flake **9** Transdanubian radiolarite – Szentgál type, with porcelanite phase 40 %, 9 × 10 × 4 mm 0.36 'g'

93.96.1–3 (0148) W end of T. I. F. 3. –45–50 cm, **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 7 × 4 × 1 mm 0.03 'g'

93.96.1–3 (0149) W end of T. I., F. 3. –45–50 cm, **B9** fragment **909** Szentgál type radiolarite? burnt, 10 × 5 × 3 mm 0.15 'g'

93.97.1–2 (0063) Middle of T. I. F. 4. –85 cm, **B1**w micro-core heavily used blade core **9** Transdanubian radiolarite – Szentgál type, 23 × 24 × 12 mm 6.62 'g'

93.98.1–6 (0091) Middle of T. II. F. 8. –45–75 cm, **I7w** end-scraper on small blade-like flake, arched, with retouched edge **9** Transdanubian radiolarite – Szentgál type, 18 × 14 × 4 mm 1.01 'g' (*Biró 2001* fig. 2. 14)

93.98.1–6 (0092) Middle of T. II. F. 8. –45–75 cm, **D7** truncated blade-like-flake **9** Transdanubian radiolarite – Szentgál type, with porcelanite phase 10 %, 22 × 12 × 3 mm 0.79 'g' (*Biró 2001* fig. 2. 12)

93.98.1–6 (0093) Middle of T. II. F. 8. –45–75 cm, **B4** chip **9** Transdanubian radiolarite – Szentgál type, 22 × 16 × 3 mm 1.06 'g'

93.98.1–6 (0094) Middle of T. II. F. 8. –45–75 cm, **B4** chip, core rim **9** Transdanubian radiolarite – Szentgál type, 23 × 14 × 4 mm 1.29 'g'

93.98.1–6 (0095) Middle of T. II. F. 8. –45–75 cm, **B5/9** fragment of blade basis **9** Transdanubian radiolarite – Szentgál type, 14 × 13 × 2 mm 0.36 'g'

93.98.1–6 (0096) Middle of T. II. F. 8. –45–75 cm, **C4/9** fragment of retouched chip, with retouch-like traces of use? **9** Transdanubian radiolarite – Szentgál type, 13 × 16 × 3 mm 0.62 'g' (*Biró 2001* fig. 2. 15)

93.98.1–6 (0097) Middle of T. II. F. 8. –45–75 cm, **B4** chip **13** Transdanubian radiolarite, reddish brown 16 × 10 × 4 mm 0.64 'g'

93.98.1–6 (0098) Middle of T. II. F. 8. –45–75 cm, **B3** flake, decortication flake **9** Transdanubian radiolarite – Szentgál type, with porcelanite phase 70 %, 23 × 17 × 8 mm 3.13 'g'

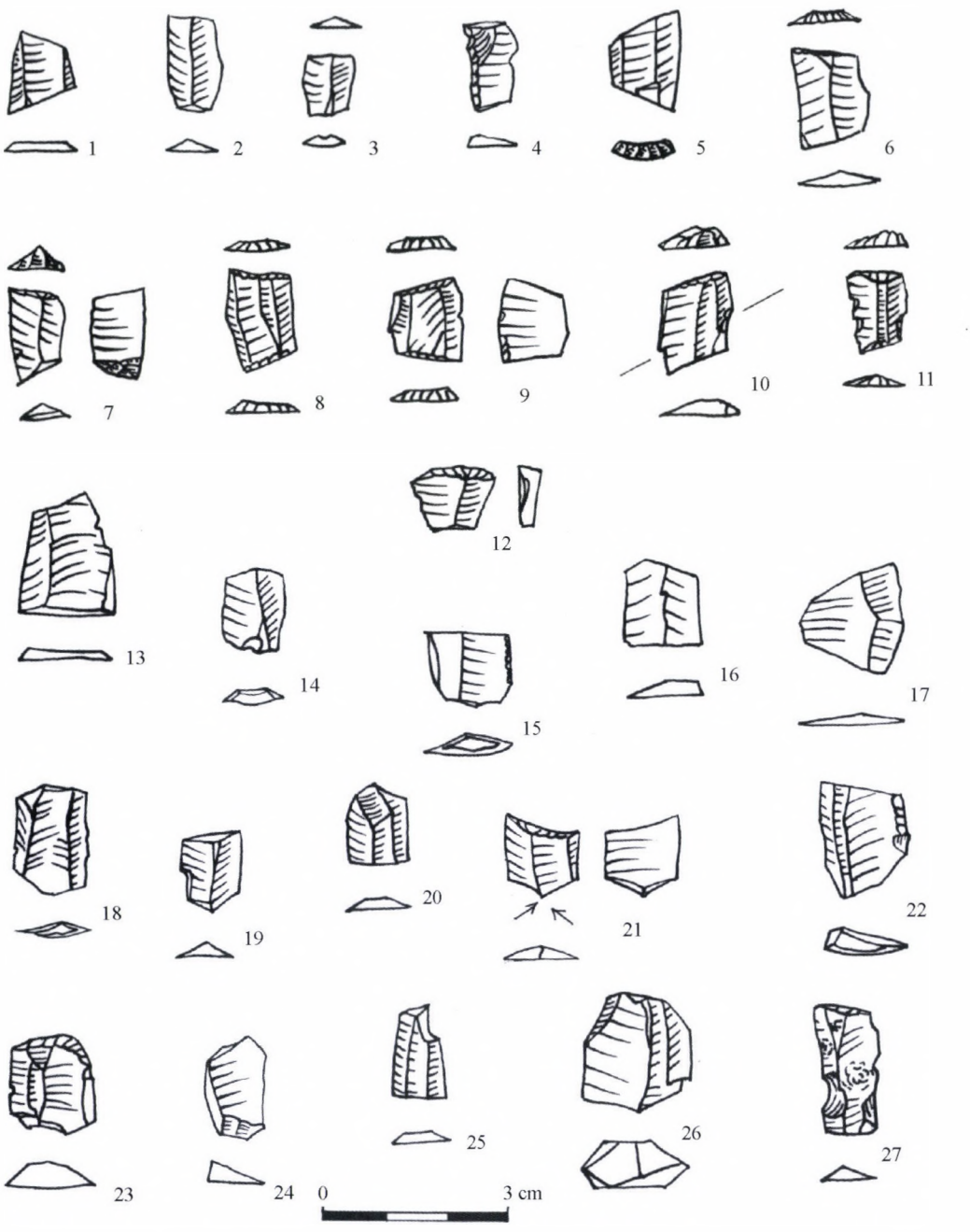

fig. 3. Lithic implements from Szentgyörgyvölgy

1. 2000.129.1–5. (0573) B4/9 trapeze-form chip fragment; 2. 2000.117.1. (0415) B5w microblade; 3. 2000.118.1. (0510) B8w micro-blade-like chip; 4. 2000.117.1. (0421) C8w backed microblade; 5. 2000.129.1–5. (0524) L/D5 trapeze form truncated blade; 6. (0486) L/D5 trapeze form truncated blade; 7. 2000.124.1. (0391) L/D5 trapeze form truncated blade; 8. 2000.126.1–12. (0469) L/D5 trapeze form truncated blade; 9. (0464) L/D5 trapeze form truncated blade; 10. 2000.117.1. (0416) L/D5 trapeze form truncated blade with hafting; 11. (0565) L/D5 trapeze form truncated blade; 12. 2000.117.1. (0500) I/D4 end-scraper /truncated chip; 13. 2000.117.1. (0401) B7 trapeze form blade-like flake; 14. 2000.117.1. (0399) B8/9 fragment of blade-like chip; 15. 2000.118.1. (0496) C5/9 fragment of retouched blade; 16. 2000.129.1–5. (0554) B4/9 chip fragment; 17. 2000.129.1–5. (0393) B3w trapeze form burnt microflake; 18. (0434) B7 trapeze form blade-like flake; 19. 2000.126.1–12. (0432) B5/9 trapeze form blade fragment; 20. 2000.129.1–5. (0395) B5/9 distal fragment of blade; 21. 2000.117.1. (0400) G/D5 geometrical form made with microburin technique -projectile point?; 22. (0427) C6/9 fragment of retouched knife; 23. 2000.129.1–5. (0439) I/D7 micro-scraper; 24. 2000.117.1. (0419) B6w micro-knife; 25. 2000.117.1. (0398) B5/9 distal fragment of blade; 26. 2000.124.1. (0390) B2w micro-core, burnt; 27. (0475) B4w micro-chip

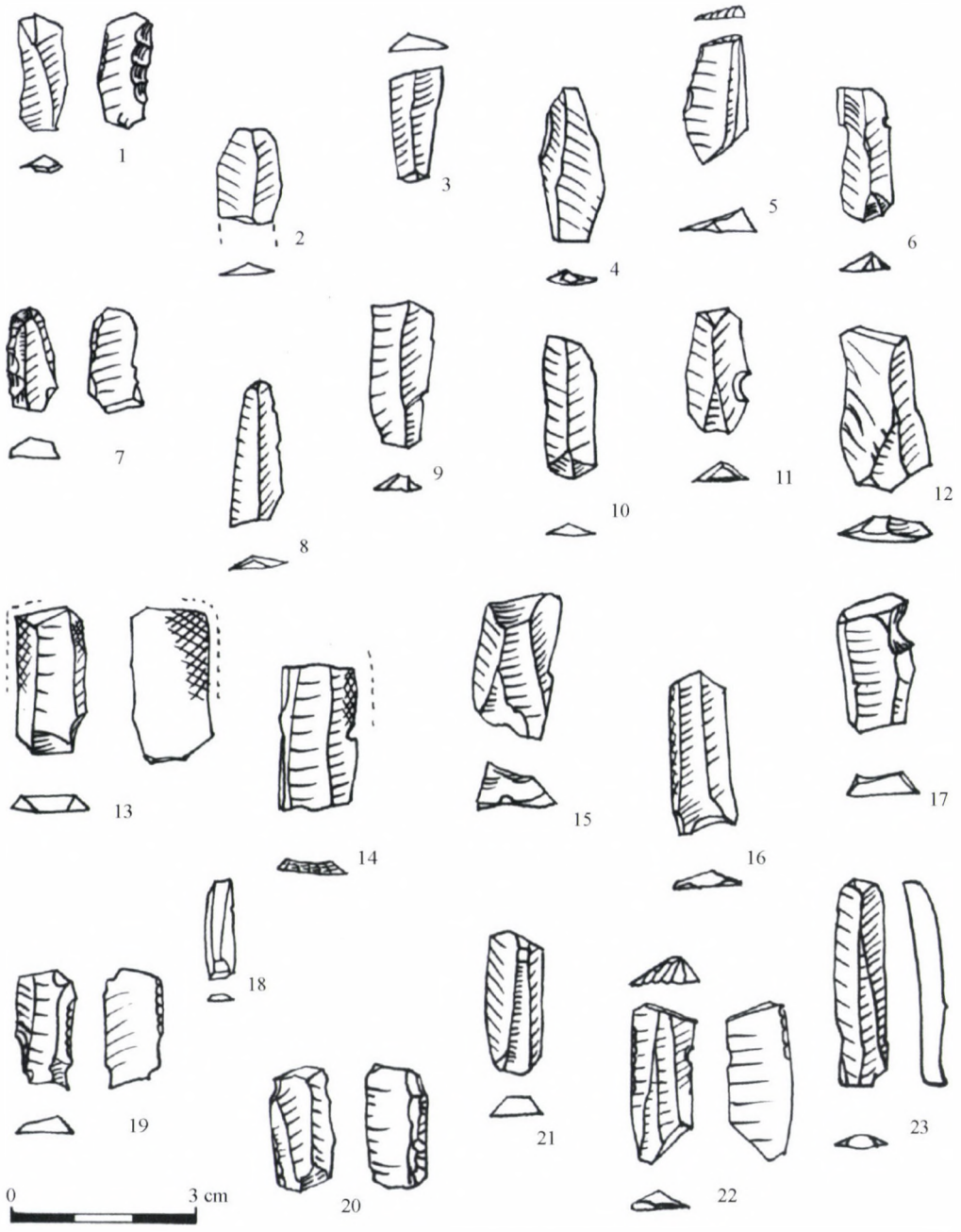

fig. 4. Lithic implements from Szentgyörgyvölgy

1. 2000.119.18. (0397) B5w microblade; 2. 2000.117.1. (0501) B5/9 fragment of blade; 3. 2000.129.1–5. (0572) B6w micro-knife; 4. 2000.117.1. (0408) B8 blade-like chip; 5. 2000.117.1. (0407) D6w micro-knife-blade, truncated; 6. 2000.117.1. (0409) B5w microblade; 7. 2000.129.1–5. (0545) C8 retouched blade-like chip; 8. 2000.117.1. (0403) B5w microblade; 9. 2000.129.1–5. (0521) B5 blade; 10. 2000.129.1–5. (0542) B5w microblade; 11. 2000.129.1–5. (0530) B6w micro-knife; 12. 2000.129.1–5. (0549) B6 knife; 13. 2000.129.1–5. (0560) B5 blade with sickle gloss; 14. 2000.129.1–5. (0526) D6 truncated knife-blade with sickle gloss; 15. 2000.125.1–4. (0431) B6 knife; 16. 2000.129.1–5. (0394) B5 blade with use polish; 17. 2000.117.1. (0405) B7w micro-blade-like flake; 18. (0564) B5w microblade; 19. 2000.117.1. (0418) C8w micro-bladelet with fine retouch; 20. 2000.129.1–5. (0543) C5 retouched (backed) blade; 21. 2000.124.1. (0580) B5w microblade; 22. 2000.117.1. (0402) D5w truncated microblade; 23. 2000.126.1–12. (0471) B5 blade from conical core

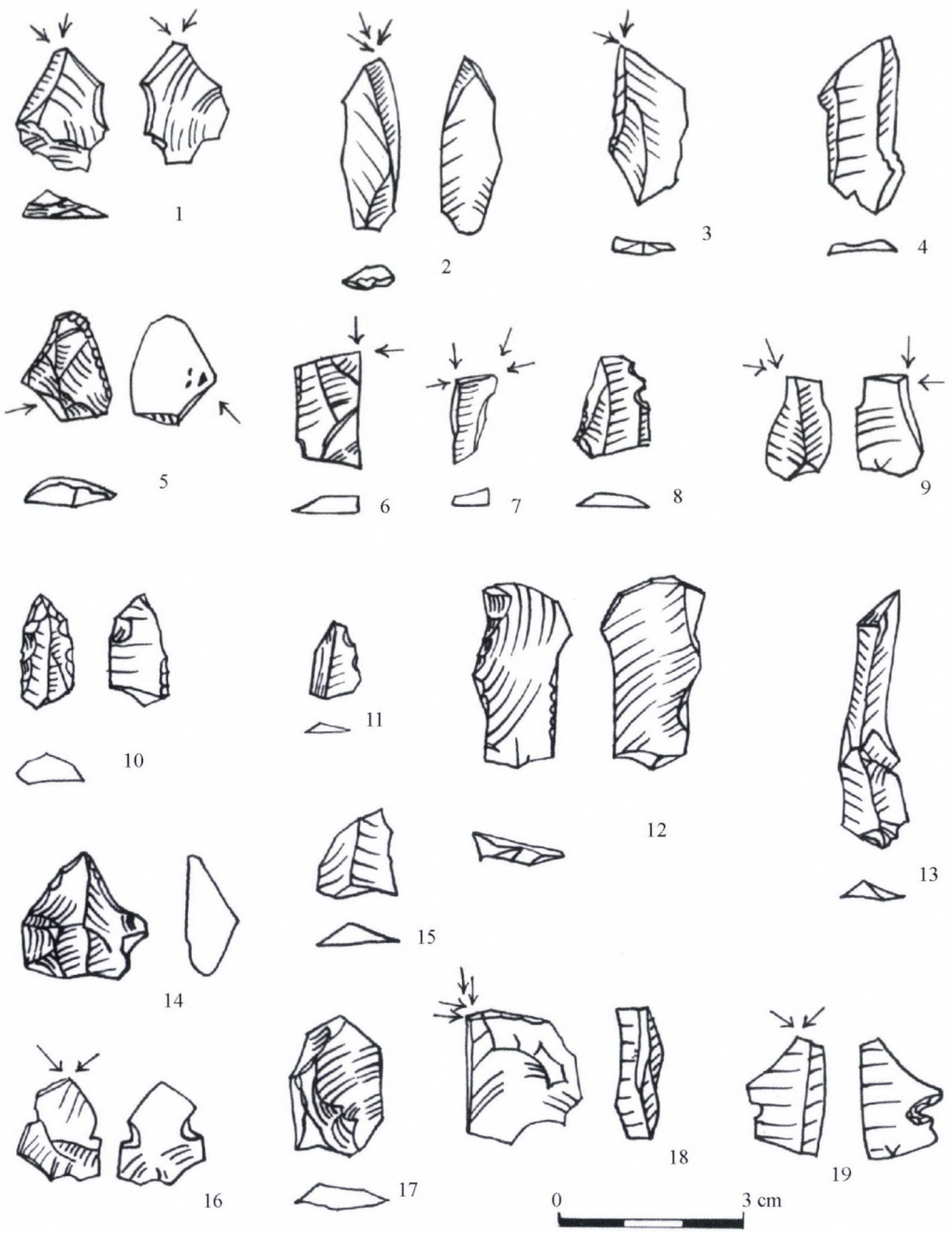

fig. 5. Lithic implements from Szentgyörgyvölgy

1. (0426) G4 medial burin on chip; 2. 2000.118.1. (0503) G5 burin on blade; 3. 2000.118.1. (0508) G7 atypical burin on blade-like flake; 4. 2000.129.1–5. (0523) B5 blade with worn edges; 5. 2000.117.1. (0404) E3w point on small flake with traces of organical hafting material; 6. 2000.129.1–5. (0441) G5 lateral burin on blade; 7. 2000.125.1–4. (0388) G4w micro-burin on chip; 8. 2000.117.1. (0420) B5/9 fragment of blade with atypical distal retouch; 9. 2000.118.1. (0459) B8 blade-like chip; 10. 2000.129.1–5. (0544) F/C5 borer on retouched blade; 11. 2000.129.1–5. (0445) B5/9 fragment of blade; 12. 2000.118.1. (0392) B6 crested, worn knife-blade; 13. 2000.129.1–5. (0571) B6 crested knife-blade; 14. (0467) F3w micro-borer on flake; 15. 2000.129.1–5. (0552) B5/9 trapeze form blade fragment; 16. (0482) B4w micro-chip; 17. (0428) B4 chip, atypical projectile point?; 18. (0466) G3 burin on flake; 19. 2000.129.1–5. (0443) B4/9 chip fragment with distal burin-like injury

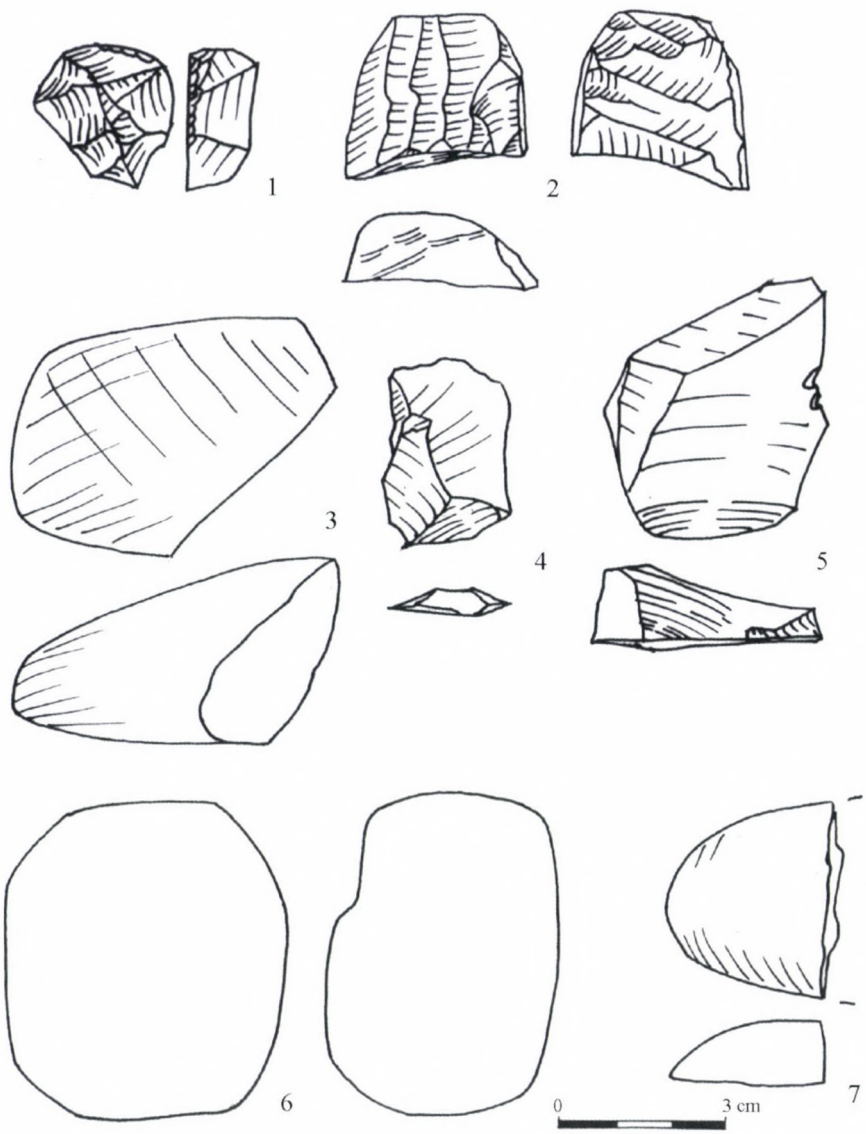

fig. 6. Lithic implements from Szentgyörgyvölgy

1. (0480) I2 end-scraper on core remnant; 2. (0433) B2 core remnant; 3. 2000. 125.2. (0476) P9 fragment of polished stone tool; 4. 2000.117.1. (0406) B7 blade-like flake; 5. 2000.125.1–4. (0386) B4 chip; 6. (0477) üt. angular-rounder hammerstone; 7. (0538) P9 fragment of polished stone tool.

93.98.1–6 (0099) Middle of T. II. F. 8. –45–75 cm, **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 11 × 10 × 2 mm 0.22 'g'

93.98.1–6 (0100) Middle of T. II. F. 8. –45–75 cm, **B3** flake **15** Transdanubian radiolarite, others with porcelanite phase 100 %, 30 × 21 × 10 mm 6.30 'g'

93.98.1–6 (0069) Middle of T. II. F. 8. –35–45 cm, **B3w** microflake, conchoidal **9** Transdanubian radiolarite – Szentgál type, 22 × 24 × 4 mm 2.11 'g'

93.98.1–6 (0070) Middle of T. II. F. 8. –35–45 cm, **I3** end-scraper on flake notched or injured from the dorsal side **9** Transdanubian radiolarite – Szentgál type, 21 × 20 × 4 mm 1.68 'g' (*Biró 2001* fig. 2. 11)

93.98.1–6 (0071) Middle of T. II. F. 8. –35–45 cm, **B2w** micro-core remnant **9** Transdanubian radiolarite – Szentgál type, 24 × 17 × 14 mm 5.71 'g'

93.98.1–6 (0072) Middle of T. II. F. 8. –35–45 cm, **B5** blade notched, hafted blade **13** Transdanubian radiolarite, reddish brown with porcelanite phase 50 %, 32 × 11 × 3 mm 1.06 'g' (*Biró 2001* fig. 3. 09)

93.98.1–6 (0073) Middle of T. II. F. 8. –35–45 cm, **B5w** microblade **9** Transdanubian radiolarite – Szentgál type, 20 × 9 × 3 mm 0.54 'g' (*Biró 2001* fig. 2. 23)

93.98.1–6 (0074) Middle of T. II. F. 8. –35–45 cm, **B5w** microblade **9** Transdanubian radiolarite – Szentgál type, with porcelanite phase 10 %, 14 × 6 × 4 mm 0.34 'g' (*Biró 2001* fig. 2. 25)

93.98.1–6 (0075) Middle of T. II. F. 8. –35–45 cm, **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 13 × 8 × 3 mm 0.31 'g'

93.98.1–6 (0076) Middle of T. II. F. 8. –35–45 cm, **B4/9** chip fragment **9** Transdanubian radiolarite – Szentgál type, with porcelanite phase 10 %, 10 × 10 × 4 mm 0.40 'g'

93.98.1–6 (0077) Middle of T. II. F. 8. –35–45 cm, **B9w** micro-fragment **9** Transdanubian radiolarite – Szentgál type, 7 × 2 × 1 mm 0.01 'g'
93.98.1–6 (0078) Middle of T. II. F. 8. –35–45 cm, **B9w** micro-fragment **9** Transdanubian radiolarite – Szentgál type, burnt, 8 × 4 × 2 mm 0.06 'g'
93.98.1–6 (0079) Middle of T. II. F. 8. –35–45 cm, **B9w** micro-fragment **9** Transdanubian radiolarite – Szentgál type, burnt, 6 × 4 × 2 mm 0.05 'g'
93.98.1–6 (0064) Middle of T. II. F. 8. –90–100 cm, **B5** blade **15** Transdanubian radiolarite, others orange-brown, 35× 10 × 2 mm 0.70 'g' (*Biró 2001* fig. 3. 08)
93.98.1–6 (0065) Middle of T. II. F. 8. –90–100 cm, **C5** retouched blade with dorsal retouch **9** Transdanubian radiolarite – Szentgál type, orange-brown shade, 30 × 10 × 4 mm 1.20 'g' (*Biró 2001* fig. 3. 05)
93.98.1–6 (0066) Middle of T. II. F. 8. –90–100 cm, **B4** chip 9 Transdanubian radiolarite – Szentgál type, with porcelanite phase 30 %, 12 × 12 × 2 mm 0.29 'g'
93.98.1–6 (0067) Middle of T. II. F. 8. –90–100 cm, **C8w** retouched blade-like chip with dorsal retouch 9 Transdanubian radiolarite – Szentgál type, 8 × 5 × 2 mm 0.08 'g' (*Biró 2001* fig. 2. 24)
93.98.1–6 (0109) Middle of T. II. above F. 8. –20 cm, **B4w** micro-chip **9** Transdanubian radiolarite– Szentgál type, 7 × 9 × 2 mm 0.13 'g'
93.98.1–6 (0110) Middle of T. II. above F. 8. –20 cm, **B4** chip **909** Szentgál type radiolarite? burnt, 17 × 15 × 2 mm 0.51 'g'
93.98.1–6 (0380) Middle of T. II. F. 8. –90–100 cm, **őrl9** fragment of grinding stone edge fragment **951** medium sandstone? red, 98 × 40 × 32 mm 125.44 'g'
93.99.1–7 (0189) T. III. F. 12. **I/D3** end-scraper /truncated flake D-form high micro-scraper **9** Transdanubian radiolarite – Szentgál type, 15 × 10 × 6 mm 0.90 'g'
93.99.1–7 (0190) T. III. F. 9. extension, –20–40 cm, **B4** chip **9** Transdanubian radiolarite – Szentgál type, 15 × 9 × 6 mm 0.81 'g'
93.99.1–7 (0288) W part of T. III. F. 12. –40–55 cm, **B3** flake **9** Transdanubian radiolarite – Szentgál type, 3 %, 27 × 25 × 6 mm 4.05 'g'
93.99.1–7 (0289) W part of T. III. F. 12. –40–55 cm, **B6** knife core rim **9** Transdanubian radiolarite – Szentgál type, 50 %, 52 × 16 × 7 mm 5.82 'g'
93.99.1–7 (0290) W part of T. III. F. 12. –40–55 cm, **B5w** microblade **9** Transdanubian radiolarite – Szentgál type, 19 × 7 × 3 mm 0.40 'g'
93.99.1–7 (0291) W part of T. III. F. 12. –40–55 cm, **B4** chip **9** Transdanubian radiolarite – Szentgál type, 14 × 15 × 3 mm 0.63 'g'
93.99.1–7 (0292) W part of T. III. F. 12. –40–55 cm, **F8w** borer on blade-like chip, atypical **9** Transdanubian radiolarite – Szentgál type, 18 × 5 × 3 mm 0.27 'g'
93.99.1–7 (0293) W part of T. III. F. 12. –40–55 cm, **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 9 × 14 × 3 mm 0.38 'g'
93.99.1–7 (0294) W part of T. III. F. 12. –40–55 cm, **B4w** micro-chip trapeze form **9** Transdanubian radiolarite – Szentgál type, 10 × 8 × 3 mm 0.24 'g'
93.99.1–7 (0295) W part of T. III. F. 12. –40–55 cm, **B4** chip **9** Transdanubian radiolarite – Szentgál type, 13 × 17 × 4 mm 0.88 'g'
93.99.1–7 (0296) W part of T. III. F. 12. –40–55 cm, **B4** chip **9** Transdanubian radiolarite – Szentgál type, 15 × 12 × 4 mm 0.72 'g'
93.99.1–7 (0297) W part of T. III. F. 12. –40–55 cm, **B2w** micro-core remnant **9** Transdanubian radiolarite – Szentgál type, 10 × 15 × 12 mm 1.80 'g'
93.99.1–7 (0298) W part of T. III. F. 12. –40–55 cm, **B4w** micro-chip **15** Transdanubian radiolarite, others reddish-brown, orange, 12 × 13 × 2 mm 0.31 'g'
93.99.1–7 (0299) W part of T. III. F. 12. –40–55 cm, **B5** blade with transversally "truncated" edge on the dorsal side **11** Transdanubian radiolarite – Hárskút type, 23 × 11 × 3 mm 0.76 'g'
93.99.1–7 (0300) W part of T. III. F. 12. –40–55 cm, **B4w** micro-chip **15** Transdanubian radiolarite, others with porcelanite phase, 4 × 3 × 1 mm 0.01 'g'
93.99.1–7 (0301) W part of T. III. F. 12. –40–55 cm, **B4w** micro-chip **15** Transdanubian radiolarite, others with porcelanite phase, 6 × 3 × 1 mm 0.02 'g'
93.99.1–7 (0314) W part of T. III. F. 12. –40–55 cm, **B3** flake, bulky **9** Transdanubian radiolarite – Szentgál type, 33 × 20 × 10 mm 6.60 'g'
93.99.1–7 (0315) W part of T. III. F. 12. –40–55 cm, **D2** truncated core remnant **9** Transdanubian radiolarite – Szentgál type, 24 × 18 × 9 mm 3.89 'g'
93.99.1–7 (0316) W part of T. III. F. 12. –40–55 cm, **B7w** micro-blade-like flake **9** Transdanubian radiolarite – Szentgál type, 19 × 14 × 3 mm 0.80 'g'
93.99.1–7 (0317) W part of T. III. F. 12. –40–55 cm, **D5w** truncated microblade **9** Transdanubian radiolarite – Szentgál type, 19 × 9 × 3 mm 0.51 'g'
93.99.1–7 (0318) W part of T. III. F. 12. –40–55 cm, **B5/9** fragment of blade, cut off, medial part, narrow inlay **9** Transdanubian radiolarite – Szentgál type, 8 × 13 × 2.5 mm 0.26 'g'
93.99.1–7 (0319) W part of T. III. F. 12. –40–55 cm, **B8f** pointed blade-like chip atypical borer? **9** Transdanubian radiolarite – Szentgál type, 17 × 7 × 4 mm 0.48 'g'
93.99.1–7 (0320) W part of T. III. F. 12. –40–55 cm, **B4** chip **9** Transdanubian radiolarite – Szentgál type, 18 × 18 × 2.5 mm 0.81 'g'
93.99.1–7 (0321) W part of T. III. F. 12. –40–55 cm, **D4w** microchip, truncated trapeze form **9** Transdanubian radiolarite – Szentgál type, with porcelanite phase, 7 × 10 × 4 mm 0.28 'g'
93.99.1–7 (0353 1–3) W part of T. III. F. 9. –40–45 cm, **fest** paint **59** mineral paint lumps, light red, **3** pieces
93.99.1–7 (0354) W part of T. III. F. 9. –40–45 cm, **B3** flake core rim **9** Transdanubian radiolarite – Szentgál type, 33 × 24 × 13 mm 10.30 'g'
93.99.1–7 (0355) W part of T. III. F. 9. –40–45 cm, **O7** special type on blade-like flake high, arched back piece with steep lateral retouch **9** Transdanubian radiolarite – Szentgál type, 26 × 11 × 7 mm 2.00 'g'
93.99.1–7 (0356) W part of T. III. F. 9. –40–45 cm, **B4** chip **9** Transdanubian radiolarite – Szentgál type, 16× 16 × 4 mm 1.02 'g'
93.99.1–7 (0357) W part of T. III. F. 9. –40–45 cm, **B4** chip **9** Transdanubian radiolarite – Szentgál type, 22× 16 × 5 mm 1.76 'g'
93.99.1–7 (0358) W part of T. III. F. 9. –40–45 cm, **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 16 × 9 × 3 mm 0.43 'g'

93.99.1–7 (0359) W part of T. III. F. 9. –40–45 cm, **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 11 × 7 × 2 mm 0.15 'g'
93.99.1–7 (0360) W part of T. III. F. 9. –40–45 cm, **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 14 × 11 × 2 mm 0.31 'g'
93.99.1–7 (0361) W part of T. III. F. 9. –40–45 cm, **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 8 × 5 × 2 mm 0.08 'g'
93.99.1–7 (0287) W part of T. III. F. 9. –40–45 cm, **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 6 × 5 × 3 mm 0.09 'g'
93.99.1–7 (0234) W part of T. III. F. 9. –45–50 cm, **B2** core remnant vésőél' **9** Transdanubian radiolarite – Szentgál type, 43 × 21 × 16 mm 14.45 'g'
93.99.1–7 (0235) W part of T. III. F. 9. –45–50 cm, **B3** flake **9** Transdanubian radiolarite – Szentgál type, 5 %, 30 × 21 × 10 mm 6.30 'g'
93.99.1–7 (0236) W part of T. III. F. 9. –45–50 cm, **B5** blade core rim **9** Transdanubian radiolarite– Szentgál type, 30 × 8 × 4 mm 0.96 'g'
93.99.1–7 (0237) W part of T. III. F. 9. –45–50 cm, **B5** blade **9** Transdanubian radiolarite– Szentgál type, 27 × 11 × 3 mm 0.89 'g'
93.99.1–7 (0238) W part of T. III. F. 9. –45–50 cm, **B5/9** fragment of blade trapeze form **9** Transdanubian radiolarite– Szentgál type, 17 × 9 × 3 mm 0.46 'g'
93.99.1–7 (0239) W part of T. III. F. 9. –45–50 cm, **B4** chip **9** Transdanubian radiolarite– Szentgál type, 11 × 13 × 3 mm 0.43 'g'
93.99.1–7 (0240) W part of T. III. F. 9. –45–50 cm, **B7w** micro-blade-like flake **9** Transdanubian radiolarite – Szentgál type, with porcelanite phase 30 %, 20 × 14 × 4 mm 1.12 'g'
93.99.1–7 (0241) W part of T. III. F. 9. –45–50 cm, **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 15 × 12 × 3 mm 0.54 'g'
93.99.1–7 (0242) W part of T. III. F. 9. –45–50 cm, **B4** chip **9** Transdanubian radiolarite – Szentgál type, 21× 14 × 3 mm 0.88 'g'
93.99.1–7 (0243) W part of T. III. F. 9. –45–50 cm, **B2w** micro-core remnant **9** Transdanubian radiolarite – Szentgál type, 13 × 10 × 7 mm 0.91 'g'
93.99.1–7 (0244) W part of T. III. F. 9. –45–50 cm, **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 8 × 8 × 4 mm 0.26 'g'
93.99.1–7 (0245) W part of T. III. F. 9. –45–50 cm, **B4f** pointed chip **9** Transdanubian radiolarite – Szentgál type, 16 × 4 × 3 mm 0.19 'g'
93.99.1–7 (0246) W part of T. III. F. 9. –45–50 cm, **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 6 × 3 × 2 mm 0.04 'g'
93.99.1–7 (0247) W part of T. III. F. 9. –45–50 cm, **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 6 × 3 × 1 mm 0.02 'g'
93.99.1–7 (0248) W part of T. III. F. 9. –45–50 cm, **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 5 × 3 × 2 mm 0.03 'g'
93.99.1–7 (0249) W part of T. III. F. 9. –45–50 cm, **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 5 × 3 × 2 mm 0.03 'g'
93.99.1–7 (0250) W part of T. III. F. 9. –45–50 cm, **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 4 × 3 × 2 mm 0.02 'g'
93.99.1–7 (0251) W part of T. III. F. 9. –45–50 cm, **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 4 × 2 × 1 mm 0.01 'g'
93.99.1–7 (0252) W part of T. III. F. 9. –45–50 cm, **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 4 × 2 × 1 mm 0.01 'g'
93.99.1–7 (0253) W part of T. III. F. 9. –45–50 cm, **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 4 × 3 × 1 mm 0.01 'g'
93.99.1–7 (0254) W part of T. III. F. 9. –45–50 cm, **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 4 × 3 × 2 mm 0.02 'g'
93.99.1–7 (0255) W part of T. III. F. 9. –45–50 cm, **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 7 × 3 × 1 mm 0.02 'g'
93.99.1–7 (0256) W part of T. III. F. 9. –45–50 cm, **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 3 × 2 × 1 mm 0.01 'g'
93.99.1–7 (0268) T. III. extension F. 9. 0–20 cm, **B2** core remnant **9** Transdanubian radiolarite – Szentgál type, 26× 25 × 17 mm 11.05 'g'
93.99.1–7 (0269) T. III. extension F. 9. 0–20 cm, **B2** core remnant, wedge-form **9** Transdanubian radiolarite – Szentgál type, 20 %, 24 × 26 × 16 mm 9.98 'g'
93.99.1–7 (0270) T. III. extension F. 9. 0–20 cm, **B8** blade-like chip **9** Transdanubian radiolarite – Szentgál type, 21 × 10 × 3 mm 0.63 'g'
93.99.1–7 (0271) T. III. extension F. 9. 0–20 cm, **B3w** microflake **15** Transdanubian radiolarite, others with porcelanite phase 100 %, 13 × 24 × 6 mm 1.87 'g'
93.99.1–7 (0322) T. III. extension F. 9. 0–20 cm, **B9** fragment **9** Transdanubian radiolarite – Szentgál type, burnt? %, 14 × 10 × 5 mm 0.70 'g'
93.99.1–7 (0382) N. part of T. VI. –20–40 cm over F. 12. **őrl9** fragment of grinding stone, flat, cylinder-slice form with acute end, carefully elaborated, halved or fragmented **51** medium sandstone red-pink, 195 × 145 × 34 mm 961.35 'g' *(fig. 2. 2)*
93.99.1–7 (0602 –603) W. part of T. III. F. 9. –45, –50 cm, **őrl9** fragment of grinding stone **51** medium sandstone, on the surface pink, on fresh fracture, grey with mica, 105 × 60 × 40 mm 252 'g' refitted fracture
93.95.06. (0127) Middle of T. I. F. 6. –35–40 cm, **B3** flake **9** Transdanubian radiolarite – Szentgál type, 40 × 26 × 12 mm 12.48 'g'
93.95.06. (0128) Middle of T. I. F. 6. –35–40 cm, **C5w** microblade, retouched with fine file-like retouch **9** Transdanubian radiolarite – Szentgál type, with porcelanite phase 35 %, 21 × 11 × 3 mm 0.69 'g' (*Biró 2001* fig. 2. 18)
93.95.06. (0129) Middle of T. I. F. 6. –35–40 cm, **J2** side-scraper on core remnant, atypical, formed on core rim. **9** Transdanubian radiolarite – Szentgál type, with porcelanite phase 95 %, 26 × 16 × 7 mm 2.91 'g' (*Biró 2001* fig. 2. 17)
93.95.06. (0130) Middle of T. I. F. 6. –35–40 cm, **B8w** micro-blade-like chip **10** Transdanubian radiolarite – Úrkút–Eplény type, orange-brownish shade, 12 × 7 × 2 mm 0.17 'g'
93.95.06. (0131) Middle of T. I. F. 6. –35–40 cm, **B4** chip **13** Transdanubian radiolarite, reddish brown 12 × 18 × 7 mm 1.51 'g'

93.95.06. (0132) Middle of T. I. F. 6. –35–40 cm, **B4** chip **13** Transdanubian radiolarite, reddish brown 12 × 14 × 4 mm 0.67 'g'
93.98.01. (0381) W end of T. I. F. 5. –60 cm, **őrl9** fragment of grinding stone **51** medium sandstone red-grey, 63 × 62 × 42 mm 164.05 'g'
93.98.01. (0068) W end of T. I. F. 5. –60 cm, **őrl9** fragment of grinding stone loaf-form **51** medium sandstone light grey, 75 × 55 × 40 mm 165 'g'
93.94.02. (0101) E end of T. I. F. 1. –20–40 cm, **B4** chip **15** Transdanubian radiolarite, others light reddish siliceous porcelanite, 15 × 8 × 3 mm 0.36 'g'
93.94.02. (0102) E end of T. I. F. 1. –20–40 cm, **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 7 × 5 × 2 mm 0.07 'g'
93.94.01. (0103) E end of T. I. F. 1. –20–40 cm, **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 8 × 5 × 2 mm 0.08 'g'
93.95.04. (0041) Middle of T. I. F. 1. –20–40 cm, **D5** truncated blade hafted, with fresh injuries **15** Transdanubian radiolarite, others with porcelanite phase 100 %, 44 × 15 × 6 mm 3.96 'g' (*Biró 2001* fig. 3. 03)
93.95.04. (0042) Middle of T. I. F. 1. –20–40 cm, **tör.** fragment, polished **999** other hematite, 18 × 17 × 6 mm 1.84 'g'
93.95.04. (0043) Middle of T. I. F. 1. –20–40 cm, **F3** borer on flake atypical **15** Transdanubian radiolarite, others reddish-brown, with porcelanite phase 30 %, 31 × 19 × 10 mm 5.89 'g' (*Biró 2001* fig. 3. 02)
93.95.04. (0044) Middle of T. I. F. 1. –20–40 cm, **B3** flake **9** Transdanubian radiolarite – Szentgál type, 24 × 27 × 7 mm 4.54 'g'
93.95.04. (0045) Middle of T. I. F. 1. –20–40 cm, **B3** flake **11** Transdanubian radiolarite – Hárskút type, 22 × 18 × 5 mm 1.98 'g'
93.95.04. (0046) Middle of T. I. F. 1. –20–40 cm, **B3** flake **11** Transdanubian radiolarite – Hárskút type, 28 × 18 × 6 mm 3.02 'g'
93.95.04. (0047) Middle of T. I. F. 1. –20–40 cm, **B3** flake **9** Transdanubian radiolarite – Szentgál type, with porcelanite phase 25 %, 23 × 28 × 8 mm 5.15 'g'
2000.113.1–14 (0150) T. IV. F. 11. **C3w** retouched micro-flake angular, retouched along two sides **9** Transdanubian radiolarite – Szentgál type, 17 × 12 × 5 mm 1.02 'g'
2000.113.1–14 (0323) T. IV. F. 11. –40–55 cm, **C8** retouched blade-like chip, atypical borer? retouched from dorsal side **9** Transdanubian radiolarite – Szentgál type, 25 × 14 × 3 mm 1.05 'g'
2000.113.1–14 (0324) T. IV. F. 11. –40–55 cm, **L/D5** trapeze form truncated blade double – regular trapeze **9** Transdanubian radiolarite – Szentgál type, 11 × 14 × 3 mm 0.46 'g'
2000.113.1–14 (0325) T. IV. F. 11. –40–55 cm, **B5w** microblade **9** Transdanubian radiolarite – Szentgál type, 15× 5 × 1,5 mm 0.11 'g'
2000.113.1–14 (0378) T. IV. F. 11. –45–50 cm, **kav.** pebble – large, used, its form resembles a polished axe **53** quartzite 330 × 85 × 65 mm 1823.25 'g' *(fig. 2. 1)*
2000.113.1–14 (0379) T. IV. F. 11. –45–50 cm, **üt.** hammerstone pestle-form, longish pebble, used on both ends **53** quartzite 94 × 50 × 55 mm 258.50 'g' *(fig. 1. 2, 2. 2)*
2000.113.1–14 (0362) W part of T. IV. F. 11. –20–35 cm, **B3** flake large core-flake **9** Transdanubian radiolarite – Szentgál type, with porcelanite phase 75 %, 55 × 34 × 45 mm 84.15 'g'
2000.113.1–14 (0363) W part of T. IV. F. 11. –20–35 cm, **C3** retouched flake atypical **13** Transdanubian radiolarite, reddish brown 35 × 31 × 10 mm 10.85 'g'
2000.113.1–14 (0364) W part of T. IV. F. 11. –20–35 cm, **J3** side scraper on flake double **9** Transdanubian radiolarite – Szentgál type, 34 × 28 × 7 mm 6.66 'g'
2000.113.1–14 (0365) W part of T. IV. F. 11. –20–35 cm, **B7** blade-like flake cusp, core rim **13** Transdanubian radiolarite, reddish brown 24 × 13 × 9 mm 2.81 'g'
2000.113.1–14 (0366) W part of T. IV. F. 11. –20–35 cm, **B4** chip **9** Transdanubian radiolarite – Szentgál type, 19 × 15 × 5 mm 1.43 'g'
2000.113.1–14 (0367) W part of T. IV. F. 11. –20–35 cm, **B3** flake decortication flake **9** Transdanubian radiolarite– Szentgál type, 20 %, 31 × 26 × 14 mm 11.28 'g'
2000.113.1–14 (0368) W part of T. IV. F. 11. –20–35 cm, **B2w** micro-core remnant **9** Transdanubian radiolarite – Szentgál type, 18 × 18 × 14 mm 4.54 'g'
2000.113.1–14 (0369) W part of T. IV. F. 11. –20–35 cm, **B4** chip **9** Transdanubian radiolarite – Szentgál type, 23 × 16 × 4 mm 1.47 'g'
2000.113.1–14 (0370) W part of T. IV. F. 11. –20–35 cm, **B4** chip **9** Transdanubian radiolarite – Szentgál type, 16 × 15 × 5 mm 1.20 'g'
2000.113.1–14 (0371) W part of T. IV. F. 11. –20–35 cm, **F6** borer on knife-blade core rim, atypical, with flicked hafting **9** Transdanubian radiolarite – Szentgál type, 24 × 10 × 5 mm 1.20 'g'
2000.113.1–14 (0372) W part of T. IV. F. 11. –20–35 cm, **B2w** micro-core remnant **10** Transdanubian radiolarite –Úrkút–Eplény type, 10 %, 16 × 18 × 13 mm 3.74 'g'
2000.113.1–14 (0373) W part of T. IV. F. 11. –20–35 cm, **B4w** micro-chip **15** Transdanubian radiolarite, others with porcelanite phase 100 %, 15 × 17 × 3 mm 0.77 'g'
2000.114.1–14 (0267) T. V. F. 13. –75–80 cm, **D8w** truncated blade-like-flake trapeze form **9** Transdanubian radiolarite– Szentgál type, 11 × 10 × 2 mm 0.22 'g'
2000.114.1–14 (0308) T. V. F. 13. –30–50 cm, **D2** truncated core remnant **13** Transdanubian radiolarite, reddish brown 17× 13 × 8 mm 1.77 'g'
2000.114.1–14 (0309) T. V. F. 13. –30–50 cm, **B5w** microblade **9** Transdanubian radiolarite – Szentgál type, 18× 8 × 2 mm 0.29 'g'
2000.114.1–14 (0310) T. V. F. 13. –30–50 cm, **G7** burin on blade-like flake lateral burin, **9** Transdanubian radiolarite– Szentgál type, 20 × 11 × 3 mm 0.66 'g'
2000.114.1–14 (0311) T. V. F. 13. –30–50 cm, **B8** blade-like chip **9** Transdanubian radiolarite – Szentgál type, 12 × 8 × 3 mm 0.29 'g'
2000.114.1–14 (0312) T. V. F. 13. –30–50 cm, **B9** fragment **9** Transdanubian radiolarite – Szentgál type, burnt, 11 × 6 × 2 mm 0.13 'g'
2000.114.1–14 (0313) T. V. F. 13. –30–50 cm, **B4** chip **15** Transdanubian radiolarite, others with porcelanite phase 100 %, 14 × 12 × 4 mm 0.67 'g'
2000.114.1–14 (0155) T. V. F. 13. –35–50 cm, **D5** truncated blade with sickle gloss, with very steep retouch **9** Transdanubian radiolarite – Szentgál type, 28 × 12 × 3 mm 1.01 'g'
2000.114.1–14 (0156) T. V. F. 13. –35–50 cm, **D5** truncated blade with injured or notched edge? **9** Transdanubian radiolarite – Szentgál type, 25 × 11 × 3 mm 0.83 'g'

2000.115.1. (0590) T. VI. F. 15. –65 cm, **csi9** fragment of polisher: flat, worn oval grinder or polisher **50** fine sandstone fine/medium grained, pink-light grey, with mica, 130 × 58 × 22 mm 165.88 'g' *(fig. 1. 8)*

2000.115.1. (0272) N part of T. VI. F. 15. –45–50 cm, **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, with porcelanite phase 70 %, 14 × 13 × 2 mm 0.36 'g'

2000.116.1. (0606) T. VIII. above F. 14. **B3** flake core rim **15** Transdanubian radiolarite, others light rosy porcelanite100 %, 42 × 24× 22 mm 22.18 'g'

2000.116.2. (0607) T. VIII. above F. 14. **B4** chip **13** Transdanubian radiolarite, reddish brown 28 × 16 × 4 mm 1.79 'g'

2000.116.3. (0608) T. VIII. above F. 14. **B3** flake end-scraper form tip? **909** Szentgál type radiolarite? burnt, 26 × 22 × 9 mm 5.15 'g'

2000.116.4. (0609 1) T. VIII. (?) above F. 14. **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 12 × 12 × 3 mm 0.43 'g'

2000.116.4. (0610 2) T. VIII. (?) above F. 14. **B5/9** fragment of blade, basis part, cut off **9** Transdanubian radiolarite – Szentgál type, 14 × 12 × 3 mm 0.50 'g'

2000.117.1. (0396 1) T. XV. F. 29. –60 cm, **B3** flake, core-flake **9** Transdanubian radiolarite – Szentgál type, orange, 27× 22 × 12 mm 7.13 'g'

2000.117.1. (0499 1) T. XV. F. 29. –55–60 cm, **B4** chip 15 Transdanubian radiolarite, others pink, light rosy porcelanite 100 %, 18 × 27 × 8 mm 3.89 'g'

2000.117.1. (0500 2) T. XV. F. 29. –55–60 cm, **I/D4** end-scraper /truncated chip micro-scraper **10** Transdanubian radiolarite – Úrkút–Eplény type, orange-mustard yellow, 10 × 13 × 3 mm 0.39 'g' *(fig. 3. 12)*

2000.117.1. (0501 3) T. XV. F. 29. –55–60 cm, **B5/9** fragment of blade microblade fragment **9** Transdanubian radiolarite – Szentgál type, 14 × 9 × 2 mm 0.25 'g' *(fig. 4. 2)*

2000.117.1. (0502 4) T. XV. F. 29. –55–60 cm, **B4w** micro-chip **9** Transdanubian radiolarite– Szentgál type, 10 × 13 × 1 mm 0.13 'g'

2000.117.1. (0398 1) T. XV. F. 29. –60–65 cm, **B5/9** fragment of blade distal end of the blade **9** Transdanubian radiolarite – Szentgál type, 14 × 8 × 1 mm 0.11 'g' *(fig. 3. 25)*

2000.117.1. (0399 2) T. XV. F. 29. –60–65 cm, **B8/9** fragment of blade-like chip **9** Transdanubian radiolarite – Szentgál type, 13 × 10 × 2 mm 0.26 'g' *(fig. 3. 14)*

2000.117.1. (0400 3) T. XV. F. 29. –60–65 cm, **G/D5** burin/truncated blade geometrical form (projectile point?) made using microburin technique **9** Transdanubian radiolarite – Szentgál type, 13 × 12 × 2 mm 0.31 'g' *(fig. 3. 21)*

2000.117.1. (0401 4) T. XV. F. 29. –60–65 cm, **B7** blade-like flake trapeziform **9** Transdanubian radiolarite – Szentgál type, 19 × 14 × 3 mm 0.80 'g' *(fig. 3. 13)*

2000.117.1. (0402 5) T. XV. F. 29. –60–65 cm, **D5w** truncated microblade hafted?, with steep truncation, worn edge **9** Transdanubian radiolarite – Szentgál type, 24 × 10 × 4 mm 0.96 'g' *(fig. 4. 22)*

2000.117.1. (0403 6) T. XV. F. 29. –60–65 cm, **B5w** microblade **9** Transdanubian radiolarite– Szentgál type, 23 × 8 × 2 mm 0.37 'g' *(fig. 4. 8)*

2000.117.1. (0404 7) T. XV. F. 29. –60–65 cm, **E3w** point on small flake asymmetrical, with remains of organic (?) hafting substance **9** Transdanubian radiolarite – Szentgál type, with porcelanite phase 30%, 18 × 14 × 4 mm 1.01 'g' *(fig. 5. 5)*

2000.117.1. (0405 8) T. XV. F. 29. –60–65 cm, **B7w** micro-blade-like flake hafted? cutting edge **9** Transdanubian radiolarite – Szentgál type, 21 × 10 × 5 mm 1.05 'g' *(fig. 4. 17)*

2000.117.1. (0406 9) T. XV. F. 29. –60–65 cm, **B7** blade-like flake **15** Transdanubian radiolarite, others orange-brown, with traces of porcelanite 1 %, 34 × 20 × 5 mm 3.40 'g' *(fig. 6. 4)*

2000.117.1. (0407 10) T. XV. F. 29. –60–65 cm, **D6w** micro-knife-blade, truncated **9** Transdanubian radiolarite – Szentgál type, 21 × 11 × 4 mm 0.92 'g' *(fig. 4. 5)*

2000.117.1. (0408 11) T. XV. F. 29. –60–65 cm, **B8** blade-like chip **9** Transdanubian radiolarite – Szentgál type, 24 × 9 × 3 mm 0.65 'g' *(fig. 4. 4)*

2000.117.1. (0409 12) T. XV. F. 29. –60–65 cm, **B5w** microblade **9** Transdanubian radiolarite– Szentgál type, orange, 22 × 6 × 2 mm 0.26 'g' *(fig. 4. 6)*

2000.117.1. (0410 13) T. XV. F. 29. –60–65 cm, **B4** chip, triangular **9** Transdanubian radiolarite – Szentgál type, 17 × 13 × 3 mm 0.66 'g'

2000.117.1. (0411 14) T. XV. F. 29. –60–65 cm, **B4** chip **9** Transdanubian radiolarite– Szentgál type, 17 × 21 × 3 mm 1.07 'g'

2000.117.1. (0412 15) T. XV. F. 29. –60–65 cm, **B3** flake core cusp flake, **909** Szentgál type radiolarite? burnt, dark red, 25 × 15 × 14 mm 5.25 'g'

2000.117.1. (0413 16) T. XV. F. 29. –60–65 cm, **B2w** micro-core remnant **15** Transdanubian radiolarite, others cream coloured silicified porcelanite 100 %, 15 × 19 × 11 mm 3.14 'g'

2000.117.1. (0414 17) T. XV. F. 29. –60–65 cm, **B9** fragment **9** Transdanubian radiolarite– Szentgál type, 13 × 15 × 7 mm 1.37 'g'

2000.117.1. (0415 18) T. XV. F. 29. –60–65 cm, **B5w** microblade **9** Transdanubian radiolarite – Szentgál type, 15 × 7 × 2 mm 0.21 'g' *(fig. 3. 2)*

2000.117.1. (0416 19) T. XV. F. 29. –60–65 cm, **L/D5** trapeze form truncated blade with steep truncation on one side, on the other side, hafted **9** Transdanubian radiolarite – Szentgál type, 16 × 11 × 4 mm 0.70 'g' *(fig. 3. 10)*

2000.117.1. (0417 20) T. XV. F. 29. –60–65 cm, **B4** chip **9** Transdanubian radiolarite – Szentgál type, orange, porcelanite 50 %, 18 × 17 × 5 mm 1.53 'g'

2000.117.1. (0418 21) T. XV. F. 29. –60–65 cm, **C8w** retouched blade-like chip with fine edge retouch **909** Szentgál type radiolarite? burnt, 17 × 8 × 2 mm 0.27 'g' *(fig. 4. 19)*

2000.117.1. (0419 22) T. XV. F. 29. –60–65 cm, **B6w** micro-knife small cutting edge **9** Transdanubian radiolarite – Szentgál type, with porcelanite phase 60 %, 17 × 9 × 5 mm 0.77 'g' *(fig. 3. 24)*

2000.117.1. (0420 23) T. XV. F. 29. –60–65 cm, **B5/9** fragment of blade distal end with atypical retouch – small projectile point? **9** Transdanubian radiolarite – Szentgál type, with porcelanite phase 80%, 15 × 10 × 2 mm 0.30 'g' *(fig. 5. 8)*

2000.117.1. (0421 24) T. XV. F. 29. –60–65 cm, **C8w** retouched blade-like chip blunted backed blade **9** Transdanubian radiolarite – Szentgál type, with porcelanite phase 50 %, 14 × 9 × 2 mm 0.25 'g' *(fig. 3. 4)*

2000.117.1. (0422 25) T. XV. F. 29. –60–65 cm, **B4w** micro-chip **15** Transdanubian radiolarite, others with porcelanite phase 100 %, 10 × 12 × 3 mm 0.36 'g'

2000.117.1. (0423 26) T. XV. F. 29. –60–65 cm, **B4w** micro-conchoidal chip **9** Transdanubian radiolarite – Szentgál type, 6 × 12 × 2 mm 0.14 'g'

2000.117.1. (0424 27) T. XV. F. 29. –60–65 cm, **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 12 × 14 × 1 mm 0.17 'g'
2000.117.1. (0425 28) T. XV. F. 29. –60–65 cm, **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 10 × 4 × 3 mm 0.12 'g'
2000.118.1. (0508 1) T. XVI. F. 30. –45–50 cm, **G7** burin on blade-like flake atypical **15** Transdanubian radiolarite, others with porcelanite phase 90 %, 27 × 13 × 3 mm 1.05 'g' *(fig. 5. 3)*
2000.118.1. (0509 2) T. XVI. F. 30. –45–50 cm, **B9** fragment **999** other radiolarit? burnt, 15 × 14 × 4 mm 0.84 'g'
2000.118.1. (0510 3) T. XVI. F. 30. –45–50 cm, **B8w** micro-blade-like chip **909** Szentgál type radiolarite? 10 × 8 × 1.5 mm 0.12 'g' *(fig. 3. 3)*
2000.118.1. (0511 4) T. XVI. F. 30. –45–50 cm, **B4w** micro-chip burin chip? **9** Transdanubian radiolarite – Szentgál type, 14 × 6 × 3 mm 0.25 'g'
2000.118.1. (0453 0) T. XVI. F. 30. –50–60 cm, **fest** paint (traces of mineral paint fixed on adhesive tape), ochre? **59** mineral paint
2000.118.1. (0454 1) T. XVI. F. 30. –50–60 cm, **A2** remnants of raw material bottom part of core remnant close to layer boundary **9** Transdanubian radiolarite – Szentgál type, with porcelanite phase 10 %, 40 × 43 × 20 mm 34.40 'g'
2000.118.1. (0455 2) T. XVI. F. 30. –50–60 cm, **B4** chip **9** Transdanubian radiolarite – Szentgál type, 18 × 10 × 3 mm 0.54 'g'
2000.118.1. (0456 3) T. XVI. F. 30. –50–60 cm, **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 15 × 8 × 5 mm 0.60 'g'
2000.118.1. (0457 4) T. XVI. F. 30. –50–60 cm, **B4/9** chip fragment **9** Transdanubian radiolarite – Szentgál type, burnt, 22 × 15 × 6 mm 1.98 'g'
2000.118.1. (0458 5) T. XVI. F. 30. –50–60 cm, **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 10 × 7 × 5 mm 0.35 'g'
2000.118.1. (0459 6) T. XVI. F. 30. –50–60 cm, **B8** blade-like chip with burin-like fracture from the dorsal side **9** Transdanubian radiolarite – Szentgál type, 17 × 10 × 2 mm 0.34 'g' *(fig. 5. 9)*
2000.118.1. (0460 7) T. XVI. F. 30. –50–60 cm, **B2w** micro-core remnant **9** Transdanubian radiolarite – Szentgál type, 18 × 15 × 8 mm 2.16 'g'
2000.118.1. (0461 8) T. XVI. F. 30. –50–60 cm, **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 12 × 8 × 1 mm 0.10 'g'
2000.118.1. (0462 9) T. XVI. F. 30. –50–60 cm, **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 5 × 9 × 3 mm 0.14 'g'
2000.118.1. (0463 10) T. XVI. F. 30. –50–60 cm, **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 11 × 8 × 1 mm 0.09 'g'
2000.118.1. (0392 1) T. XVI. F. 30. –60–63 cm, **B6** knife with visible traces of use-wear, with core rim **9** Transdanubian radiolarite – Szentgál type, with porcelanite phase 20 %, 31 × 15 × 6 mm 2.79 'g' *(fig. 5. 12)*
2000.118.1. (0496 1) T. XVI. ? F. 30. –45–50 cm, **C5/9** fragment of retouched blade bulky, with fine retouch (use-wear traces?) on the cut edge **9** Transdanubian radiolarite – Szentgál type, 12 × 13 × 3 mm 0.47 'g' *(fig. 3. 15)*
2000.118.1. (0497 2) T. XVI. ? F. 30. –45–50 cm, **B4w** micro-chip **9** Transdanubian radiolarite– Szentgál type, with porcelanite phase 35 %, 7 × 7 × 2 mm 0.10 'g'
2000.118.1. (0498 3) T. XVI. ? F. 30. –45–50 cm, **B4** chip **909** Szentgál type radiolarite? burnt, 16 × 12 × 4 mm 0.77 'g'
2000.118.1. (0503 1) T. XVI. ? F. 30. –60–65 cm, **G5** burin on blade medial burin **9** Transdanubian radiolarite – Szentgál type, 28 × 11 × 4 mm 1.23 'g' *(fig. 5. 2)*
2000.118.1. (0504 2) T. XVI. ? F. 30. –60–65 cm, **B4** chip porcelanite **9** Transdanubian radiolarite– Szentgál type, 17 × 12 × 5 mm 1.02 'g'
2000.118.1. (0505 3) T. XVI. ? F. 30. –60–65 cm, **B2w** micro-core remnant porcelanite **9** Transdanubian radiolarite – Szentgál type, 11 × 9 × 9 mm 0.89 'g'
2000.119.22. (0611) T. XI. F. 17. –40, –50 cm, **B3f** pointed flake **9** Transdanubian radiolarite – Szentgál type, 21× 18 × 3 mm 1.13 'g'
2000.119.23. (0612) T. XI. F. 17. –40, –50 cm, **B8f** pointed blade-like chip **9** Transdanubian radiolarite – Szentgál type, 20 × 8 × 2.5 mm 0.40 'g'
2000.119.24. (0613 1) T. XI. F. 17. –40, –50 cm, **D5/9** truncated blade fragment medial part **9** Transdanubian radiolarite– Szentgál type, 7 × 9 × 2 mm 0.13 'g'
2000.119.24. (0614 2) T. XI. F. 17. –40, –50 cm, **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 6 × 7 × 3 mm 0.13 'g'
2000.119.24. (0615 3) T. XI. F. 17. –40, –50 cm, **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, with porcelanite phase 90 %, 6 × 8 × 1 mm 0.05 'g'
2000.119.26. (0616) T. XI. F. 17. –40, –50 cm, **B3** flake core rim **9** Transdanubian radiolarite – Szentgál type, 28× 14 × 7 mm 2.74 'g'
2000.120.1–4. (0597) Middle of T. V. F. 18. 0–20 cm, **dör.** grinding stone with rectangular cross-section and rounded ends **951** medium sandstone? volcanite? ash-grey, with coarse surface, 77 × 36 × 37 mm 102.56 'g'
2000.120.1. (0617) T. XI. F. 18. –45, –50 cm, **B4w** micro-chip, burin chip **9** Transdanubian radiolarite – Szentgál type, 12 × 5 × 3 mm 0.18 'g'
2000.120.2. (0618) T. XI. F. 18. –40, –50 cm, **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 10 × 8 × 3 mm 0.24 'g'
2000.120.3. (0619) T. XI. F. 18. –40 cm, **B2** core remnant, core flake **9** Transdanubian radiolarite – Szentgál type, burnt, 35 × 30 × 15 mm 15.75 'g'
2000.120.4. (0620) T. XI. F. 18. –40 cm, **B4** chip **9** Transdanubian radiolarite – Szentgál type, 20 × 10 × 6 mm 1.20 'g'
2000.121.1–31. (0588) T. XI. F. 19. –50 cm, **őrl9** fragment of grinding stone **51** medium sandstone light matrix with variable grains, basically composed of quartz, 60 × 38 × 33 mm 75.24 'g'
2000.121.1. (0621) N part of T. XII. F. 19. –20–40 cm, **B4** chip **13** Transdanubian radiolarite, reddish brown 18 × 12 × 6 mm 1.30 'g'
2000.121.10. (0631) T. XII. F. 19. –40–45 cm, **B7/9** fragment of blade-like flake, basis **9** Transdanubian radiolarite – Szentgál type, 11 × 13 × 3 mm 0.43 'g'
2000.121.11. (0632) T. XII. F. 19. 0–20 cm, **B3** flake **9** Transdanubian radiolarite – Szentgál type, with porcelanite phase 30 %, 40 × 23 × 12 mm 11.04 'g'
2000.121.12. (0633) T. XII. F. 19. 0–20 cm, **B3** flake **9** Transdanubian radiolarite – Szentgál type, 31 × 27 × 10 mm 8.37 'g'

2000.121.13. (0634) T. XII. F. 19. 0–20 cm, **B4** chip **9** Transdanubian radiolarite – Szentgál type, with porcelanite phase 90 %, 29 × 14 × 3 mm 1.22 'g'
2000.121.14. (0635) T. XII. F. 19. 0–20 cm, **B4** chip **9** Transdanubian radiolarite – Szentgál type, 14 × 14 × 1 mm 0.20 'g'
2000.121.15. (0636) T. XII. F. 19. 0–20 cm, **B9** fragment **9** Transdanubian radiolarite – Szentgál type, 16 × 11 × 7 mm 1.23 'g'
2000.121.16. (0637) T. XII. F. 19. 0–20 cm, **B7w** micro-blade-like flake with traces of use, injured **909** Szentgál type radiolarite? burnt, 16 × 12 × 4 mm 0.77 'g'
2000.121.17. (0638 1) T. XII. F. 19. 0–20 cm, **B4** chip **9** Transdanubian radiolarite – Szentgál type, 13 × 11 × 3 mm 0.43 'g'
2000.121.17. (0639 2) T. XII. F. 19. 0–20 cm, **B7/9** fragment of blade-like flake with sickle gloss **9** Transdanubian radiolarite– Szentgál type, 16 × 12 × 2 mm 0.38 'g'
2000.121.17. (0640 3) T. XII. F. 19. 0–20 cm, **B7w** micro-blade-like flake **909** Szentgál type radiolarite? orange red, 15 × 7× 4 mm 0.42 'g'
2000.121.17. (0641 4) T. XII. F. 19. 0–20 cm, **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 6 × 4 × 1 mm 0.02 'g'
2000.121.18. (0642) T. XI. F. 19. –45–50 cm, **B4** chip **9** Transdanubian radiolarite – Szentgál type, 14 × 12 × 4 mm 0.67 'g'
2000.121.19. (0643) T. XI. F. 19. –45–50 cm, **B7** blade-like flake atypical **53** quartzite white, 28 × 14 × 6 mm 2.35 'g'
2000.121.2. (0622) N part of T. XII. F. 19. –20–40 cm, **B4** chip **9** Transdanubian radiolarite – Szentgál type, 16 × 15 × 4 mm 0.96 'g'
2000.121.20. (0644) T. XI. F. 19. –45–50 cm, **B2** core remnant **13** Transdanubian radiolarite, reddish brown with porcelanite phase 60 %, 40 × 25 × 22 mm 22 'g'
2000.121.21. (0645) T. XI. F. 19. –45–50 cm, **B5w** microblade **9** Transdanubian radiolarite – Szentgál type, 24 × 8× 2 mm 0.38 'g'
2000.121.22. (0646) T. XI. F. 19. –45–50 cm, **B5** blade **9** Transdanubian radiolarite – Szentgál type, 33 × 12 × 4 mm 1.58 'g'
2000.121.23. (0647) T. XI. F. 19. –45–50 cm, **B4** chip **9** Transdanubian radiolarite – Szentgál type, 19 × 17 × 2 mm 0.65 'g'
2000.121.24. (0648) T. XI. F. 19. –45–50 cm, **B4f** pointed chip **15** Transdanubian radiolarite, others orange, 19 × 15 × 3 mm 0.86 'g'
2000.121.25. (0649) T. XI. F. 19. –45–50 cm, **B4** chip trapeze form **13** Transdanubian radiolarite, reddish brown with porcelanite phase 10 %, 15 × 16 × 3 mm 0.72 'g'
2000.121.26. (0650 1) T. XI. F. 19. –45–50 cm, **B5/9** fragment of blade trapeze form **9** Transdanubian radiolarite – Szentgál type, 14 × 11 × 3 mm 0.46 'g'
2000.121.26. (0651 2) T. XI. F. 19. –45–50 cm, **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 11 × 7 × 2 mm 0.15 'g'
2000.121.26. (0652 3) T. XI. F. 19. –45–50 cm, **B4** chip **9** Transdanubian radiolarite – Szentgál type, 15 × 13 × 3 mm 0.59 'g'
2000.121.26. (0653 4) T. XI. F. 19. –45–50 cm, **tör.** fragment **53** quartzite white, 14 × 8 × 3 mm 0.34 'g'
2000.121.26. (0654 5) T. XI. F. 19. –45–50 cm, **B4** chip core rim **15** Transdanubian radiolarite, others with porcelanite phase 100 %, 17 × 8 × 7 mm 0.95 'g'
2000.121.27. (0655) T. XI. F. 19. –55–60 cm, **I/D7** end-scraper/truncated blade-like flake **909** Szentgál type radiolarite? burnt, 22 × 23 × 8 mm 4.05 'g'
2000.121.28. (0656) T. XI. F. 19. –55–60 cm, **B5** blade **13** Transdanubian radiolarite, reddish brown 32 × 12 × 4 mm 1.54 'g'
2000.121.29. (0657) T. XI. F. 19. –55–60 cm, **B6** knife **9** Transdanubian radiolarite – Szentgál type, 27 × 8 × 4 mm 0.86 'g'
2000.121.3. (0623) N part of T. XII. F. 19. –20–40 cm, **B4** chip core rim **15** Transdanubian radiolarite, others with porcelanite phase, 18 × 9 × 10 mm 1.62 'g'
2000.121.30. (0658) T. XI. F. 19. –55–60 cm, **B5/9** fragment of blade basis part **9** Transdanubian radiolarite – Szentgál type, 17 × 10 × 3 mm 0.51 'g'
2000.121.31. (0659 1) T. XI. F. 19. –55–60 cm, **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 8 × 10 × 1 mm 0.08 'g'
2000.121.31. (0660 2) T. XI. F. 19. –55–60 cm, **B4** chip **9** Transdanubian radiolarite – Szentgál type, 11 × 15 × 4 mm 0.66 'g'
2000.121.31. (0661 3) T. XI. F. 19. –55–60 cm, **B4w** micro-chip **11** Transdanubian radiolarite – Hárskút type, 11× 9 × 1 mm 0.10 'g'
2000.121.4. (0624 1) N part of T. XII. F. 19. –20–40 cm, **B5/9** fragment of blade trapeze form **9** Transdanubian radiolarite – Szentgál type, 13 × 11 × 1 mm 0.14 'g'
2000.121.4. (0625 2) N part of T. XII. F. 19. –20–40 cm, **B4** chip **11** Transdanubian radiolarite – Hárskút type, 13 × 9 × 4 mm 0.47 'g'
2000.121.5. (0626) N part of T. XI. F. 19. –35–40 cm, **D7** truncated blade-like-flake hafted **909** Szentgál type radiolarite? 30 × 11 × 6 mm 1.98 'g'
2000.121.6. (0627) N part of T. XI. F. 19. –35–40 cm, **B4** chip **13** Transdanubian radiolarite, reddish brown 9 × 9 × 5 mm 0.41 'g'
2000.121.7. (0628) T. XII. F. 19. –40–45 cm, **B3** flake **9** Transdanubian radiolarite – Szentgál type, burnt, 24 × 28 × 5 mm 3.36 'g'
2000.121.8. (0629) T. XII. F. 19. –40–45 cm, **B4** chip triangular form **9** Transdanubian radiolarite – Szentgál type, 26 × 16 × 4 mm 1.66 'g'
2000.121.9. (0630) T. XII. F. 19. –40–45 cm, **B7** blade-like flake, bulky **9** Transdanubian radiolarite – Szentgál type, 18 × 13 × 3 mm 0.70 'g'
2000.122.1. (0662) T. XII. F. 20. –45–50 cm, **B2** core remnant of irregular flake core **9** Transdanubian radiolarite – Szentgál type, 33 × 28 × 23 mm 21.25 'g'
2000.122.10. (0671) Middle of T. XII. F. 20. –20–40 cm, **B4** chip **9** Transdanubian radiolarite – Szentgál type, 12× 12 × 3 mm 0.43 'g'
2000.122.2. (0663) T. XII. F. 20. –45–50 cm, **B4** chip with visible traces of use-wear? **909** Szentgál type radiolarite? orange, 21 × 14 × 3 mm 0.88 'g'
2000.122.3. (0664) T. XII. F. 20. –45–50 cm, **B5/9** fragment of blade hafted, fragmented, with sickle gloss **9** Transdanubian radiolarite – Szentgál type, 27 × 13 × 3 mm 1.05 'g'
2000.122.4. (0665) T. XII. F. 20. –45–50 cm, **B2/9** fragment of core remnant **909** Szentgál type radiolarite? burnt, 22 × 18 × 8 mm 3.17 'g'
2000.122.5. (0666) T. XII. F. 20. –45–50 cm, **D8** blade-like chip, truncated cutting edge?, atypical **9** Transdanubian radiolarite – Szentgál type, 16 × 10 × 3 mm 0.48 'g'
2000.122.6. (0667) T. XII. F. 20. –20–40 cm, **B6** knife hafted, with traces of use-wear **9** Transdanubian radiolarite – Szentgál type, 29 × 15 × 5 mm 2.18 'g'

2000.122.7. (0668) T. XII. F. 20. –20–40 cm, **C3** retouched flake worn cutting edge on core rim flake **9** Transdanubian radiolarite – Szentgál type, 24 × 16 × 6 mm 2.30 'g'
2000.122.8. (0669) T. XII. F. 20. –20–40 cm, **B5w** microblade **9** Transdanubian radiolarite – Szentgál type, 17 × 7× 2 mm 0.24 'g'
2000.122.9. (0670) Middle of T. XII. F. 20. –20–40 cm, **L/D7** trapeze form truncated blade-like flake double **9** Transdanubian radiolarite – Szentgál type, 13 × 11 × 3 mm 0.43 'g'
2000.123.1. (0672) T. XI. F. 21. –55–60 cm, **B3** flake core rim, core base **13** Transdanubian radiolarite, reddish brown 37 × 48 × 11 mm 19.54 'g'
2000.123.10. (0681) T. XI. N part of F. 21. –20–40 cm, **B2** core remnant wedge-like bipolar core-remnant **9** Transdanubian radiolarite – Szentgál type, 23 × 22 × 8 mm 4.05 'g'
2000.123.11. (0682) T. XI. N part of F. 21. –20–40 cm, **B5** blade with strong sickle gloss, traces of use-wear retouch under the cutting edge **13** Transdanubian radiolarite, reddish brown 33 × 15 × 3 mm 1.49 'g'
2000.123.12. (0683) T. XI. N part of F. 21. –20–40 cm, **B5** blade hafted, high, with visible traces of use-wear **9** Transdanubian radiolarite – Szentgál type, 30 × 13 × 5 mm 1.95 'g'
2000.123.13. (0684) T. XI. N part of F. 21. –20–40 cm, **B2** core remnant core-flake **13** Transdanubian radiolarite, reddish brown 26 × 22 × 13 mm 7.44 'g'
2000.123.14. (0685) T. XI. N part of F. 21. –20–40 cm, **B2** core remnant **9** Transdanubian radiolarite – Szentgál type, 33 × 21 × 16 mm 11.09 'g'
2000.123.15. (0686 1) T. XI. N part of F. 21. –20–40 cm, **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 11 × 8 × 1 mm 0.09 'g'
2000.123.15. (0687 2) T. XI. N part of F. 21. –20–40 cm, **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 13 × 9 × 1 mm 0.12 'g'
2000.123.15. (0688 3) T. XI. N part of F. 21. –20–40 cm, **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 14 × 11 × 4 mm 0.62 'g'
2000.123.15. (0689 4) T. XI. N part of F. 21. –20–40 cm, **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 13 × 10 × 4 mm 0.52 'g'
2000.123.2. (0673) T. XI. F. 21. –55–60 cm, **B4** conchoidal chip **9** Transdanubian radiolarite – Szentgál type, 14 × 18 × 3 mm 0.76 'g'
2000.123.3. (0674) T. XI. F. 21. –55–60 cm, **B4w** micro-chip trapeze form **9** Transdanubian radiolarite – Szentgál type, 7 × 9 × 3 mm 0.19 'g'
2000.123.4. (0675) T. XI. F. 21. –45–50 cm, **B7/9** fragment of blade-like flake basis part, cut off, trapeze form **9** Transdanubian radiolarite – Szentgál type, 13 × 10 × 2 mm 0.26 'g'
2000.123.5. (0676) T. XI. F. 21. –45–50 cm, **B5/9** fragment of blade basis part **913** Transdanubian radiolarite, reddish brown? with porcelanite phase 20 %, 16 × 10 × 2.5 mm 0.40 'g'
2000.123.6. (0677) T. XI. N part of F. 21. –20–40 cm, **B8** blade-like chip cutting edge, with sickle gloss **15** Transdanubian radiolarite, others light rosy porcelanite100 %, 19 × 13 × 3 mm 0.74 'g'
2000.123.7. (0678) T. XI. N part of F. 21. –20–40 cm, **D6/9** truncated knife-blade, fragment **9** Transdanubian radiolarite– Szentgál type, 17 × 13 × 4 mm 0.88 'g'
2000.123.8. (0679) T. XI. N part of F. 21. –20–40 cm, **H2** wedge on core remnant small wedge **9** Transdanubian radiolarite– Szentgál type, with porcelanite phase, 20 × 15 × 9 mm 2.70 'g'
2000.123.9. (0680) T. XI. N part of F. 21. –20–40 cm, **B8** blade-like chip **9** Transdanubian radiolarite – Szentgál type, porcelanite, burnt? 70 %, 25 × 15 × 4 mm 1.50 'g'
2000.124.1. (0390 1) T. XIII. F. 22. 0–20 cm, **B2w** micro-core remnant burnt, angular **9** Transdanubian radiolarite – Szentgál type, 17 × 16 × 10 mm 2.72 'g' *(fig. 3. 26)*
2000.124.1. (0391 2) T. XIII. F. 22. 0–20 cm, **L/D5** trapeze form truncated blade truncated on one side, on the other side, thinning retouch – hafting? from the dorsal side **9** Transdanubian radiolarite – Szentgál type, 15 × 9 × 3 mm 0.41 'g' *(fig. 3. 7)*
2000.124.1. (0580 1) T. XIII. F. 22. –45–50 cm, **B5w** microblade **9** Transdanubian radiolarite – Szentgál type, 22 × 8 × 4 mm 0.70 'g' *(fig. 4. 21)*
2000.124.1. (0512 1) N half of T. XIII. F. 22. –20–40 cm, **B4w** micro-chip trapeziform **9** Transdanubian radiolarite – Szentgál type, 6 × 6 × 1,5 mm 0.05 'g'
2000.124.1. (0513 1) N half of T. XIII. F. 22. –20–40 cm, **B8/9** fragment of blade-like chip trapeziform **9** Transdanubian radiolarite – Szentgál type, 5 %, 16 × 8 × 4 mm 0.51 'g'
2000.124.1. (0478 1) S half of T. XV. F. 22. –20–40 cm, **A3** raw material- or pre-core flake with layer boundary **77** Becsehely type grey silex grey, mottled, 60 × 30 × 41 mm 73.80 'g'
2000.125.1–4. (0484 1) T. XIII. F. 24. –20–40 cm, **B4w** micro-chip **13** Transdanubian radiolarite, reddish brown 8 × 6× 2 mm 0.10 'g'
2000.125.1–4. (0485 2) T. XIII. F. 24. –20–40 cm, **B4w** micro-chip **13** Transdanubian radiolarite, reddish brown 11 × 8 × 2 mm 0.18 'g'
2000.125.1–4. (0494 1) T. XIII. F. 24. –55–60 cm, **B7/9** fragment of blade-like flake, short (fragmented?) **15** Transdanubian radiolarite, others orange yellowish-brown, white cortex 15 %, 18 × 18 × 4 mm 1.30 'g'
2000.125.1–4. (0495 2) T. XIII. F. 24. –55–60 cm, **B8** blade-like chip **9** Transdanubian radiolarite – Szentgál type, 17 × 14 × 3 mm 0.71 'g'
2000.125.1–4. (0430 1) T. XIII. F. 24. –20–40 cm, **B4** chip burin chip? **9** Transdanubian radiolarite – Szentgál type, 20 × 12 × 5 mm 1.20 'g'
2000.125.1–4. (0431 2) T. XIII. F. 24. –20–40 cm, **B6** knife with high ridge **11** Transdanubian radiolarite – Hárskút type, 23 × 12 × 6 mm 1.66 'g' *(fig. 4. 15)*
2000.125.1–4. (0384 1) T. XIII. F. 24. **G3** burin on flake, large, lateral burin **10** Transdanubian radiolarite – Úrkút–Eplény type, orange-yellow, 44 × 40 × 20 mm 35.20 'g'
2000.125.1–4. (0385 2) T. XIII. F. 24. **B4** chip **9** Transdanubian radiolarite– Szentgál type, 14 × 16 × 5 mm 1.12 'g'
2000.125.1–4. (0386 3) T. XIII. F. 24. **B4** chip **11** Transdanubian radiolarite – Hárskút type, orange brown, 10 × 12 × 2 mm 0.24 'g' *(fig. 6. 5)*
2000.125.1–4. (0387 4) T. XIII. F. 24. **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 10 × 7 × 1 mm 0.07 'g'
2000.125.1–4. (0388 5) F. 24. **G4w** micro-burin on chip microburin chip, with two lateral burin edges **9** Transdanubian radiolarite – Szentgál type, 12 × 5 × 2 mm 0.12 'g' *(fig. 5. 7)*

2000.125.1–4. (0389 6) T. XIII. F. 24. **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 13 × 7 × 2 mm 0.18 'g'
2000.125.1–4. (0591) T. XIII. F. 24. –55–60 cm, **kav9** pebble fragment flat pebble **53** quartzite from the lead of the River Mura? white, 65 × 115 × 17 mm 127.08 'g'
2000.125.1–4. (0592) T. XIII. F. 24. –55–60 cm, **kav9** pebble fragment with traces of ochre, flat **953** quartzite? from the lead of the River Mura? yellowish-grey, 61 × 49 × 10 mm 29.89 'g' *(fig. 1. 7)*
2000.126.1–12. (0432 1) T. XIII. F. 25. –40–45 cm, **B5/9** fragment of blade trapeziform small cutting edge inlay **15** Transdanubian radiolarite, others light rosy porcelanite, 14 × 10 × 3 mm 0.42 'g' *(fig. 3. 19)*
2000.126.1–12. (0469 1) T. XIII. F. 25. –45–50 cm, **L/D5** trapeze form truncated blade on slightly irregular blade, with double truncation and worn edges **9** Transdanubian radiolarite – Szentgál type, 17 × 11 × 2 mm 0.37 'g' *(fig. 3. 8)*
2000.126.1–12. (0470 2) T. XIII. F. 25. –45–50 cm, **B8** blade-like chip **9** Transdanubian radiolarite – Szentgál type, 17 × 11 × 1 mm 0.19 'g'
2000.126.1–12. (0471 3) T. XIII. F. 25. –45–50 cm, **B5** blade, complete, with arched back detached from a conical blade-core **10** Transdanubian radiolarite – Úrkút–Eplény type, with MnO pattern, 32 × 8 × 3.5 mm 0.90 'g' *(fig. 4. 23)*
2000.126.1–12. (0472 4) T. XIII. F. 25. –45–50 cm, **B2** core remnant **9** Transdanubian radiolarite – Szentgál type, 22 × 14 × 11 mm 3.39 'g'
2000.126.1–12. (0473 5) T. XIII. F. 25. –45–50 cm, **B3** flake core-flake **9** Transdanubian radiolarite – Szentgál type, with MnO and chalcedony pattern, 35 × 25 × 10 mm 8.75 'g'
2000.127.1. (0690) T. XV. F. 29. –50–55 cm, **B6w** micro-knife **9** Transdanubian radiolarite – Szentgál type, 17 × 9× 4 mm 0.61 'g'
2000.127.10. (0699 1) T. XV. F. 29. –50–55 cm, **B4** chip **999** other silex light greenish grey – Mecsek or Drava valley?, 14 × 8 × 2 mm 0.22 'g'
2000.127.10. (0700 2) T. XV. F. 29. –50–55 cm, **B5/9** fragment of blade medial fragment **9** Transdanubian radiolarite – Szentgál type, 8 × 12 × 2 mm 0.19 'g'
2000.127.10. (0701 3) T. XV. F. 29. –50–55 cm, **B4** chip segment-form cutting edge **9** Transdanubian radiolarite – Szentgál type, 12 × 8 × 2 mm 0.19 'g'
2000.127.10. (0702 4) T. XV. F. 29. –50–55 cm, **B4** chip **9** Transdanubian radiolarite – Szentgál type, 12 × 6 × 3 mm 0.22 'g'
2000.127.10. (0703 5) T. XV. F. 29. –50–55 cm, **B4** conchoidal chip **9** Transdanubian radiolarite – Szentgál type, 9× 15 × 2 mm 0.27 'g'
2000.127.10. (0704 6) T. XV. F. 29. –50–55 cm, **F9** borer fragment tip fragment **9** Transdanubian radiolarite – Szentgál type, 12 × 6 × 3 mm 0.22 'g'
2000.127.10. (0705 7) T. XV. F. 29. –50–55 cm, **L/D4** trapeze form truncated chip, with double truncation **9** Transdanubian radiolarite – Szentgál type, 14 × 9 × 1.5 mm 0.19 'g'
2000.127.10. (0706 8) T. XV. F. 29. –50–55 cm, **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 8 × 10 × 1 mm 0.08 'g'
2000.127.10. (0707 9) T. XV. F. 29. –50–55 cm, **B4** chip **9** Transdanubian radiolarite – Szentgál type, 11 × 10 × 4 mm 0.44 'g'
2000.127.10. (0708 10) T. XV. F. 29. –50–55 cm, **F9** borer fragment, fragment of the tip **9** Transdanubian radiolarite – Szentgál type, 7 × 4 × 4 mm 0.11 'g'
2000.127.10. (0709 11) T. XV. F. 29. –50–55 cm, **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 9 × 10 × 2 mm 0.18 'g'
2000.127.2. (0691) T. XV. F. 29. –50–55 cm, **B4** chip **9** Transdanubian radiolarite – Szentgál type, 16 × 12 × 4 mm 0.77 'g'
2000.127.3. (0692) T. XV. F. 29. –50–55 cm, **B4** chip **9** Transdanubian radiolarite – Szentgál type, 18 × 13 × 1 mm 0.23 'g'
2000.127.4. (0693) T. XV. F. 29. –50–55 cm, **B8** blade-like chip **9** Transdanubian radiolarite – Szentgál type, 17 × 9 × 3 mm 0.46 'g'
2000.127.5. (0694) T. XV. F. 29. –50–55 cm, **B8** blade-like chip pin/needle? **9** Transdanubian radiolarite – Szentgál type, 23 × 6 × 2 mm 0.28 'g'
2000.127.6. (0695) T. XV. F. 29. –50–55 cm, **B7w** micro-blade-like flake **9** Transdanubian radiolarite – Szentgál type, 19 × 11 × 2 mm 0.42 'g'
2000.127.7. (0696) T. XV. F. 29. –50–55 cm, **J3w** side-scraper on micro-flake **9** Transdanubian radiolarite – Szentgál type, 25 × 14 × 6 mm 2.10 'g'
2000.127.8. (0697) T. XV. F. 29. –50–55 cm, **B5/9** fragment of blade basis part **9** Transdanubian radiolarite – Szentgál type, burnt, 16 × 11 × 3 mm 0.53 'g'
2000.127.9. (0698) T. XV. F. 29. –50–55 cm, **B3** flake **15** Transdanubian radiolarite, others with porcelanite phase, 22 × 18× 10 mm 3.96 'g'
2000.128.1–3. (0506 1) T. XVI. F. 31. **B4** chip **13** Transdanubian radiolarite, reddish brown 15 × 20 × 3 mm 0.90 'g'
2000.128.1–3. (0507 2) T. XVI. F. 31. **G4w** micro-burin on chip **13** Transdanubian radiolarite, reddish brown 12 × 5 × 3 mm 0.18 'g'
2000.129.1–5. (0449 1) T. XIV. F. 27. **B3** flake core-flake **9** Transdanubian radiolarite – Szentgál type, 50 × 41 × 14 mm 28.70 'g'
2000.129.1–5. (0450 2) T. XIV. F. 27. **B4/9** chip fragment, burnt **909** Szentgál type radiolarite? 10 × 7 × 1 mm 0.07 'g' 2–3–4 refitted fracture
2000.129.1–5. (0451 3) T. XIV. F. 27. **B4/9** chip fragment, burnt **909** Szentgál type radiolarite? 12 × 10 × 4 mm 0.48 'g' 2–3–4 refitted fracture
2000.129.1–5. (0452 4) T. XIV. F. 27. **B4/9** chip fragment burnt **909** Szentgál type radiolarite? 15 × 13 × 4 mm 0.78 'g' 2–3–4 refitted fracture
2000.129.1–5. (0439 1) T. XIV. F. 27. –20–40 cm, **I/D7** end-scraper/truncated blade-like flake micro-scraper, with steep truncation-like retouch **9** Transdanubian radiolarite – Szentgál type, 15 × 13 × 4 mm 0.78 'g' *(fig. 3. 23)*
2000.129.1–5. (0440 2) T. XIV. F. 27. –20–40 cm, **B4** chip **9** Transdanubian radiolarite – Szentgál type, 14 × 19 × 1 mm 0.27 'g'
2000.129.1–5. (0441 3) T. XIV. F. 27. –20–40 cm, **G5** burin on blade with lateral burin edge **9** Transdanubian radiolarite – Szentgál type, 17 × 8 × 2 mm 0.27 'g' *(fig. 5. 6)*
2000.129.1–5. (0442 4) T. XIV. F. 27. –20–40 cm, **B4/9** chip fragment **9** Transdanubian radiolarite – Szentgál type, 17 × 11× 3 mm 0.56 'g'
2000.129.1–5. (0443 5) T. XIV. F. 27. –20–40 cm, **B4/9** chip fragment with fresh injuries, burin-like broken distal part **9** Transdanubian radiolarite – Szentgál type, 18 × 12 × 3 mm 0.65 'g' *(fig. 5. 19)*
2000.129.1–5. (0444 6) T. XIV. F. 27. –20–40 cm, **B2** core remnant **9** Transdanubian radiolarite – Szentgál type, burnt, 17 × 23 × 12 mm 4.69 'g'

2000.129.1–5. (0445 7) T. XIV. F. 27. –20–40 cm, **B5/9** fragment of blade tip of a micro-blade **9** Transdanubian radiolarite – Szentgál type, 14 × 6 × 2 mm 0.17 'g' *(fig. 5. 11)*
2000.129.1–5. (0446 8) T. XIV. F. 27. –20–40 cm, **B4/9** chip fragment with burin-like (fresh?) fractures **9** Transdanubian radiolarite – Szentgál type, 10 × 6 × 2 mm 0.12 'g'
2000.129.1–5. (0447 9) T. XIV. F. 27. –20–40 cm, **B4w** micro-chip 9 Transdanubian radiolarite – Szentgál type, **7** × 14 × 5 mm 0.49 'g'
2000.129.1–5. (0393 1) T. XIV. F. 27. –35–40 cm, **B3w** microflake burnt, trapeziform, fragmented? **909** Szentgál type radiolarite? 16 × 16 × 2 mm 0.51 'g' *(fig. 3. 17)*
2000.129.1–5. (0394 2) T. XIV. F. 27. –35–40 cm, **B5** blade with sickle gloss **9** Transdanubian radiolarite – Szentgál type, 24× 9 × 3 mm 0.65 'g' *(fig. 4. 16)*
2000.129.1–5. (0395 3) T. XIV. F. 27. –35–40 cm, **B5/9** fragment of blade, distal fragment **9** Transdanubian radiolarite – Szentgál type, orange, 13 × 9 × 2 mm 0.23 'g' *(fig. 3. 20)*
2000.129.1–5. (0520 1) T. XIV. F. 27. –45–50 cm, **B3w** microflake **9** Transdanubian radiolarite – Szentgál type, 16 × 14 × 6 mm 1.34 'g'
2000.129.1–5. (0521 2) T. XIV. F. 27. –45–50 cm, **B5** blade **9** Transdanubian radiolarite – Szentgál type, 23 × 10 × 2 mm 0.46 'g' *(fig. 4. 9)*
2000.129.1–5. (0522 3) T. XIV. F. 27. –45–50 cm, **B3w** microflake with traces of use-wear on the edge **9** Transdanubian radiolarite – Szentgál type, 17 × 18 × 5 mm 1.53 'g'
2000.129.1–5. (0523 4) T. XIV. F. 27. –45–50 cm, **B5** blade with traces of use-wear on the edge **9** Transdanubian radiolarite – Szentgál type, 28 × 13 × 2 mm 0.73 'g' *(fig. 5. 4)*
2000.129.1–5. (0524 5) T. XIV. F. 27. –45–50 cm, **L/D5** trapeze form truncated blade, truncated on the basis **9** Transdanubian radiolarite – Szentgál type, 14 × 11 × 2 mm 0.31 'g' *(fig. 3. 5)*
2000.129.1–5. (0525 6) T. XIV. F. 27. –45–50 cm, **B7w** micro-blade-like flake **9** Transdanubian radiolarite – Szentgál type, 23 × 11 × 2 mm 0.51 'g'
2000.129.1–5. (0526 7) T. XIV. F. 27. –45–50 cm, **D6** truncated knife-blade with sickle gloss, truncated on the basis **9** Transdanubian radiolarite – Szentgál type, 22 × 12 × 3 mm 0.79 'g' *(fig. 4. 14)*
2000.129.1–5. (0527 8) T. XIV. F. 27. –45–50 cm, **B2/9** fragment of core remnant with burin edge? **9** Transdanubian radiolarite – Szentgál type, 22 × 9 × 7 mm 1.39 'g'
2000.129.1–5. (0528 9) T. XIV. F. 27. –45–50 cm, **B3** flake core preparation flake **9** Transdanubian radiolarite – Szentgál type, 28 × 28 × 13 mm 10.19 'g'
2000.129.1–5. (0529 10) T. XIV. F. 27. –45–50 cm, **B4/9** chip fragment **9** Transdanubian radiolarite – Szentgál type, 11 × 5 × 1 mm 0.06 'g'
2000.129.1–5. (0530 11) T. XIV. F. 27. –45–50 cm, **B6w** micro-knife **15** Transdanubian radiolarite, others with porcelanite phase 100 %, 23 × 12 × 3 mm 0.83 'g' *(fig. 4. 11)*
2000.129.1–5. (0531 12) T. XIV. F. 27. –45–50 cm, **B4** chip **15** Transdanubian radiolarite, others with porcelanite phase 100 %, 17 × 6 × 4 mm 0.41 'g'
2000.129.1–5. (0532 13) T. XIV. F. 27. –45–50 cm, **B4w** micro-chip **15** Transdanubian radiolarite, others with porcelanite phase 100 %, 14 × 6 × 3 mm 0.25 'g'
2000.129.1–5. (0533 14) T. XIV. F. 27. –45–50 cm, **B4** chip, core rejuvenation **9** Transdanubian radiolarite – Szentgál type, 26 × 11 × 6 mm 1.72 'g'
2000.129.1–5. (0534 15) T. XIV. F. 27. –45–50 cm, **B4** chip **13** Transdanubian radiolarite, reddish brown with porcelanite phase 10 %, 15 × 12 × 3 mm 0.54 'g'
2000.129.1–5. (0535 16) T. XIV. F. 27. –45–50 cm, **B2/9** fragment of core remnant **13** Transdanubian radiolarite, reddish brown 20 × 12 × 7 mm 1.68 'g'
2000.129.1–5. (0536 17) T. XIV. F. 27. –45–50 cm, **B8** blade-like chip **13** Transdanubian radiolarite, reddish brown 13× 8 × 2 mm 0.21 'g'
2000.129.1–5. (0537 18) T. XIV. F. 27. –45–50 cm, **B8** blade-like chip **13** Transdanubian radiolarite, reddish brown 19× 9 × 4 mm 0.68 'g'
2000.129.1–5. (0571 1) T. XIV. F. 27. –45–50 cm, **B6** knife core rim **9** Transdanubian radiolarite – Szentgál type, 41 × 9× 4 mm 1.48 'g' *(fig. 5. 13)*
2000.129.1–5. (0572 2) T. XIV. F. 27. –45–50 cm, **B6w** micro-knife **9** Transdanubian radiolarite – Szentgál type, 16 × 8 × 3 mm 0.38 'g' *(fig. 4. 3)*
2000.129.1–5. (0573 3) T. XIV. F. 27. –45–50 cm, **B4/9** chip fragment trapeziform **10** Transdanubian radiolarite – Úrkút–Eplény type, 12 × 9 × 2 mm 0.22 'g' *(fig. 3. 1)*
2000.129.1–5. (0574 4) T. XIV. F. 27. –45–50 cm, **B4** chip, hinge **13** Transdanubian radiolarite, reddish brown with porcelanite phase 70 %, 14 × 24 × 6 mm 2.02 'g'
2000.129.1–5. (0575 5) T. XIV. F. 27. –45–50 cm, **B4** chip **9** Transdanubian radiolarite – Szentgál type, with porcelanite phase 20 %, 15 × 10 × 3 mm 0.45 'g'
2000.129.1–5. (0576 6) T. XIV. F. 27. –45–50 cm, **B4** chip **9** Transdanubian radiolarite – Szentgál type, 11× 10 × 2 mm 0.22 'g'
2000.129.1–5. (0577 7) T. XIV. F. 27. –45–50 cm, **B2/9** fragment of core remnant **9** Transdanubian radiolarite – Szentgál type, 10 × 8 × 6 mm 0.48 'g'
2000.129.1–5. (0578 8) T. XIV. F. 27. –45–50 cm, **B4** chip **9** Transdanubian radiolarite – Szentgál type, 5 × 7 × 3 mm 0.11 'g'
2000.129.1–5. (0514 1) T. XIV. F. 27. –60–65 cm, **B3** flake **9** Transdanubian radiolarite – Szentgál type, 23× 24 × 7 mm 3.86 'g'
2000.129.1–5. (0515 2) T. XIV. F. 27. –60–65 cm, **B8** blade-like chip **9** Transdanubian radiolarite – Szentgál type, 20 × 8 × 4 mm 0.64 'g'
2000.129.1–5. (0516 3) T. XIV. F. 27. –60–65 cm, **B4** chip **9** Transdanubian radiolarite – Szentgál type, 17× 13 × 4 mm 0.88 'g'
2000.129.1–5. (0517 4) T. XIV. F. 27. –60–65 cm, **B4** chip **9** Transdanubian radiolarite – Szentgál type, 14× 16 × 3 mm 0.67 'g'
2000.129.1–5. (0518 5) T. XIV. F. 27. –60–65 cm, **B4/9** chip fragment burin chip? **9** Transdanubian radiolarite – Szentgál type, 14 × 5 × 3 mm 0.21 'g'
2000.129.1–5. (0519 6) T. XIV. F. 27. –60–65 cm, **B4w** micro-chip **915** Transdanubian radiolarite, others? burnt, 8 × 8 × 3 mm 0.19 'g'
2000.129.1–5. (0542 1) T. XIV. F. 27. –60–65 cm, **B5w** microblade **15** Transdanubian radiolarite, others beige coloured porcelanite, belonging to Szentgál type 100 %, 23 × 7 × 2 mm 0.32 'g' *(fig. 4. 10)*

2000.129.1–5. (0543 2) T. XIV. F. 27. –60–65 cm, **C5** retouched blade backed, blunted from dorsal side with worn edges (ancient (LUP) type) **9** Transdanubian radiolarite – Szentgál type, 17 × 10 × 6 mm 1.02 'g' *(fig. 4. 20)*

2000.129.1–5. (0544 3) T. XIV. F. 27. –60–65 cm, **F/C5** borer on retouched blade, tip of borer (basis broken?) **9** Transdanubian radiolarite – Szentgál type, 18 × 8 × 4 mm 0.58 'g' *(fig. 5. 10)*

2000.129.1–5. (0545 4) T. XIV. F. 27. –60–65 cm, **C8** retouched blade-like chip, micro blade-like flake with blunted edges **9** Transdanubian radiolarite – Szentgál type, 16 × 8 × 4 mm 0.51 'g' *(fig. 4. 7)*

2000.129.1–5. (0546 5) T. XIV. F. 27. –60–65 cm, **B4** chip burin chip? **9** Transdanubian radiolarite – Szentgál type, 11 × 7 × 2 mm 0.15 'g'

2000.129.1–5. (0547 6) T. XIV. F. 27. –60–65 cm, **B4f** pointed chip with borer tip, asymmetrical **9** Transdanubian radiolarite – Szentgál type, 17 × 25 × 7 mm 2.98 'g'

2000.129.1–5. (0548 7) T. XIV. F. 27. –60–65 cm, **B3** flake core-flake **916** Mecsek radiolarite, dark red? brick-coloured, with lilac tint, 24 × 26 × 13 mm 8.11 'g'

2000.129.1–5. (0549 8) T. XIV. F. 27. –60–65 cm, **B6** knife **9** Transdanubian radiolarite – Szentgál type, 26× 13 × 5 mm 1.69 'g' *(fig. 4. 12)*

2000.129.1–5. (0550 9) T. XIV. F. 27. –60–65 cm, **B5w** microblade **9** Transdanubian radiolarite – Szentgál type, light rosy porcelanite, 20 × 10 × 5 mm 1 'g'

2000.129.1–5. (0551 10) T. XIV. F. 27. –60–65 cm, **B4** chip **9** Transdanubian radiolarite – Szentgál type, light rosy porcelanite 50 %, 15 × 15 × 4 mm 0.90 'g'

2000.129.1–5. (0552 11) T. XIV. F. 27. –60–65 cm, **B5/9** fragment of blade trapeziform cutting edge inlay **9** Transdanubian radiolarite– Szentgál type, 14 × 12 × 4 mm 0.67 'g' *(fig. 5. 15)*

2000.129.1–5. (0553 12) T. XIV. F. 27. –60–65 cm, **B5/9** fragment of blade trapeziform cutting edge inlay, medial part **9** Transdanubian radiolarite – Szentgál type, 14 × 11 × 3 mm 0.46 'g'

2000.129.1–5. (0554 13) T. XIV. F. 27. –60–65 cm, **B4/9** chip fragment **9** Transdanubian radiolarite – Szentgál type, 8 × 12× 2 mm 0.19 'g' *(fig. 3. 16)*

2000.129.1–5. (0555 14) T. XIV. F. 27. –60–65 cm, **B7/9** fragment of blade-like flake **9** Transdanubian radiolarite – Szentgál type, 22 × 15 × 4 mm 1,32 'g'

2000.129.1–5. (0556 15) T. XIV. F. 27. –60–65 cm, **B4** chip **9** Transdanubian radiolarite – Szentgál type, light rosy porcelanite70 %, 14 × 16 × 3 mm 0.67 'g'

2000.129.1–5. (0557 16) T. XIV. F. 27. –60–65 cm, **B4** chip **9** Transdanubian radiolarite – Szentgál type, 13× 8 × 1 mm 0.10 'g'

2000.129.1–5. (0558 17) T. XIV. F. 27. –60–65 cm, **B9** fragment **909** Szentgál type radiolarite? 17 × 7 × 4 mm 0.48 'g'

2000.129.1–5. (0560 1) S part of T. XIV. F. 27. 0–20 cm, **B5** blade with sickle gloss **9** Transdanubian radiolarite– Szentgál type, with light rosy porcelanite 30 %, 24 × 12 × 3 mm 0.86 'g' *(fig. 4. 13)*

2000.129.1–5. (0561 2) S part of T. XIV. F. 27. 0–20 cm, **B8** blade-like chip with traces of use-wear on the edge **13** Transdanubian radiolarite, reddish brown porcelanite 30 %, 19 × 11 × 4 mm 0.84 'g'

2000.129.1–5. (0562 3) S part of T. XIV. F. 27. 0–20 cm, **B3** flake core-flake **9** Transdanubian radiolarite – Szentgál type, 29 × 24 × 11 mm 7,66 'g'

2000.129.1–5. (0563 4) S part of T. XIV. F. 27. 0–20 cm, **B3** flake core rim **9** Transdanubian radiolarite – Szentgál type, with porcelanite phase 25 %, 25 × 25 × 8 mm 5 'g'

2000.129.1–5. (0579 1) F. 27. **B3** flake **9** Transdanubian radiolarite – Szentgál type, 30 × 29 × 6 mm 5,22 'g'

2000.13.1–14. (0589) Middle part of T. III. F. 11. –40, –45 cm, **őrl9** fragment of grinding stone, plate or loaf-shaped grinding stone, fragment of rim **51** medium sandstone Permian (?) red sandstone, 71 × 76 × 58 mm 312.97 'g'

2000.13.1–14. (0598) W part of T. III. F. 11. 0–20 cm, **őrl9** fragment of grinding stone, with narrowing end **51** medium sandstone light grey-pink, with metamorphic quartzite grains, 100 × 84 × 35 mm 294 'g' *(fig. 1. 3)*

2000.13.1–14. (0599) W part of T. III. F. 11. 0–20 cm, **őrl9** fragment of grinding stone **51** medium sandstone with large mica and quartzite grains, light grey, pink shade, 121 × 74 × 30 mm 268.62 'g'

2000.125.1. (0397 1) T. XIV. F. 32. –50 cm, **B5w** microblade, with fresh injuries on the dorsal side **9** Transdanubian radiolarite – Szentgál type, with porcelanite phase 15 %, 18 × 8 × 3 mm 0.43 'g' *(fig. 4. 1)*

2000.125.2. (0476 1) T. XV. F. 28. 0–20 cm, **P9** fragment of polished stone tool **80** Serpentinite, light green, 57 × 48 × 36 mm 98.50 'g' *(fig. 6. 3)*

2000.119.27. (0273) T. VI. F. 14. –40–55 cm, **B3f** pointed flake secondary decortication flake- basis atypical borer-point? **977** Becsehely type grey silex? cortex 15 %, 51 × 35 × 15 mm 26,78 'g'

2000.119.18 (0274) T. VI. F. 14. –40–55 cm, **M4w** segment on micro-chip retouched on the edge, core rim **9** Transdanubian radiolarite – Szentgál type, 12 × 8 × 4 mm 0.38 'g'

2000.119.19. (0275) T. VI. F. 14. –40–55 cm, **B3** flake M form 15 Transdanubian radiolarite, others reddish brown, orange, **26** × 16 × 6 mm 2.50 'g'

2000.119.14. (0276) T. VI. F. 14. –40–55 cm, **B7** blade-like flake primary decortication flake **15** Transdanubian radiolarite, others with porcelanite phase 100 %, 23 × 16 × 3 mm 1.10 'g'

2000.119.15. (0277) T. VI. F. 14. –40–55 cm, **B7** blade-like flake primary decortication flake **15** Transdanubian radiolarite, others with porcelanite phase 100 %, 36 × 25 × 7 mm 6.30 'g'

Without inventory number:

(0104) E part of T. I. 0–20 cm, 07/18/95 **C6** retouched knife blade core rim, fine marginal retouch, with fresh injuries **22** Tevel flint 15 %, 60 × 28 × 11 mm 18.48 'g' (*Biró 2001* fig. 2. 28)

(0105) E part of T. I. 0–20 cm, 07/18/95 **B5** blade flicked hafting, lateral borer-tip **9** Transdanubian radiolarite – Szentgál type, with porcelanite phase 97 %, 36 × 15 × 5 mm 2.70 'g' (*Biró 2001* fig. 2. 20)

(0106) E part of T. I. 0–20 cm, 07/18/95 **B2** core remnant **9** Transdanubian radiolarite – Szentgál type, with porcelanite phase 30 %, 33 × 32 × 15 mm 15.84 'g'

(0107) E part of T. I. 0–20 cm, 07/18/95 **B4** chip **9** Transdanubian radiolarite – Szentgál type, with porcelanite phase 5 %, 13 × 14 × 3 mm 0.55 'g'

(0108) E part of T. I. 0–20 cm, 07/18/95 **B4** chip with retouch-like traces of use **9** Transdanubian radiolarite – Szentgál type, with porcelanite phase 5 %, 13 × 10 × 3 mm 0.39 'g' (*Biró 2001* fig. 2. 27 1)

(0035) Middle of T. I. 0–20 cm, 07/18/95 **C3w** retouched micro-flake **9** Transdanubian radiolarite – Szentgál type, 17 × 18 × 3 mm 0.92 'g'

(0036) Middle of T. I. 0–20 cm, 07/18/95 **B7** blade-like flake core rim **9** Transdanubian radiolarite – Szentgál type, 21× 14 × 4 mm 1.18 'g'
(0037) Middle of T. I. 0–20 cm, 07/18/95 **B8** blade-like chip **9** Transdanubian radiolarite – Szentgál type, 14 × 7 × 1 mm 0.10 'g'
(0038) Middle of T. I. 0–20 cm, 07/18/95 **B5/9** fragment of blade micro-blade **9** Transdanubian radiolarite – Szentgál type, 10 × 7 × 1 mm 0.07 'g'
(0039) Middle of T. I. 0–20 cm, 07/18/95 **B4** chip **9** Transdanubian radiolarite – Szentgál type, 13 × 13 × 5 mm 0.85 'g'
(0040) Middle of T. I. 0–20 cm, 07/18/95 **B4** chip **9** Transdanubian radiolarite – Szentgál type, orange, 14 × 17 × 5 mm 1.19 'g'
(0048) Middle of T. I. 0–25 cm, 07/18/95 **B7** blade-like flake **15** Transdanubian radiolarite, others with porcelanite phase 100 %, 22× 13 × 4 mm 1.14 'g'
(0049) Middle of T. I. 0–25 cm, 07/18/95 **B7** blade-like flake **15** Transdanubian radiolarite, others with porcelanite phase 100 %, 23× 16 × 3 mm 1.10 'g'
(0050) Middle of T. I. 0–25 cm, 07/18/95 **B4** chip trapeze form **9** Transdanubian radiolarite – Szentgál type, with porcelanite phase 90 %, 12 × 12 × 2 mm 0.29 'g'
(0051) Middle of T. I. 0–25 cm, 07/18/95 **B4** chip **9** Transdanubian radiolarite – Szentgál type, 11 × 11 × 2,5 mm 0.30 'g'
(0052) Middle of T. I. 0–25 cm, 07/18/95 **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 8 × 8 × 1 mm 0.06 'g'
(0053) Middle of T. I. 0–25 cm, 07/18/95 **B5/9** fragment of blade distal part **9** Transdanubian radiolarite – Szentgál type, burnt? 11 × 8 × 3 mm 0.26 'g'
(0015) W end of T. I. 0–25 cm, 07/18/95 **B2** core remnant **9** Transdanubian radiolarite – Szentgál type, with porcelanite phase 10 %, 21 × 13 × 15 mm 4.10 'g'
(0016) W end of T. I. 0–25 cm, 07/18/95 **B5w** microblade with slightly worn edge **9** Transdanubian radiolarite – Szentgál type, 23 × 10 × 1 mm 0.23 'g'
(0017) W end of T. I. 0–25 cm, 07/18/95 **B9** fragment **9** Transdanubian radiolarite – Szentgál type, burnt, 16 × 8 × 4 mm 0.51 'g'
(0018) W end of T. I. 0–25 cm, 07/18/95 **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 12 × 6 × 1 mm 0.07 'g'
(0019) W end of T. I. 0–25 cm, 07/18/95 **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 8 × 11 × 1 mm 0.09 'g'
(0020) W end of T. I. 0–25 cm, 07/18/95 **B4w** micro-chip core rim **15** Transdanubian radiolarite, others with porcelanite phase 100 %, 15 × 7 × 3 mm 0.32 'g'
(0133) W end of T. I. –40, –60 cm, 07/21/95 **B1/9** core fragment **9** Transdanubian radiolarite – Szentgál type, with porcelanite, with thick vein of chalcedony 5 %, 23 × 27 × 13 mm 8.07 'g'
(0134) W end of T. I. –40, –60 cm, 07/21/95 **B8w** micro-blade-like chip medial part **9** Transdanubian radiolarite – Szentgál type, 11 × 8 × 2 mm 0.18 'g'
(0135) W end of T. I. –40, –60 cm, 07/21/95 **B2w** micro-core remnant, bipolar **13** Transdanubian radiolarite, reddish brown 21× 10 × 8 mm 1.68 'g'
(0136) W end of T. I. –40, –60 cm, 07/21/95 **B4w** micro-chip **11** Transdanubian radiolarite – Hárskút type, 10 × 11 × 2 mm 0.22 'g'
(0137) W end of T. I. –40, –60 cm, 07/21/95 **tör.** fragment **999** other hematite lump, 24 × 20 × 12 mm 5,76 'g'
(0138) W end of T. I. –40, –60 cm, 07/21/95 **B4** chip **909** Szentgál type radiolarite? burnt, 11 × 17 × 6 mm 1.12 'g'
(0139) W end of T. I. –40, –60 cm, 07/21/95 **fest** paint **59** mineral paint, limonite? %, 13 × 15 × 8 mm 1.56 'g'
(0218) Surface of II. excavation area 07/09/96 **B2** core remnant **9** Transdanubian radiolarite – Szentgál type, 23 × 30× 26 mm 17.94 'g'
(0219) Surface of II. excavation area 07/09/96 **B4** chip **9** Transdanubian radiolarite – Szentgál type, 15 × 10 × 4 mm 0.60 'g'
(0056) T. II. 0–20 cm, 07/24/95 **C6w** retouched small knife hafted, with fine retouch **9** Transdanubian radiolarite – Szentgál type, with porcelanite phase 10 %, 22 × 14 × 10 mm 3.08 'g' (*Biró 2001* fig. 3. 06)
(0057) T. II. 0–20 cm, 07/24/95 **B6** knife core rim, with traces of use-wear from the dorsal side **9** Transdanubian radiolarite – Szentgál type, 24 × 15 × 4 mm 1.44 'g' (*Biró 2001* fig. 3. 10)
(0058) T. II. 0–20 cm, 07/24/95 **I/D4** end-scraper/truncated chip micro-scraper **9** Transdanubian radiolarite – Szentgál type, 10 × 14 × 4 mm 0.56 'g' (*Biró 2001* fig. 2. 10)
(0059) T. II. 0–20 cm, 07/24/95 **I4w** end-scraper on micro-chip **9** Transdanubian radiolarite – Szentgál type, 10 × 14 × 5 mm 0.70 'g' (*Biró 2001* fig. 2. 09)
(0001) E end of T. II. 0–20 cm, 07/26/95 **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 10 × 6 × 2 mm 0.12 'g'
(0002) Middle of T. II. 0–20 cm, 07/25/95 **C6** retouched knife blade with file-retouch, hafted, fine marginal retouch **9** Transdanubian radiolarite– Szentgál type, 39 × 10 × 4 mm 1.56 'g' (*Biró 2001* fig. 2. 13)
(0003) Middle of T. II. 0–20 cm, 07/25/95 **B3w** microflake core rim **9** Transdanubian radiolarite – Szentgál type, 22 × 17 × 8 mm 2.99 'g'
(0004) Middle of T. II. 0–20 cm, 07/25/95 **B6** knife M (segment) form **9** Transdanubian radiolarite – Szentgál type, 25 × 12 × 4 mm 1.20 'g'
(0005) Middle of T. II. 0–20 cm, 07/25/95 **B4** chip **9** Transdanubian radiolarite – Szentgál type, 16 × 12 × 2 mm 0.38 'g'
(0006) Middle of T. II. 0–20 cm, 07/25/95 **B5w** microblade **9** Transdanubian radiolarite – Szentgál type, 20 × 10 × 2 mm 0.40 'g'
(0007) Middle of T. II. 0–20 cm, 07/25/95 **F/C8** borer on retouched blade-like chip **9** Transdanubian radiolarite – Szentgál type, 16 × 6 × 4 mm 0.38 'g' (*Biró 2001* fig. 2. 05 1)
(0008) Middle of T. II. 0–20 cm, 07/25/95 **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 7 × 13 × 2 mm 0.18 'g'
(0009) Middle of T. II. 0–20 cm, 07/25/95 **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 9 × 11 × 1,5 mm 0.15 'g'
(0010) Middle of T. II. 0–20 cm, 07/25/95 **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 9 × 13 × 4 mm 0.47 'g'
(0011) Middle of T. II. 0–20 cm, 07/25/95 **B4w** micro-chip **15** Transdanubian radiolarite, others orange-brown, 9 × 8 × 4 mm 0.29 'g'
(0012) Middle of T. II. 0–20 cm, 07/25/95 **D5/9** truncated blade fragment trapeze form **15** Transdanubian radiolarite, others orange-brown, porcelanite 50 %, 22 × 14 × 5 mm 1.54 'g' (*Biró 2001* fig. 2. 04)
(0013) Middle of T. II. 0–20 cm, 07/25/95 **B2w** micro-core remnant **9** Transdanubian radiolarite – Szentgál type, with porcelanite phase 80 %, 15 × 8 × 7 mm 0.84 'g'
(0014) Middle of T. II. 0–20 cm, 07/25/95 **B2w** micro-core remnant **15** Transdanubian radiolarite, others with porcelanite phase 100 %, 21 × 14 × 11 mm 3.23 'g'
(0023) Middle of T. II. 0–20 cm, 07/25/95 **P9** fragment of polished stone tool trapeze form, chisel medial fragment **49** greenschist-amphibolite dark greenish grey, laminar, 40 × 48 × 15 mm 28.80 'g' (*Biró 2001* fig. 3. 01)
(0060) Middle of T. II. 0–20 cm, 07/24/95 **B4** chip **9** Transdanubian radiolarite – Szentgál type, 14 × 15 × 2 mm 0.42 'g'
(0061) Middle of T. II. 0–20 cm, 07/24/95 **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 6 × 6 × 1 mm 0.04 'g'

(0062) Middle of T. II. 0–20 cm, 07/24/95 **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 6 × 3 × 1 mm 0.02 'g'
(0054) W end of T. II. 0–20 cm, 07/24/95 **B4f** pointed chip **9** Transdanubian radiolarite – Szentgál type, 21 × 16 × 4 mm 1,34 'g'
(0055) W end of T. II. 0–20 cm, 07/24/95 **B3w** microflake core-flake **909** Szentgál type radiolarite? 27 × 17 × 10 mm 4.59 'g'
(0168) T. III. surface 07/08/96 **B2** core remnant **9** Transdanubian radiolarite – Szentgál type, 33 × 40 × 27 mm 35.64 'g'
(0160) E end of T. III. 0–20 cm, 07/08/96 **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 3× 2 × 0.5 mm > 0.01 'g'
(0161) E end of T. III. 0–20 cm, 07/08/96 **I3w** end-scraper on micro-flake double, M form **9** Transdanubian radiolarite – Szentgál type, 20 × 17 × 5 mm 1.70 'g'
(0162) E end of T. III. 0–20 cm, 07/08/96 **G3** burin on flake **9** Transdanubian radiolarite – Szentgál type, 18 × 18 × 6 mm 1.94 'g'
(0163) E end of T. III. 0–20 cm, 07/08/96 **I4** end-scraper on chip **9** Transdanubian radiolarite – Szentgál type, 16× 12 × 5 mm 0.96 'g'
(0164) E end of T. III. 0–20 cm, 07/08/96 **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 9 × 6 × 2 mm 0.11 'g'
(0165) E end of T. III. 0–20 cm, 07/08/96 **C4w** retouched chip burin-tip? atypical **9** Transdanubian radiolarite – Szentgál type, 11 × 13 × 3 mm 0.43 'g'
(0166) E end of T. III. 0–20 cm, 07/08/96 **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 11 × 12 × 3 mm 0.40 'g'
(0167) E end of T. III. 0–20 cm, 07/08/96 **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 10 × 6 × 1 mm 0.06 'g'
(0229) E end of T. III. –20–30 cm, 07/10/96 **B2** core remnant, prismatic blade core **9** Transdanubian radiolarite – Szentgál type, 25 × 32 × 20 mm 16 'g'
(0230) E end of T. III. –20–30 cm, 07/10/96 **M/C3** segment on retouched flake core rim, burin-tip **9** Transdanubian radiolarite – Szentgál type, 18 × 15 × 8 mm 2.16 'g'
(0231) E end of T. III. –20–30 cm, 07/10/96 **B4** chip **9** Transdanubian radiolarite – Szentgál type, 17 × 16 × 2 mm 0.54 'g'
(0232) E end of T. III. –20–30 cm, 07/10/96 **C4** retouched chip **9** Transdanubian radiolarite – Szentgál type, 16 × 11 × 4 mm 0.70 'g'
(0233) E end of T. III. –20–30 cm, 07/10/96 **B4** chip **9** Transdanubian radiolarite – Szentgál type, 11 × 7 × 4 mm 0.31 'g'
(0175 1–2) Middle of T. III. –30–40 cm, 07/10/96 **B7** blade-like flake broken in half (fresh injury) **15** Transdanubian radiolarite, others pink porcelanite, 28 × 15 × 4 mm 1,68 'g' refitted fresh fracture
(0176) Middle of T. III. –30–40 cm, 07/10/96 **F/G5** borer / burin on blade with sickle gloss , retouched burin-chip on triangular blade **15** Transdanubian radiolarite, others orange, 20 × 8 × 3 mm 0.48 'g'
(0177) Middle of T. III. –30–40 cm, 07/10/96 **B9** fragment **9** Transdanubian radiolarite – Szentgál type, burnt, 13 × 12 × 5 mm 0.78 'g'
(0278) W part of T. III. 0–20 cm, 07/09/96 **G7** burin on blade-like flake hafted, very finely elaborated, lateral burin **9** Transdanubian radiolarite– Szentgál type, 38 × 16 × 6 mm 3.65 'g'
(0279) W part of T. III. 0–20 cm, 07/09/96 **G7** burin on blade-like flake hafted, atypical lateral burin **9** Transdanubian radiolarite – Szentgál type, 26 × 11 × 6 mm 1.72 'g'
(0280) W part of T. III. 0–20 cm, 07/09/96 **G4** burin on chip, angular lateral burin **11** Transdanubian radiolarite – Hárskút type, 16 × 17 × 4 mm 1.09 'g'
(0281) W part of T. III. 0–20 cm, 07/09/96 **B7/9** fragment of blade-like flake medial part of small bladelet, cut **9** Transdanubian radiolarite – Szentgál type, 13 × 10 × 2 mm 0.26 'g'
(0282) W part of T. III. 0–20 cm, 07/09/96 **B5w** microblade, medial part of small bladelet, cut? **9** Transdanubian radiolarite – Szentgál type, 16 × 6 × 2 mm 0.19 'g'
(0283) W part of T. III. 0–20 cm, 07/09/96 **H2** wedge on core remnant **13** Transdanubian radiolarite, reddish brown 21 × 15× 6 mm 1.89 'g'
(0284) W part of T. III. 0–20 cm, 07/09/96 **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 15 × 7× 3 mm 0.32 'g'
(0285) W part of T. III. 0–20 cm, 07/09/96 **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 11 × 7 × 2 mm 0.15 'g'
(0286) W part of T. III. 0–20 cm, 07/09/96 **B4w** micro-chip triangular , core rim **9** Transdanubian radiolarite – Szentgál type, 10 × 17× 5 mm 0.85 'g'
(0207) W part of T. III. –30–40 cm, 07/10/96 **F/C7** borer on retouched blade-like flake medial borer on arched back blank **9** Transdanubian radiolarite – Szentgál type, with porcelanite phase 10 %, 24 × 13 × 7 mm 2.18 'g'
(0208) W part of T. III. –30–40 cm, 07/10/96 **B4** chip triangular **9** Transdanubian radiolarite – Szentgál type, with porcelanite phase 10 %, 13 × 7 × 2 mm 0.18 'g'
(0157) E part of T. IV. 0–20 cm, 07/11/96 **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 12 × 8 × 3 mm 0.29 'g'
(0158) E part of T. IV. 0–20 cm, 07/11/96 **B3** flake **77** Becsehely type grey silex 21 × 33 × 13 mm 9.01 'g'
(0159) E part of T. IV. 0–20 cm, 07/11/96 **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 4 × 3 × 0.5 mm 0.01 'g'
(0152) S part of T. V. 0–20 cm, 07/17/96 **B2w** micro-core remnant **9** Transdanubian radiolarite – Szentgál type, 21 × 25× 9 mm 4.73 'g'
(0153) S part of T. V. 0–20 cm, 07/17/96 **B5w** microblade with visible traces of use-wear **9** Transdanubian radiolarite – Szentgál type, 23 × 11 × 3 mm 0.76 'g'
(0154) S part of T. V. 0–20 cm, 07/17/96 **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 10 × 7 × 1,5 mm 0.11 'g'
(0170) S part of T. V. –20–35 cm, 07/18/96 **B7** blade-like flake decortication flake **9** Transdanubian radiolarite – Szentgál type, with porcelanite phase 95 %, 44 × 24 × 10 mm 10.56 'g'
(0171) S part of T. V. –20–35 cm, 07/18/96 **B4** chip **15** Transdanubian radiolarite, others rosy porcelanite belonging to Szentgál type radiolarite 100 %, 15 × 10 × 4 mm 0.60 'g'
(0172) S part of T. V. –20–35 cm, 07/18/96 **B2w** micro-core remnant **9** Transdanubian radiolarite – Szentgál type, 12× 18 × 8 mm 1.73 'g'
(0194) S part of T. V. 0–20 cm, 07/16/96 **B3** flake core rim **15** Transdanubian radiolarite, others porcelanite (belonging to Szentgál type radiolarite?) 100 %, 35 × 23 × 7 mm 5.64 'g'
(0195) S part of T. V. 0–20 cm, 07/16/96 **B5w** microblade with visible traces of use-wear **9** Transdanubian radiolarite – Szentgál type, 19× 6 × 2 mm 0.23 'g'
(0196) S part of T. V. 0–20 cm, 07/16/96 **B8w** micro-blade-like chip **9** Transdanubian radiolarite– Szentgál type, 14 × 6 × 2 mm 0.17 'g'
(0197) S part of T. V. 0–20 cm, 07/16/96 **B4w** micro-chip, segment form **9** Transdanubian radiolarite – Szentgál type, 14× 10 × 5 mm 0.70 'g'
(0198) S part of T. V. 0–20 cm, 07/16/96 **B4f** pointed chip **9** Transdanubian radiolarite – Szentgál type, 15 × 8 × 3 mm 0.36 'g'
(0199) S part of T. V. 0–20 cm, 07/16/96 **B4** chip **9** Transdanubian radiolarite – Szentgál type, 8 × 13 × 3 mm 0.31 'g'

(0200) S part of T. V. 0–20 cm, 07/16/96 **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 12 × 10 × 3 mm 0.36 'g'
(0201) S part of T. V. 0–20 cm, 07/16/96 **B4w** micro-chip triangular **9** Transdanubian radiolarite – Szentgál type, 14 × 7 × 4 mm 0.39 'g'
(0202) S part of T. V. 0–20 cm, 07/16/96 **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 8 × 7 × 2 mm 0.11 'g'
(0203) S part of T. V. 0–20 cm, 07/16/96 **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 11 × 6 × 3 mm 0.20 'g'
(0204) S part of T. V. 0–20 cm, 07/16/96 **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 10 × 8 × 1 mm 0.08 'g'
(0205) S part of T. V. 0–20 cm, 07/16/96 **B4w** micro-chip trapeziform **9** Transdanubian radiolarite – Szentgál type, 6 × 4 × 1 mm 0.02 'g'
(0206) S part of T. V. 0–20 cm, 07/16/96 **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, burnt, 8 × 7 × 3 mm 0.17 'g'
(0151) N part of T. V. –20–35 cm, 07/18/96 **B5w** microblade with visible traces of use-wear **9** Transdanubian radiolarite – Szentgál type, 24 × 9 × 3 mm 0.65 'g'
(0178) N part of T. V. 0–20 cm, 07/17/96 **B4** chip **9** Transdanubian radiolarite – Szentgál type, 18 × 15 × 3 mm 0.81 'g'
(0179) N part of T. V. 0–20 cm, 07/17/96 **G2** burin on core remnant core rim, triangular **9** Transdanubian radiolarite – Szentgál type, with porcelanite phase 10 %, 19 × 17 × 6 mm 1.94 'g'
(0180) N part of T. V. 0–20 cm, 07/17/96 **B6/9** knife fragment core rim, broken distal end **9** Transdanubian radiolarite – Szentgál type, with porcelanite phase 20 %, 18 × 11 × 3 mm 0.59 'g'
(0181) N part of T. V. 0–20 cm, 07/17/96 **B5/9** fragment of blade small knife-form blade basis fragment **9** Transdanubian radiolarite– Szentgál type, 13 × 9 × 3 mm 0.35 'g'
(0182) N part of T. V. 0–20 cm, 07/17/96 **B2w** micro-core remnant **9** Transdanubian radiolarite – Szentgál type, 8 × 10× 6 mm 0.48 'g'
(0183) N part of T. V. 0–20 cm, 07/17/96 **E4w** pointed micro-chip small triangular point (?) retouched from the dorsal side **9** Transdanubian radiolarite – Szentgál type, 10 × 8 × 3 mm 0.24 'g'
(0184) N part of T. V. 0–20 cm, 07/17/96 **B4w** micro-chip **9** Transdanubian radiolarite– Szentgál type, 8 × 11 × 4 mm 0.35 'g'
(0185) N part of T. V. 0–20 cm, 07/17/96 **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 7 × 7 × 1 mm 0.05 'g'
(0186) N part of T. V. 0–20 cm, 07/17/96 **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 10 × 6 × 1 mm 0.06 'g'
(0187) N part of T. V. 0–20 cm, 07/17/96 **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 5 × 4 × 2 mm 0.04 'g'
(0188) N part of T. V. 0–20 cm, 07/17/96 **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 4 × 3 × 0.5 mm 0.01 'g'
(0326) N part of T. V. 0–20 cm, 07/16/96 **B2w** micro-core remnant **10** Transdanubian radiolarite – Úrkút–Eplény type, 21 × 30 × 18 mm 11.34 'g'
(0327) N part of T. V. 0–20 cm, 07/16/96 **B2w** micro-core remnant bipolar, piece escaille, **9** Transdanubian radiolarite– Szentgál type, 14 × 10 × 6 mm 0.84 'g'
(0328) N part of T. V. 0–20 cm, 07/16/96 **B4** chip 9 Transdanubian radiolarite – Szentgál type, 15 × 14 × 3 mm 0.63 'g'
(0329) N part of T. V. 0–20 cm, 07/16/96 **B4** chip **15** Transdanubian radiolarite, others light pink porcelanite 100 %, 21 × 14 × 4 mm 1.18 'g'
(0330) N part of T. V. 0–20 cm, 07/16/96 **G5w** burin on micro-blade medial burin **9** Transdanubian radiolarite – Szentgál type, 15 × 10 × 2 mm 0.30 'g'
(0331) N part of T. V. 0–20 cm, 07/16/96 **B4** chip **15** Transdanubian radiolarite, others white porcelanite 100 %, 14 × 12 × 3 mm 0.50 'g'
(0332) N part of T. V. 0–20 cm, 07/16/96 **G4** burin on chip medial burin (characteristic type) **9** Transdanubian radiolarite – Szentgál type, 18 × 13 × 4 mm 0.94 'g'
(0333) N part of T. V. 0–20 cm, 07/16/96 **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 10 %, 12 × 9 × 4 mm 0.43 'g'
(0334) N part of T. V. 0–20 cm, 07/16/96 **B4w** micro-chip core rim **9** Transdanubian radiolarite – Szentgál type, 14 × 10× 4 mm 0.56 'g'
(0335) N part of T. V. 0–20 cm, 07/16/96 **B4w** micro-chip core rim **9** Transdanubian radiolarite – Szentgál type, 13 × 10× 3 mm 0.39 'g'
(0336) N part of T. V. 0–20 cm, 07/16/96 **B4w** micro-chip core rim **9** Transdanubian radiolarite – Szentgál type, 12 × 7× 3 mm 0.25 'g'
(0337) N part of T. V. 0–20 cm, 07/16/96 **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 8 × 6 × 1 mm 0.05 'g'
(0338) N part of T. V. 0–20 cm, 07/16/96 **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 11 × 8 × 3 mm 0.26 'g'
(0339) N part of T. V. 0–20 cm, 07/16/96 **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 9 × 6 × 1 mm 0.05 'g'
(0340) N part of T. V. 0–20 cm, 07/16/96 **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 12 × 6 × 1 mm 0.07 'g'
(0341) N part of T. V. 0–20 cm, 07/16/96 **B8w** micro-blade-like chip **9** Transdanubian radiolarite – Szentgál type, 9 × 5× 1 mm 0.05 'g'
(0342) N part of T. V. 0–20 cm, 07/16/96 **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 8 × 7 × 2 mm 0.11 'g'
(0352) N part of T. V. 0–20 cm, 07/16/96 **csi9** fragment of polisher ? **51** medium sandstone with quartzite grains, light yellow, 35× 29 × 35 mm 35.53 'g'
(0374) Surface of T. V. 07/16/96 **B2w** micro-core remnant **13** Transdanubian radiolarite, reddish brown with porcelanite phase 20 %, 43 × 30 × 27 mm 34.83 'g'
(0375) Surface of T. V. 07/16/96 **B4** chip **9** Transdanubian radiolarite – Szentgál type, 16 × 20 × 11 mm 3.52 'g'
(0376) Surface of T. V. 07/16/96 **B4** chip **9** Transdanubian radiolarite – Szentgál type, 10 × 11 × 2 mm 0.22 'g'
(0377) Surface of T. V. 07/16/96 **B4** chip **9** Transdanubian radiolarite – Szentgál type, burnt, porcelanite 50 %, 13 × 14 × 3 mm 0.55 'g'
(0220) T. V. extension 0–20 cm, 07/19/96 **B8** blade-like chip **9** Transdanubian radiolarite – Szentgál type, burnt, 17 × 8 × 5 mm 0.68 'g'
(0221) T. V. extension 0–20 cm, 07/19/96 **B4** chip **9** Transdanubian radiolarite – Szentgál type, 12 × 14 × 2 mm 0.34 'g'
(0222) T. V. extension 0–20 cm, 07/19/96 **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 16 × 7 × 3 mm 0.34 'g'
(0223) T. V. extension 0–20 cm, 07/19/96 **B2w** micro-core remnant **9** Transdanubian radiolarite – Szentgál type, burnt, 9× 7 × 6 mm 0.38 'g'
(0224) T. V. extension 0–20 cm, 07/19/96 **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 11 × 8 × 1 mm 0.09 'g'
(0225) T. V. extension 0–20 cm, 07/19/96 **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 13 × 6 × 3 mm 0.23 'g'
(0226) T. V. extension 0–20 cm, 07/19/96 **B4** chip **15** Transdanubian radiolarite, others porcelanite 100 %, 17 × 9 × 2 mm 0.31 'g'
(0227) T. V. extension 0–20 cm, 07/19/96 **B4** chip **15** Transdanubian radiolarite, others porcelanite 100 %, 13 × 9 × 2 mm 0.23 'g'

(0228) T. V. extension 0–20 cm, 07/19/96 **B4** chip decortication flake **10** Transdanubian radiolarite – Úrkút–Eplény type, porcelanite 50 %, 14 × 10 × 4 mm 0.56 'g'
(0302) T. V. extension 0–20 cm, 07/18/96 **B4w** micro-chip, high core rejuvenation flake **9** Transdanubian radiolarite – Szentgál type, 17 × 13 × 6 mm 1.33 'g'
(0303) T. V. extension 0–20 cm, 07/18/96 **B7/9** fragment of blade-like flake trapeze form, basis part **13** Transdanubian radiolarite, reddish brown 15 × 13 × 3 mm 0.59 'g'
(0304) T. V. extension 0–20 cm, 07/18/96 **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 13 × 10 × 1 mm 0.13 'g'
(0305) T. V. extension 0–20 cm, 07/18/96 **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 12 × 11 × 1 mm 0.13 'g'
(0306) T. V. extension 0–20 cm, 07/18/96 **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 4 × 6 × 1 mm 0.02 'g'
(0307) T. V. extension 0–20 cm, 07/18/96 **B4w** micro-chip **15** Transdanubian radiolarite, others porcelanite 100 %, 4 × 2 × 1 mm 0.01 'g'
(0209) T. V. extension –20–35 cm, 07/19/96 **B2** core remnant, from irregular flake core **9** Transdanubian radiolarite – Szentgál type, 20 × 20 × 12 mm 4.80 'g'
(0210) T. V. extension –20–35 cm, 07/19/96 **D5** truncated blade with very steep straight truncation **15** Transdanubian radiolarite, others porcelanite (belonging to Szentgál radiolarite) 100 %, 21 × 11 × 4 mm 0.92 'g'
(0211) T. V. extension –20–35 cm, 07/19/96 **B4** chip **11** Transdanubian radiolarite – Hárskút type, porcelanite 15 %, 13 × 16 × 5 mm 1.04 'g'
(0212) T. V. extension –20–35 cm, 07/19/96 **B5/9** fragment of blade **9** Transdanubian radiolarite – Szentgál type, porcelanite 3 %, 15 × 11 × 2 mm 0.33 'g'
(0213) T. V. extension –20–35 cm, 07/19/96 **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 10 × 6× 2 mm 0.12 'g'
(0214) T. V. extension –20–35 cm, 07/19/96 **B8w** micro-blade-like chip **15** Transdanubian radiolarite, others orange, 9 × 4× 1 mm 0.04 'g'
(0215) T. V. extension –20–35 cm, 07/19/96 **B8w** micro-blade-like chip **9** Transdanubian radiolarite – Szentgál type, 10 × 6 × 2 mm 0.12 'g'
(0216) T. V. extension –20–35 cm, 07/19/96 **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 10 × 5× 3 mm 0.15 'g'
(0217) T. V. extension –20–35 cm, 07/19/96 **B4w** micro-chip **15** Transdanubian radiolarite, others orange, 8 × 6 × 2 mm 0.10 'g'
(0257) T. V. extension –20–35 cm, 07/22/96 **G7** burin on blade-like flake, core rim **9** Transdanubian radiolarite – Szentgál type, porcelanite 30 %, 44 × 21 × 9 mm 8.32 'g'
(0258) T. V. extension –20–35 cm, 07/22/96 **B4w** micro-chip **9** Transdanubian radiolarite– Szentgál type, 13 × 9 × 1 mm 0.12 'g'
(0259) T. V. extension –20–35 cm, 07/22/96 **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 15 %, 11× 15 × 2 mm 0.33 'g'
(0260) T. V. extension –20–35 cm, 07/22/96 **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 12 × 8× 2 mm 0.19 'g'
(0261) T. V. extension –20–35 cm, 07/22/96 **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 8 × 6× 2 mm 0.10 'g'
(0262) T. V. extension –20–35 cm, 07/22/96 **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 4 × 3× 1 mm 0.01 'g'
(0191) T. VI. 0–20 cm, 07/23/96 **G7** burin on blade-like flake hafted or injured with lateral burin edge **9** Transdanubian radiolarite– Szentgál type, with porcelanite phase 5 %, 24 × 12 × 6 mm 1.73 'g'
(0192) T. VI. 0–20 cm, 07/23/96 **B7/9** fragment of blade-like flake, dorsal side fragmented **9** Transdanubian radiolarite– Szentgál type, burnt?, 23 × 15 × 3 mm 1.04 'g'
(0193) T. VI. 0–20 cm, 07/23/96 **B2w** micro-core remnant **15** Transdanubian radiolarite, others orange, porcelanite 15 %, 14 × 17× 6 mm 1.43 'g'
(0169) S part of T. VI. 0–20 cm, 07/23/96 **P** polished stone tool, small, bulky asymmetrical chisel-blade **999** other weathered serpentinite or metabasalt?, 63 × 44 × 26 mm 72.07 'g' ? *(fig. 1. 5)*
(0173) N part of T. VI. 0–20 cm, 07/23/96 **G7** burin on blade-like flake burin chip **15** Transdanubian radiolarite, others light pink porcelanite belonging to Szentgál radiolarite 100 %, 30 × 10 × 6 mm 1.80 'g'
(0174) N part of T. VI. 0–20 cm, 07/23/96 **F/C7** borer on retouched blade-like flake **9** Transdanubian radiolarite – Szentgál type, 25 × 12 × 6 mm 1.80 'g'
(0596) S part of T. XI. F. 11. **őrl9** fragment of grinding stone fragment of the rim **52** rough sandstone light grey, coarse conglomerate with pebbles, 93 × 54 × 30 mm 150.66 'g'
(0595) N part of T. XI. –35, –40 cm, 07/17/97 **ret.** retoucher with traces of use on the edges **53** quartzite pebble, elongated form, 135 × 38 × 13 mm 66.69 'g' *(fig. 1. 1)*
(0600) N part of T. XI. –35, –40 cm, 10/17/97 **őrl9** fragment of grinding stone fragment of the rim **51** medium sandstone lilac pink, with mica, 65 × 55 × 44 mm 157.30 'g'
(0601) N part of T. XI. –35, –40 cm, 10/17/97 **kav.** pebble, flat polisher **53** quartzite 60 × 45 × 6 mm 16.20 'g' *(fig. 1. 9)*
(0559 1) T. XIII. –10–20 cm, 07/01/98 **tör.** fragment **53** quartzite 66 × 37 × 25 mm 61.05 'g'
(0539 1) S half of T. XIII. –20–40 cm, 07/06/98 **B4** chip decortication flake **15** Transdanubian radiolarite, others with porcelanite phase 100 %, 15 × 27 × 6 mm 2.43 'g'
(0540 2) S half of T. XIII. –20–40 cm, 07/06/98 **B4** chip decortication flake **15** Transdanubian radiolarite, others porcelanite, light rosy siliceous 100 %, 11 × 22 × 5 mm 1.21 'g'
(0541 3) S half of T. XIII. –20–40 cm, 07/06/98 **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 13× 6 × 6 mm 0.47 'g'
(0480 1) S part of T. XIII. 0–20 cm, 06/30/98 **I2** end-scraper on core remnant, high core-flake **9** Transdanubian radiolarite – Szentgál type, 23 × 23 × 12 mm 6.35 'g' *(fig. 6. 1)*
(0481 2) S part of T. XIII. 0–20 cm, 06/30/98 **B4** chip burin-tip **9** Transdanubian radiolarite – Szentgál type, 15 × 15 × 3 mm 0.68 'g'
(0482 3) S part of T. XIII. 0–20 cm, 06/30/98 **B4w** micro-chip **15** Transdanubian radiolarite, others orange, 19 × 9 × 1 mm 0.17 'g' *(fig. 5. 16 1)*
(0483 4) S part of T. XIII. 0–20 cm, 06/30/98 **G4w** micro-burin on chip medial atypical burin-point on hafted chip, flicked on two sides **13** Transdanubian radiolarite, reddish brown 16 × 12 × 1 mm 0.19 'g'
(0538 1) S part of T. XIII. –20 cm, 06/30/98 **P9** fragment of polished stone tool butt fragment **80** Serpentinite light green, 31 × 33 × 14 mm 14.32 'g' *(fig. 6. 7)*
(0464 1) N half of T. XIII. 0–20 cm, 06/30/98 **L/D5** trapeze form truncated blade classical trapeze truncated on two sides **9** Transdanubian radiolarite – Szentgál type, 14 × 10 × 2 mm 0.28 'g' *(fig. 3. 9)*

(0465 2) N half of T. XIII. 0–20 cm, 06/30/98 **A3** raw material- or pre-core flake core mantle **13** Transdanubian radiolarite, reddish brown 35 × 47 × 14 mm 23.03 'g'
(0466 3) N half of T. XIII. 0–20 cm, 06/30/98 **G3** burin on flake multiple atypical burin, with traces of use **13** Transdanubian radiolarite, reddish brown 20 × 18 × 7 mm 2.52 'g' *(fig. 5. 18)*
(0467 4) N half of T. XIII. 0–20 cm, 06/30/98 **F3w** micro-borer on flake of core remnant **13** Transdanubian radiolarite, reddish brown with porcelanite phase, 20 × 18 × 9 mm 3.24 'g' *(fig. 5. 14)*
(0468 5) N half of T. XIII. 0–20 cm, 06/30/98 **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 15 × 10 × 4 mm 0.60 'g'
(0477 1) N half of T. XIII. surface 06/29/98 **üt.** hammerstone angular-rounded **80** Serpentinite light green, 50 × 50 × 37 mm 92.50'g' *(fig. 6. 6)*
(0426 1) N half of T. XIII. 0–20 cm, 07/01/98 **G4** burin on chip medial burin or point **9** Transdanubian radiolarite– Szentgál type, 21 × 13 × 5 mm 1.37 'g' *(fig. 5. 1)*
(0427 2) N half of T. XIII. 0–20 cm, 07/01/98 **C6/9** fragment of retouched knife cut, trapeziform, with marginal retouch on the narrow side **9** Transdanubian radiolarite – Szentgál type, 19 × 13 × 4 mm 0.99 'g' *(fig. 3. 22)*
(0428 3) N half of T. XIII. 0–20 cm, 07/01/98 **B4** conchoidal chip, atypical point? **9** Transdanubian radiolarite – Szentgál type, 24 × 14 × 4 mm 1.34 'g' *(fig. 5. 17)*
(0429 4) N half of T. XIII. 0–20 cm, 07/01/98 **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, with porcelanite phase, 15 × 14 × 3 mm 0.63 'g'
(0479 1) N part of T. XIII. 0–20 cm, 07/01/98 **kav9** pebble fragment flat, with traces of use? **53** quartzite 90 × 55 × 25 mm 123.75 'g'
(0493 1) N part of T. XIII. 0–20 cm, 06/30/98 **őrl9** fragment of grinding stone plate polished on two sides **51** medium sandstone light yellow, 70 × 48 × 34 mm 114.24 'g'
(0486 1) T. XIII. surface 06/29/98 **L/D5** trapeze form truncated blade, truncation on one side **9** Transdanubian radiolarite – Szentgál type, 16× 11 × 1 mm 0.18 'g' *(fig. 3. 6)*
(0487 2) T. XIII. surface 06/29/98 **A2** remnants of raw material **909** Szentgál type radiolarite? burnt, pink porcelanite 50 %, 35 × 20 × 18 mm 12.60 'g'
(0488 3) T. XIII. surface 06/29/98 **B4w** micro-chip **909** Szentgál type radiolarite? light rosy porcelanite 95 %, 14 × 10 × 1 mm 0.14 'g'
(0489 4) T. XIII. surface 06/29/98 **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 10 × 5 × 4 mm 0.20 'g'
(0490 5) T. XIII. surface 06/29/98 **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 9 × 6 × 1 mm 0.05 'g'
(0491 6) T. XIII. surface 06/29/98 **A3** raw material- or pre-core flake **15** Transdanubian radiolarite, others with porcelanite phase 100 %, 30 × 14 × 12 mm 5.04 'g'
(0433 1) N part of T. XIV. 0–20 cm, 07/03/98 **B2** core remnant belonging to micro-blade core worked from several directions **9** Transdanubian radiolarite – Szentgál type, 26 × 33 × 17 mm 14.59 'g' *(fig. 6. 2)*
(0434 2) N part of T. XIV. 0–20 cm, 07/03/98 **B7** blade-like flake trapeziform, edge inlay worn from the dorsal side **9** Transdanubian radiolarite – Szentgál type, 16 × 11 × 3 mm 0.53 'g' *(fig. 3. 18 1)*
(0435 3) N part of T. XIV. 0–20 cm, 07/03/98 **B8/9** fragment of blade-like chip, basis part **9** Transdanubian radiolarite – Szentgál type, with porcelanite phase 30 %, 13 × 9 × 3 mm 0.35 'g'
(0436 4) N part of T. XIV. 0–20 cm, 07/03/98 **B4/9** chip fragment **9** Transdanubian radiolarite – Szentgál type, 13 × 11× 2 mm 0.29 'g'
(0437 5) N part of T. XIV. 0–20 cm, 07/03/98 **B3** flake **9** Transdanubian radiolarite – Szentgál type, with porcelanite phase 90 %, 26 × 23 × 6 mm 3.59 'g'
(0438 6) N part of T. XIV. 0–20 cm, 07/03/98 **B4/9** chip fragment **9** Transdanubian radiolarite – Szentgál type, 9 × 8× 2 mm 0.14 'g'
(0581 1) N part of T. XV. –20–40 cm, 07/09/98 **B4** chip **15** Transdanubian radiolarite, others cream-coloured porcelanite 100 %, 13 × 10 × 2 mm 0.26 'g'
(0582 2) N part of T. XV. –20–40 cm, 07/09/98 **B5/9** fragment of blade trapeziform, arched with fresh fracture? **9** Transdanubian radiolarite – Szentgál type, 10 × 15 × 3 mm 0.45 'g'
(0583 3) N part of T. XV. –20–40 cm, 07/09/98 **B4** chip hinge **9** Transdanubian radiolarite – Szentgál type, 10 × 14 × 5 mm 0.70 'g'
(0584 4) N part of T. XV. –20–40 cm, 07/09/98 **B4** chip cutting edge **9** Transdanubian radiolarite – Szentgál type, 16 × 11 × 3 mm 0.53 'g'
(0585 5) N part of T. XV. –20–40 cm, 07/09/98 **B2** core remnant **9** Transdanubian radiolarite – Szentgál type, 23 × 18 × 8 mm 3.31 'g'
(0586 6) N part of T. XV. –20–40 cm, 07/09/98 **B4** chip **9** Transdanubian radiolarite – Szentgál type, 15 × 8 × 3 mm 0.36 'g'
(0587 7) N part of T. XV. –20–40 cm, 07/09/98 **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 7 × 6 × 1 mm 0.04 'g'
(0448 1) T. XVI. –20–40 cm, 07/13/98 **ret.** retoucher with traces of use on both ends **51** medium sandstone pebble, 73 × 53× 34 mm 131.55 'g'
(0474 1) S half of T. XVI. –20–25 cm, 07/13/98 **D5w** truncated microblade **9** Transdanubian radiolarite – Szentgál type, burnt, 21 × 9 × 3 mm 0.57 'g'
(0475 2) S half of T. XVI. –20–25 cm, 07/13/98 **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, burnt, 6 × 7 × 1 mm 0.04 'g' *(fig. 3. 27 1)*
(0564 1) S half of T. XVI. –40–50 cm, 07/15/98 **B5w** microblade fine, with flicked edge **9** Transdanubian radiolarite – Szentgál type, with porcelanite phase, 16 × 4 × 1 mm 0.06 'g' *(fig. 4. 18)*
(0565 2) S half of T. XVI. –40–50 cm, 07/15/98 **L/D5** trapeze form truncated blade classical trapeze, truncated on two sides, with flicked hafting **9** Transdanubian radiolarite – Szentgál type, 13 × 9 × 3 mm 0.35 'g' *(fig. 3. 11)*
(0566 3) S half of T. XVI. –40–50 cm, 07/15/98 **B9** fragment **9** Transdanubian radiolarite – Szentgál type, 9 × 6× 2 mm 0.11 'g'
(0567 4) S half of T. XVI. –40–50 cm, 07/15/98 **B2/9** fragment of core remnant **909** Szentgál type radiolarite? burnt, 14× 8 × 8 mm 0.90 'g'
(0568 5) S half of T. XVI. –40–50 cm, 07/15/98 **B4** chip **13** Transdanubian radiolarite, reddish brown with porcelanite phase 10 %, 21 × 17 × 3 mm 1.07 'g'
(0569 6) S half of T. XVI. –40–50 cm, 07/15/98 **B9** fragment **13** Transdanubian radiolarite, reddish brown 12 × 6 × 4 mm 0.29 'g'
(0570 7) S half of T. XVI. –40–50 cm, 07/15/98 **B2**/9 fragment of core remnant **11** Transdanubian radiolarite – Hárskút type, 17 × 13 × 8 mm 1.77 'g'
(0383) I. area surface stray finds 01/01/96 **őrl.** grinding stone, bowl shaped irregular, with fresh injury **51** medium sandstone grey, yellowish grey, 210 × 195 × 30 mm 1228.50 'g'

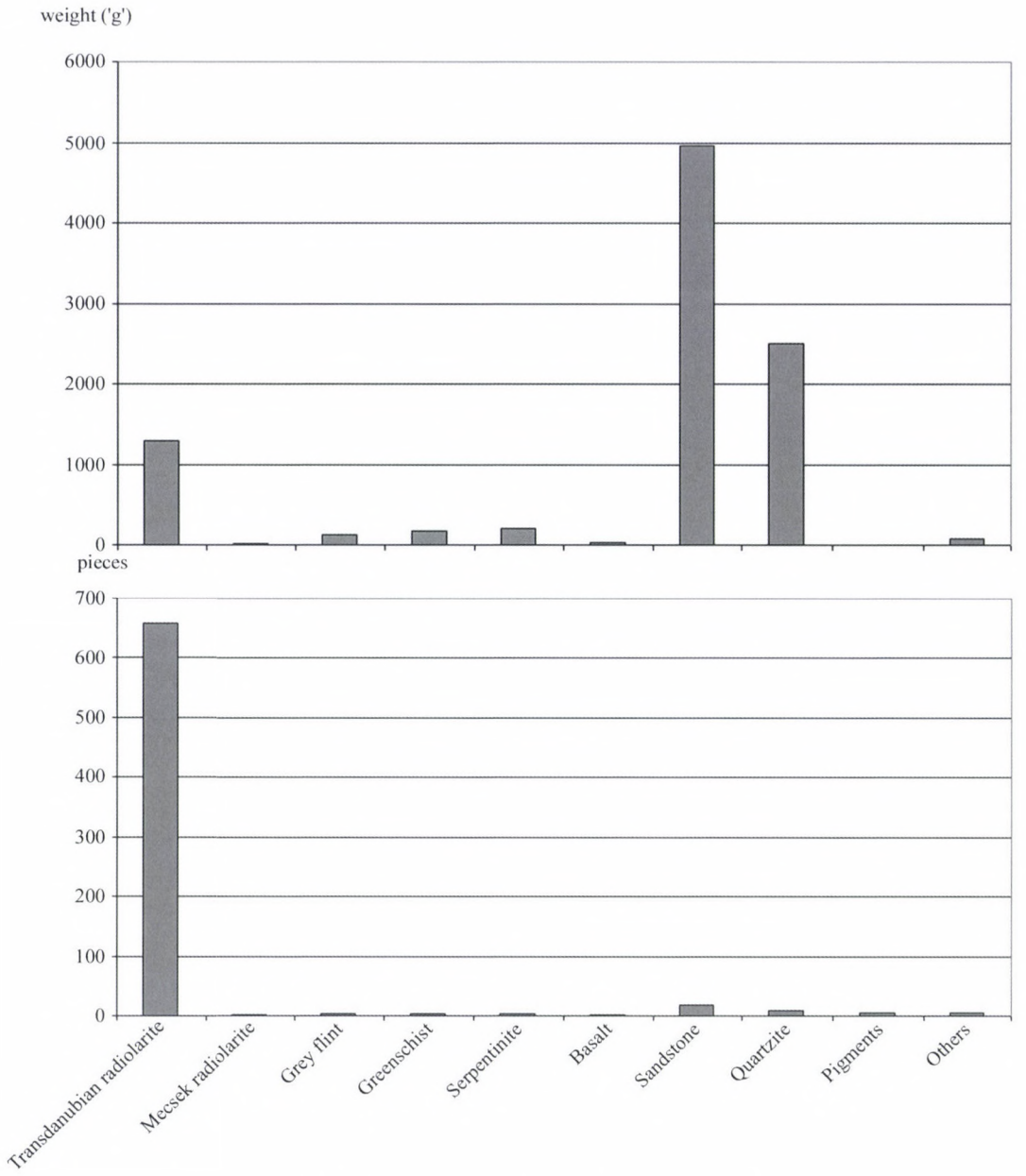

fig. 7. Szentgyörgyvölgy: raw material distribution by pieces and weight within the lithic material

(0492 1) N of I. area (pumpkin field) 07/01/98 **B3** flake from conical blade core **9** Transdanubian radiolarite – Szentgál type, 30× 18 × 5 mm 2.70 'g'
(0343) II. area surface 07/09/96 **B3** flake **9** Transdanubian radiolarite – Szentgál type, 10 %, 28 × 37 × 14 mm 14.50 'g'
(0344) II. area surface 07/09/96 **B2w** micro-core remnant **9** Transdanubian radiolarite – Szentgál type, 10 %, 21 × 18 × 13 mm 4.91 'g'
(0345) II. area surface 07/09/96 **B4** chip **9** Transdanubian radiolarite – Szentgál type, 17 × 17 × 2 mm 0.58 'g'
(0346) II. area surface 07/09/96 **B4** chip **9** Transdanubian radiolarite – Szentgál type, 17 × 23 × 2 mm 0.78 'g'
(0347) II. area surface 07/09/96 **B4** chip core rim **9** Transdanubian radiolarite – Szentgál type, 15 %, 20 × 13 × 7 mm 1.82 'g'
(0348) II. area surface 07/09/96 **B5/9** fragment of blade trapeze form **9** Transdanubian radiolarite – Szentgál type, 15 × 12× 2 mm 0.36 'g'
(0349) II. area surface 07/09/96 **B4** chip **9** Transdanubian radiolarite – Szentgál type, 13 × 12 × 3 mm 0.47 'g'
(0350) II. area surface 07/09/96 **B4** chip atypical borer? **9** Transdanubian radiolarite – Szentgál type, 14 × 18 × 6 mm 1.51 'g'
(0351) II. area surface 07/09/96 **B5w** microblade **9** Transdanubian radiolarite – Szentgál type, 16 × 8 × 1.5 mm 0.19 'g'
(0263) Szentgyörgyvölgy-Haraszti erdő, field survey 07/22/96 **F7w** borer on small blade-like flake, segment form microborer? **9** Transdanubian radiolarite – Szentgál type, 15 × 6 × 2.5 mm 0.23 'g'
(0264) Szentgyörgyvölgy-Haraszti erdő, field survey 07/22/96 **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 11 × 6 × 2 mm 0.13 'g'

(0265) Szentgyörgyvölgy-Haraszti erdő, field survey 07/22/96 **B7/9** fragment of blade-like flake basis fragment **9** Transdanubian radiolarite – Szentgál type, 12 × 10 × 3 mm 0.36 'g'
(0266) Szentgyörgyvölgy-Haraszti erdő, field survey 07/22/96 **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 7 × 5 × 2 mm 0.07 'g'
(0604) field survey 10/16/97 **P** polished stone tool, chisel **47** basalt ash-grey, with coarse weathered surface, 58 × 48 × 10 mm 27.84 'g' refitted fracture
(0605) field survey 10/16/97 **ret9** fragment of retoucher, elongated pebble, broken, with traces of use on its end **49** greenschist-amphibolite dark graphite grey, with oriented texture, pink knots of feldspar, 65 × 40 × 24 mm 62.40 'g', refitted fracture
(0024) field survey 10/11/95 **C4** retouched chip, transversal form **9** Transdanubian radiolarite – Szentgál type, with porcelanite phase 15 %, 14 × 18 × 4 mm 1.01 'g'
(0025) field survey 10/11/95 **C/D7** retouched/truncated blade-like flake with sickle gloss **10** Transdanubian radiolarite – Úrkút–Eplény type, 14 × 10 × 3 mm 0.42 'g' (*Biró 2001* fig. 2. 03)
(0026) field survey 05/11/95 **P9** fragment of polished stone tool bulky chisel? **49** greenschist-amphibolite dark greenish grey, striped-laminated, 70 × 42 × 26 mm 76.44 'g' *(fig. 1. 4)* (*Biró 2001* fig. 3. 4)
(0027) field survey 05/11/95 **B3** flake, core preparation flake **9** Transdanubian radiolarite – Szentgál type, with porcelanite phase 60 %, 43 × 30 × 17 mm 21.93 'g'
(0028) field survey 05/11/95 **B6** knife, core rim on the back, used edge **9** Transdanubian radiolarite – Szentgál type, 27 × 19× 8 mm 4.10 'g'
(0029) field survey 05/11/95 **I/D4** end-scraper /truncated chip, retouched all around the flake **9** Transdanubian radiolarite – Szentgál type, 16 × 18 × 4 mm 1.15 'g' (*Biró 2001* fig. 2. 08)
(0030) field survey 05/11/95 **D5** truncated blade, flicked **9** Transdanubian radiolarite– Szentgál type, 23 × 12 × 3 mm 0.83 'g' (*Biró 2001* fig. 2. 06)
(0031) field survey 05/11/95 **H4** wedge on conchoidal chip **9** Transdanubian radiolarite – Szentgál type, 17 × 20 × 7 mm 2.38 'g' (*Biró 2001* fig. 3. 07)
(0032) field survey 05/11/95 **B5/9** fragment of blade basis, cut off **9** Transdanubian radiolarite – Szentgál type, 15 × 14 × 3 mm 0.63 'g'
(0033) field survey 05/11/95 **B4w** micro-chip **9** Transdanubian radiolarite – Szentgál type, 10 × 11 × 3 mm 0.33 'g'
(0034) field survey 05/11/95 **B2w** micro-core remnant **9** Transdanubian radiolarite – Szentgál type, 18 × 11 × 10 mm 1.98 'g'

Distribution of lithic finds in the excavation units and the observed features

Almost all of the excavated features contained stone tools, the only exceptions being Features 7, 10, 16, 23 and 26. Features 27, 29, 19 and 9 were relatively rich in lithic material (containing 70, 53, 42 and 42 pieces, resp.), while Features 8, 2, 12, 30 and 11 each contained over 20 stone tools. Some features can be grouped into one unit as regards their function. Taking into consideration the size (extent) of the features, the most intensive use (or discard) of stone tools could be observed in Features 8–9–12, Feature 29, Feature 24, with values over 10 pieces/m^2. In terms of the function of the features uncovered by Eszter Bánffy, the features yielding the richest array of stone artefacts were mostly the longpits flanking the houses.

The overall intensity of lithic finds on the site is 0.71 pieces/m^2 for the total excavation area and 4.3 pieces/m^2 for the identified closed features alone. Compared to other Neolithic sites, this value can be considered regular for a normal settlement site without a particularly intensive local stone-knapping activity.

Site	Stone tool intensity (total)
Szentgyörgyvölgy	0.71 pieces / m^2
Gellénháza[3]	1.88 pieces / m^2
Szentgál-Füzikút[4]	3.9 pieces / m^2
Kompolt-Kistér[5]	1.54 pieces / 100 m^2
Felsővadász-Várdomb[6]	2.0 pieces / m^2

Table 1. Stone tool intensity data for some prehistoric sites[7]

[3] *Biró – Simon 2003.*

[4] *K. T. Biró:* A Szentgál-Füzikúti késő neolit település kőanyaga (Lithic material of the Late Neolithic Settlement Szentgál, Füzi-kút). VMMK 19–20 (1994) 89–118.

[5] *A. Vaday – E. Bánffy – L. Bartosiewicz – K. T. Biró – Fl. Gogâltan – F. Horváth – A. Nagy:* Kompolt-Kistér. Újkőkori, bronzkori, szarmata és avar lelőhely. Leletmentő ásatás az M3-as autópálya nyomvonalán (A Neolithic, Bronze Age, Sarmatian and Avar site. Rescue excavation at the M3 motorway). Agria 35 (1999) 1–367.

[6] *K. T. Biró:* Felsővadász-Várdomb. Az őskori lelőhely kőanyaga [Felsővadász-Várdomb. The lithic finds of the prehistpric settlement]. HOMÉ, in press.

[7] *Biró – Simon 2003.*



fig. 8. Szentgál radiolarite (cores, flake-scraper) from Szentgyörgyvölgy

Type and raw material distribution

Preliminary reports on the production phases, type and raw material have been published on the lithic finds from Szentgyörgyvölgy,[8] together with a selection of the lithic industry from the early excavation seasons *(figs 2 and 3)*.[9] The main conclusions based on a fraction of the excavated material have remained essentially unchanged.

The type and raw material distribution can be presented in the form of a simple matrix *(Table 2)*. The codes used for in *Table 2* correspond to the categories of the Catalogue and the systematic description of the lithic material used by the author since the mid-1980s.[10]

Raw material

The raw material distribution of the site can be evaluated by pieces or by weight *(fig. 7)*. Obviously, chipped stone tools represent a smaller weight and their production takes place mainly on the site, resulting in numerous small pieces, while polished stone tools and grinders are more heavy and are typically made on special workshop sites lying close to the raw material sources, and they will leave fewer traces of production on an average settlement site. The two approaches together characterise the actual raw material use of a site much better *(fig. 7)*.

The Neolithic settlement of Szentgyörgyvölgy is characterised by the predominance of Transdanubian radiolarite varieties, predominantly Szentgál (red) radiolarite *(fig. 8)*. The importance of Szentgál radiolarite in the Early Neolithic raw material supply of the Carpathian Basin has also been emphasised by Eszter Bánffy.[11] Other colour varieties can be equally

[8] *Biró 2001* figs 7–8, based on 149 pieces and *K. T. Biró:* Advances in the study of Early Neolithic lithic materials in Hungary, in: *Prehistoric studies 2002* Table 6, based on 379 pieces.

[9] *Biró 2001*

[10] *K. T. Biró:* Chipped stone industry of the Linearband Pottery Culture in Hungary. Archaeologia Interregionalis 240. Warsaw – Cracow 1987, 131–167; *K. T. Biró:* Lithic implements and the circulation of raw materials in the Great Hungarian Plain during the Late Neolithic Period. Budapest 1998, 1–350; etc.

[11] *E. Bánffy:* Újabb adatok a Nyugat-Dunántúl őskorának kereskedelmi és kulturális útvonalaihoz (Data to the trade and cultural routes of prehistoric Western Transdanubia). Savaria 24 (1998–1999) 51–64.

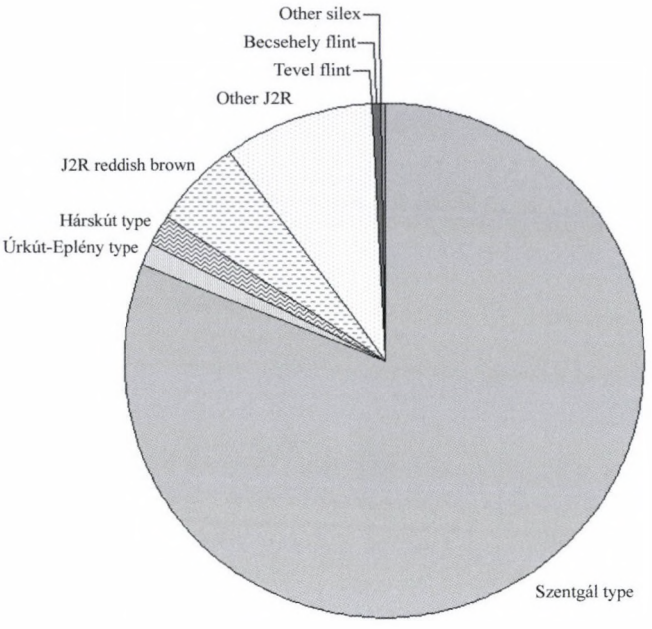

fig. 9. Szentgyörgyvölgy: chipped stone tool raw materials.

found among the chipped stone tools, but in much smaller quantities *(fig. 9)*. In addition to radiolarites from the Transdanubian Mountain Range, the chipped stone inventory also includes a suspect (uncertain) piece of Mecsek radiolarite, but seeing that it is a single item, we cannot attribute much significance to the piece. It must here be noted that lithic raw material similar to the Mecsek radiolarites have been identified on sites in Croatia/Slovenia, suggesting that contacts were maintained with areas to the south-west. The existence of contacts in this direction is supported by the presence of grey Becsehely type flint, which was found in large quantities on Neolithic sites investigated before the construction of County Zala section of the M7 motorway. Becsehely grey flint, however, was identified in a few cases only at Szentgyörgyvölgy (in three instances, including uncertain pieces). Greenish-grey silex (radiolarite?) from the Drava Valley was also described among the uncertain pieces.

Only one single lithic artefact made from Tevel flint, the other type of grey flint occurring profusely on various sites in western Transdanubia, was identified at Szentgyörgyvölgy. No other raw material types were identified in the chipped stone tool kit.

The polished stone tools included one item from basalt and one from meta-basalt or serpentinite, as well as two fragments of greenschist and two of serpentinite. A haematite lump, shaped in the form of a chisel, was assigned to the polished stone tools on formal grounds; however, it seems more likely that it was a form for transporting red mineral pigment. The basalt can be securely sourced from the Balaton Uplands or the Small Hungarian Plain, and it points in a similar direction as the Transdanubian radiolarites; the source of the serpentinites can be sought in Austria and/or the Croatian deposits in the Medves Mountains. The two polished stone tools made from greenschist macroscopically resemble Moravian/Bohemian greenschist artefacts.[12] Another piece, a retoucher made from greenschist, perhaps represents the Felsőcsatár type.[13]

Sandstone dominates the assemblage comprising other stone artefacts, such as polishers, grinders and retouchers. One piece could be identified as Permian red sandstone, probably procured from the Balaton Uplands; the use of this rock has been documented on several Early Neolithic sites in western Transdanubia, including Vörs and Balatonszemes. Several lumps of mineral paint, basically red haematite, complete the raw material inventory of the lithic artefacts.

[12] *Biró 2001* fig. 3/1, 4.

[13] *Gy. Szakmány – Zs. Kasztovszky:* PromptGamma Activation Analysis (PGAA), a new method in the archaeological study of polished stone tools and their raw materials. European Journal of Mineralogy 16. No. 2 (2004) 285–295.

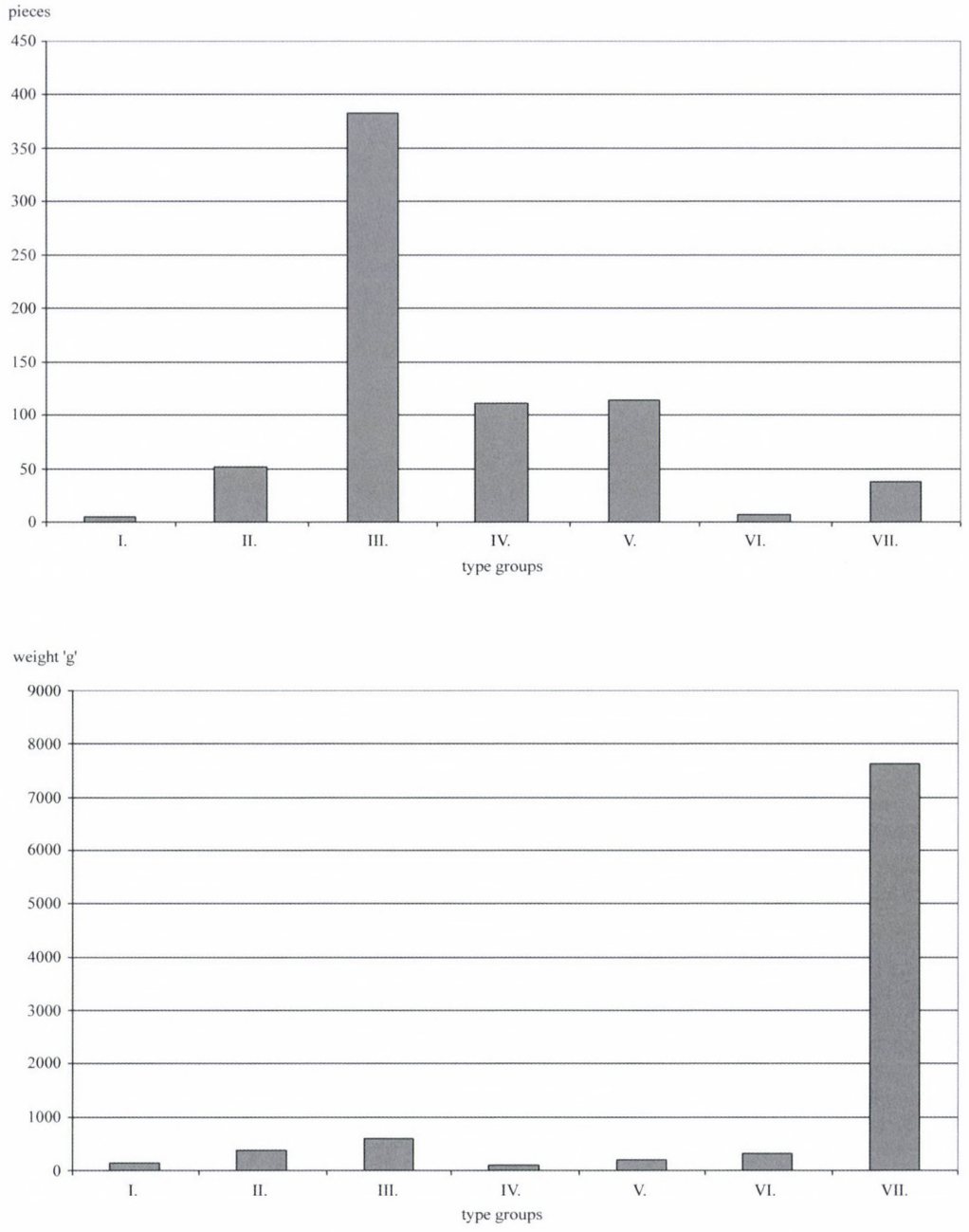

fig. 10. Szentgyörgyvölgy: type group distribution by pieces (a) and by weight (b).

The chipped stone industry

The chipped stone tool kit is basically microlithic (average size of total: 20.9 mm, average of retouched tools 20.1 mm). The technological type distribution *(Table 3)* shows the typical image of a regular settlement site, with little local "workshop activity".

Raw material blocks are rare (five pieces, accounting for less than 1 % of the total assemblage), typically used forms. Most can be assigned to the dominant Transdanubian radiolarite, although one piece of the sporadically occurring grey flints, classified as Becsehely type of probably southern origin, has also been identified. The overall number of cores is also low (50 pieces, 7 %); the cores are heavily exploited and small, 21.8 mm long on average. All cores were of Transdanubian radiolarite, their overwhelming majority represented the red Szentgál variety. The cores are in part (micro)blade cores, often worked from several directions, and in part irregular flake-cores. The industry is mainly flake-based: flakes constitute the

bulk of the total inventory by pieces and the bulk of chipped stone tools total by weight (383 pieces, 53.9 %). Blades are relatively few, most of them blade fragments, and microlithic in character (total: 111 pieces, 15.6 %). Most of the blade fragments were used as inlays for composite tools. Trapeze-form and segment-form unretouched bladelets are fairly frequent. 15 of all the bladelets bear sickle gloss or other, less characteristic traces of utilisation. Sickle gloss is an important new feature of Early Neolithic lithic assemblages; at Szentgyörgyvölgy, it was identified on 10 pieces (5 blades, one blade-like chip and 3 truncated tools, as well as a combined tool with burin and borer, probably with secondary use). The ratio of retouched tools is fairly high (114 pieces, 16 %), the tool forms are typical and have a very careful finish.

In addition to a considerable number of retouched and truncated blanks, characteristic tool types comprise a high numberof typical trapezes and some segments, both characteristic of the early horizon of Neolithic implements. Some backed bladelets and wedges can also be assigned to the archaic elements. Burins occur in abundance, and very minutely formed borers are also quite frequent.

The number of scrapers is relatively low, comprising flake-scrapers and a few end-scrapers, again a characteristic feature of the early horizon of Neolithic stone tools.

Tool type category	Pieces	%
Retouched blanks	22	19.30
Truncated blanks	22	19.30
Points	2	1.75
Borers	12	10.53
Burins	21	18.42
Wedges	3	2.63
end-scrapers	14	12.28
side scrapers	3	2.63
trapezes	12	10.53
segments	2	1.75
other	1	0.88
Total	114	100.00

Table 3. Retouched tool types from Szentgyörgyvölgy (see also *fig. 11*).

The base form of the tools is more blade-oriented than that of the blanks: most of the blade-based tools, however, are realised on blade fragments and not complete blades. Compared to the Starčevo material, the laminar base-form index for tools is relatively high; compared to the later LBK forms, it is much lower. Laminarisation, in the total industry as well as among the base form, seems to be an important feature separating the Early Neolithic and the Middle Neolithic lithic assemblages.

Base form for retouched tools	Core-based	(%)	flake-based	(%)	blade-based	(%)	total no. of tools
Vörs[14]	0	0	10	58.82	7	41.18	17
Gellénháza[15]	2	4.65	19	44.19	21	48.84	43
Szentgyörgyvölgy	7	6.14	49	42.98	58	50.88	114
Balatonszemes[16]	2	5.88	12	35.29	20	58.82	34
Mencshely (1998)	3	5.36	20	35.71	33	58.93	56

Table 4. Base form for retouched tools on Transdanubian Early Neolithic and Early Middle Neolithic sites (see also *fig. 11*).

[14] *N. Kalicz – Zs. M. Virág – K. T. Biró:* The northern periphery of the Early Neolithic Starčevo culture in South-Western Hungary: a case study of an excavation at Lake Balaton. DocPraehist 25 (1998) 151–187.

[15] *Biró – Simon 2003.*

[16] *K. T. Biró:* Balatonszemes-Bagódomb: a kőanyag előzetes vizsgálata [Balatonszemes-Bagódomb. The lithic finds]. Antaeus, in press.

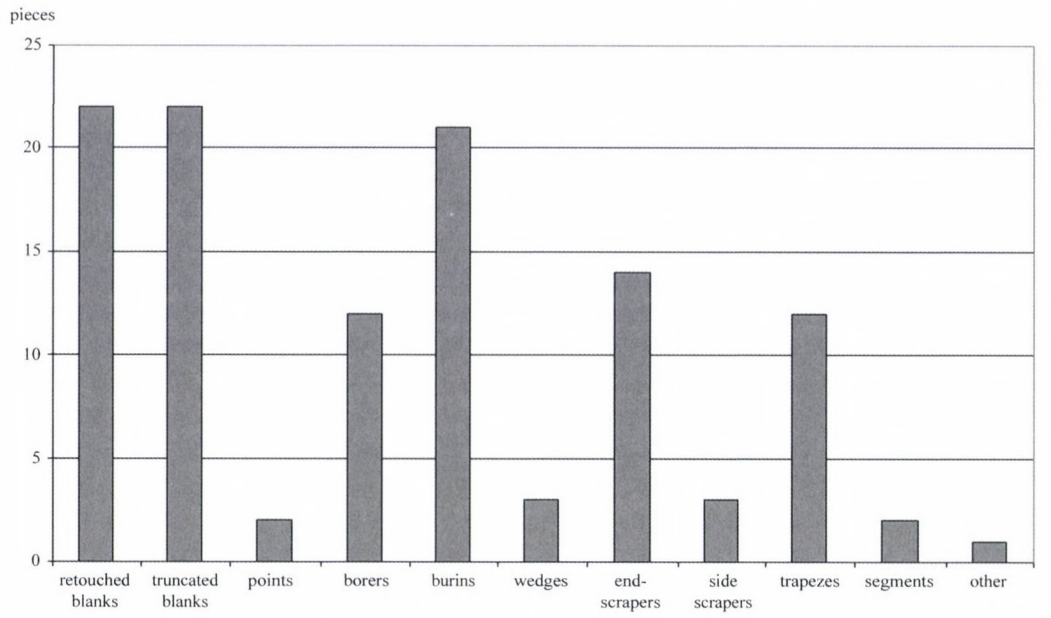

fig. 11. Szentgyörgyvölgy: distribution of retouched tool types.

Polished tools

The total number of polished stone tools is not too high (7 pieces, 1 % of the total lithic industry). The forms are very general: medial fragment of a trapeze-form chisel,[17] elongated chisel-blade with pointed butt[18] and chisels with rounded/angular butt *(fig. 6. 3, 4)*.

Miscellaneous stone artefacts

Miscellaneous stone artefacts, i.e. pieces made of rocks and minerals, which cannot be fitted into the formal categories of chipped and polished stone tools, are made up mainly of grinders, quernstones, polishers, retouchers and hammer-stones *(fig. 12)*. Mineral paint lumps of irregular form are also assigned here. Interesting polisher forms include a piece with negative traces of polishing (93.94–95 [0594]). There are several grinders and hammer-stones of rounded, rounded angular form; one remarkable piece, made of light green serpentinite (0477, *fig. 6. 6*), has a good analogy from Vörs-Máriaasszony-sziget, where it was part of a small depot (Feature 55). A pestle shaped hammerstone of quartzite was also found. Quernstones (grinding stones) come in various forms: loaf shaped with angular butt, dish formed and plain flat shapes all occur.

	pieces	weight 'g'	% within non-chipped artefacts
Polished stone artefacts	7	319.59	4.02
Polisher	3	301.76	3.79
Grinders	2	262.43	3.30
Quernstones	13	4269.37	53.67
Retouchers	3	260.64	3.28
Hammerstones	2	351.00	4.41
Mineral paint	5	1.56	0.02
Pebbles	5	2120.17	26.65
Others (fragments)	4	68.98	0.87
Total	44	7955.49	100.00

Table 5. Distribution of type categories in the non-chipped lithics from Szentgyörgyvölgy (see also *fig. 12*).

[17] *Biró 2001* fig. 3. 1.

[18] *Biró 2001* fig. 3. 4.

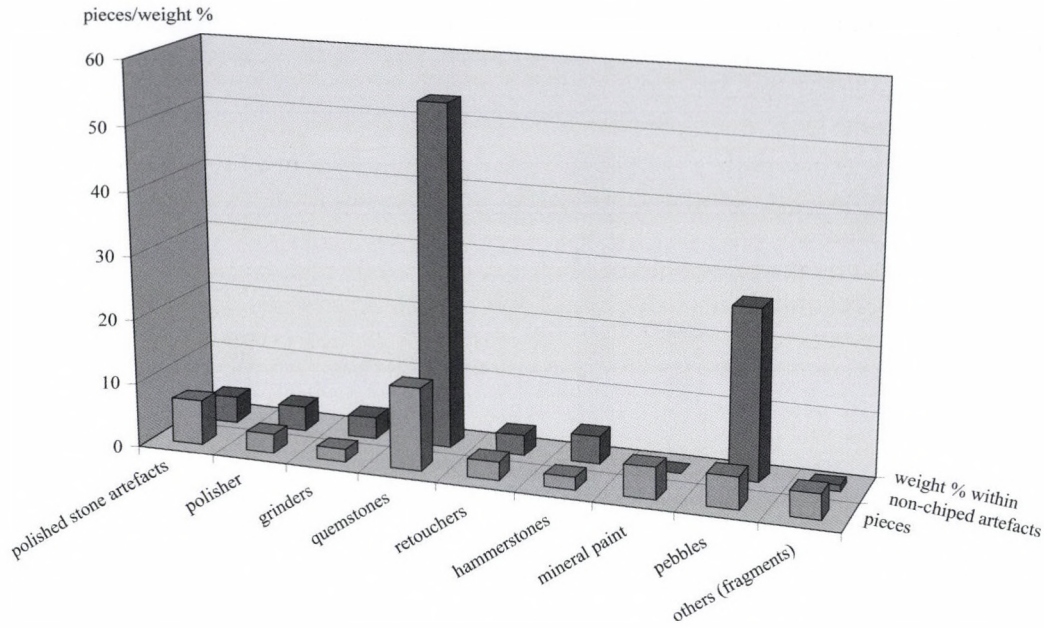

fig. 12. Szentgyörgyvölgy: distribution of type categories in the non-chipped lithic material.

Conclusions

The lithic inventory from Szentgyörgyvölgy-Pityerdomb yielded important new evidence for the evaluation of the earliest lithic horizon of food producing communities in Hungary. This lithic inventory is closest to Gellénháza in terms of its composition, type, variety and blank base form, showing both Starčevo and LBK elements. Szentgyörgyvölgy is more homogeneous as regards its cultural position and can be dated to the beginning of the LBK. All forms typical for the early horizon (trapezes, segments, flake side-scrapers, wedges, burins and borers) are present. Raw material pieces are lacking and cores are rare. The variety of forms appears to be

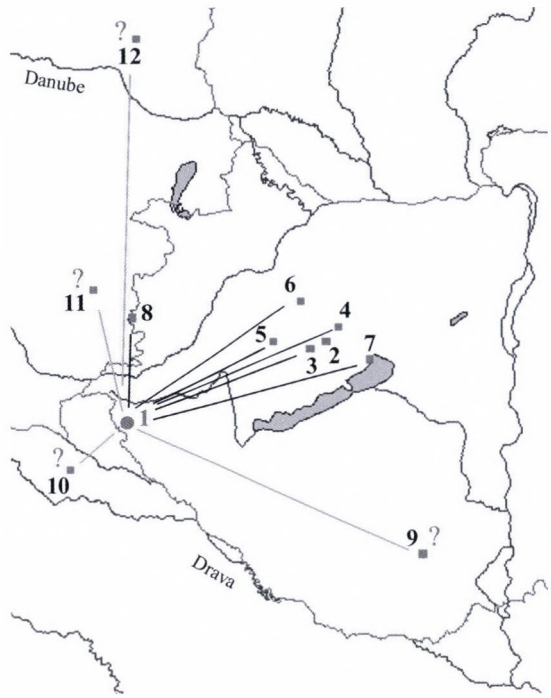

fig. 13. Contact directions of Szentgyörgyvölgy

1. Szentgyörgyvölgy (site); 2. Szentgál radiolarite; 3. Úrkút–Eplény type radiolarite; 4. Hárskút type radiolarite; 5. basalt; 6. Tevel flint; 7. Permian red sandstone; 8. Felsőcsatár type greenschist; 9. Mecsek radiolarite; 10. Croatian/Slovenian radiolarite, serpentinite; 11. Austrian serpentinite; 12. Greenschist from the Bohemian Massif

a feature typical for the earliest LBK materials; the dominance of flake base forms reflects a Starčevo tradition, while the smaller variety of raw materials point towards the self-sufficient classical Transdanubian LBK industries.

The raw material spectrum is absolutely Bakony- (Szentgál-) based, with very few other elements. The presence of probably southern grey flint was noted in a few (uncertain) cases only; a similar direction of contacts is suggested by alien radiolarites (?), of which one or two pieces were identified and, probably, serpentinite. The northern, north-eastern (Bakony) direction of contacts is further supported by the presence of Permian red sandstone, basalt and one piece of Tevel flint. Long distance elements are few: greenschist (from the Bohemian Massif?) and serpentinite can probably be assigned here. The possible contact directions of the site are presented in *fig. 13.*

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Biró – Simon 2003 — *K. T. Biró – K. H. Simon:* Lithic material of the Starčevo culture at Gellénháza–Városrét, in: E. Jerem – P. Raczky (eds): Morgenrot der Kulturen. Frühe Etappen der Menschheitsgeschichte in Mittel- und Südosteuropa. Festschrift für Nándor Kalicz zum 75. Geburstag. Budapest 2003, 115–126.

Table 2. Type and raw material distribution of the Szentgyörgyvölgy lithic industry

Szentgyörgyvölgy-Pityer type/raw material distribution

	9	10	11	13	15	22	47	49	50	51	52	53	59	77	80	909	913	915	916	936	951	953	977	999			
type																									*pieces*	*weight 'g'*	*type*
A2	*1*															*1*									*2*	*47*	*A2*
A3				*1*	*1*									*1*											*3*	*101.87*	*A3*
B1/9	*1*																								*1*	*8.073*	*B1/9*
B1w	*1*																								*1*	*6.624*	*B1w*
B2	*19*			*2*	*1*																				*22*	*254.229*	*B2*
B2/9	*2*		*1*	*1*												*2*									*6*	*9.378*	*B2/9*
B2w	*15*	*2*		*2*	*3*																				*22*	*94.005*	*B2w*
B3	*26*		*2*	*1*	*5*									*1*		*2*			*1*						*38*	*385.348*	*B3*
B3f	*1*																						*1*		*2*	*27.909*	*B3f*
B3w	*5*		*1*		*1*											*2*									*9*	*17.728*	*B3w*
B4	*86*	*1*	*3*	*11*	*16*											*4*								*1*	*122*	*102.0345*	*B4*
B4/9	*10*	*1*														*3*									*14*	*6.142*	*B4/9*
B4f	*4*				*1*																				*5*	*5.726*	*B4f*
B4w	*131*		*2*	*2*	*11*											*1*		*1*							*148*	*29.3535*	*B4w*
B5	*10*	*1*	*1*	*3*	*1*																				*16*	*18.427*	*B5*
B5/9	*24*				*1*												*1*								*26*	*9.95*	*B5/9*
B5w	*22*				*1*																				*23*	*8.6305*	*B5w*
B6	*9*		*1*																						*10*	*23.219*	*B6*
B6/9	*1*																								*1*	*0.594*	*B6/9*
B6w	*3*				*1*																				*4*	*2.589*	*B6w*
B7	*5*			*1*	*6*							*1*													*13*	*33.656*	*B7*
B7/9	*8*			*1*	*1*																				*10*	*6.189*	*B7/9*
B7w	*6*															*2*									*8*	*6.004*	*B7w*
B8	*12*			*3*	*1*																				*16*	*8.929*	*B8*
B8/9	*4*																								*4*	*1.2595*	*B8/9*
B8f	*2*																								*2*	*0.876*	*B8f*
B8w	*5*	*1*			*1*											*1*									*8*	*0.953*	*B8w*

	9	10	11	13	15	22	47	49	50	51	52	53	59	77	80	909	913	915	916	936	951	953	977	999			
B9	*7*			*1*												*2*								*1*	*11*	*6.583*	*B9*
B9w	*4*																								*4*	*0.366*	*B9w*
C/D7		*1*																							*1*	*0.42*	*C/D7*
C3	*1*			*1*																					*2*	*13.154*	*C3*
C3w	*2*																								*2*	*1.938*	*C3w*
C4	*2*																								*2*	*1.712*	*C4*
C4/9	*1*																								*1*	*0.624*	*C4/9*
C4w	*1*																								*1*	*0.429*	*C4w*
C5	*2*																								*2*	*2.22*	*C5*
C5/9	*1*																								*1*	*0.468*	*C5/9*
C5w	*1*																								*1*	*0.693*	*C5w*
C6	*1*					*1*																			*2*	*20.04*	*C6*
C6/9	*1*																								*1*	*0.988*	*C6/9*
C6w	*1*																								*1*	*3.08*	*C6w*
C7			*1*																						*1*	*1.625*	*C7*
C8	*2*																								*2*	*1.562*	*C8*
C8w	*2*															*1*									*3*	*0.604*	*C8w*
D2	*1*			*1*																					*2*	*5.656*	*D2*
D4w	*1*																								*1*	*0.28*	*D4w*
D5	*4*				*2*																				*6*	*9.033*	*D5*
D5/9	*1*				*1*																				*2*	*1.666*	*D5/9*
D5w	*3*																								*3*	*2.04*	*D5w*
D6	*1*																								*1*	*0.792*	*D6*
D6/9	*1*																								*1*	*0.884*	*D6/9*
D6w	*1*																								*1*	*0.924*	*D6w*
D7	*1*															*1*									*2*	*2.772*	*D7*
D8	*1*																								*1*	*0.48*	*D8*
D8w	*1*																								*1*	*0.22*	*D8w*
E3w	*1*																								*1*	*1.008*	*E3w*
E4w	*1*																								*1*	*0.24*	*E4w*

	9	10	11	13	15	22	47	49	50	51	52	53	59	77	80	909	913	915	916	936	951	953	977	999			
F/C5	*1*																								*1*	*0.576*	*F/C5*
F/C7	*2*																								*2*	*3.984*	*F/C7*
F/C8	*1*																								*1*	*0.384*	*F/C8*
F/G5					*1*																				*1*	*0.48*	*F/G5*
F3					*1*																				*1*	*5.89*	*F3*
F3w				*1*																					*1*	*3.24*	*F3w*
F6	*1*																								*1*	*1.2*	*F6*
F7w	*1*																								*1*	*0.225*	*F7w*
F8w	*1*																								*1*	*0.27*	*F8w*
F9	*2*																								*2*	*0.328*	*F9*
G/D5	*1*																								*1*	*0.312*	*G/D5*
G2	*1*																								*1*	*1.938*	*G2*
G3	*1*	*1*		*1*																					*3*	*39.664*	*G3*
G4	*2*		*1*																						*3*	*3.389*	*G4*
G4w	*1*			*2*																					*3*	*0.492*	*G4w*
G5	*2*																								*2*	*1.504*	*G5*
G5w	*1*																								*1*	*0.3*	*G5w*
G7	*5*				*2*																				*7*	*18.921*	*G7*
H2	*1*			*1*																					*2*	*4.59*	*H2*
H4	*1*																								*1*	*2.38*	*H4*
I/D3	*1*																								*1*	*0.9*	*I/D3*
I/D4	*2*	*1*																							*3*	*2.102*	*I/D4*
I/D7	*1*															*1*									*2*	*4.828*	*I/D7*
I2	*1*																								*1*	*6.348*	*I2*
I3	*1*																								*1*	*1.68*	*I3*
I3w	*2*																								*2*	*2.96*	*I3w*
I4	*1*																								*1*	*0.96*	*I4*
I4w	*2*																								*2*	*1.204*	*I4w*
I7w	*1*																								*1*	*1.008*	*I7w*
J2	*1*																								*1*	*2.912*	*J2*

	9	10	11	13	15	22	47	49	50	51	52	53	59	77	80	909	913	915	916	936	951	953	977	999			
J3	*1*																								*1*	*6.664*	*J3*
J3w	*1*																								*1*	*2.1*	*J3w*
L/D4	*1*																								*1*	*0.189*	*L/D4*
L/D5	*10*																								*10*	*3.792*	*L/D5*
L/D7	*1*																								*1*	*0.429*	*L/D7*
M/C3	*1*																								*1*	*2.16*	*M /C3*
M4w	*1*																								*1*	*0.384*	*M4w*
O7	*1*																								*1*	*2.002*	*O7*
P							*1*																	*1*	*2*	*99.912*	*P*
P9								*2*							*2*					*1*					*5*	*219.678*	*P9*
csi.																					*1*				*1*	*100.352*	*csi.*
csi9									*1*	*1*															*2*	*201.405*	*csi9*
dör.																					*2*				*2*	*262.434*	*dör.*
fest													*5*												*5*	*1.56*	*fest*
kav.												*2*													*2*	*1839.45*	*kav.*
kav9												*2*										*1*			*3*	*280.715*	*kav9*
őrl.										*1*															*1*	*1228.5*	*őrl.*
őrl9										*10*	*1*										*1*				*12*	*3040.87*	*őrl9*
ret.										*1*		*1*													*2*	*198.236*	*ret.*
ret9								*1*																	*1*	*62.4*	*ret9*
tör.												*2*												*2*	*4*	*68.982*	*tör.*
üt.												*1*			*1*										*2*	*351*	*üt.*
?	*1*																								*1*	*0.36*	*?*
Total (pieces)	*516*	*9*	*13*	*36*	*59*	*1*	*1*	*3*	*1*	*13*	*1*	*9*	*5*	*2*	*3*	*23*	*1*	*1*	*1*	*1*	*4*	*1*	*1*	*5*	*710*		
Total (weight, 'g')	*910.029*	*52.934*	*14.695*	*152.154*	*117.1*	*18.48*	*27.84*	*167.64*	*165.88*	*4160.341*	*150.66*	*2479.203*	*1.56*	*82.809*	*205.318*	*45.15*	*0.4*	*0.192*	*8.112*	*1.62*	*488.226*	*29.89*	*26.775*	*80.732*		*9387.74*	

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Peter Stadler – Angela Carneiro – Eszter Bánffy

THE RADIOCARBON DATES FOR SZENTGYÖRGYVÖLGY-PITYERDOMB

We collected samples for radiocarbon dating from both settlement nuclei of the Szentgyörgyvölgy-Pityerdomb settlement. In the lack of bone finds, these could only be charcoal remains, taken mainly from the hearth and the surrounding area (charred twigs, branches, firewood). With the help of Peter Stadler, we sent these samples to Vienna to be analysed using AMS as part of the VERA (Vienna Environmental Research Accelerator) project of the Naturhistorisches Museum.[1] The analytical results were broadly the same for the samples from both trenches *(figs 1–14)*. The following calibrated dates[2] were obtained for the ten evaluable samples: three began with the date 5480 cal BC, five with 5470 cal BC, one with 5460 cal BC and another one with 5620–5560 cal BC (Feature 18, a hearth). The earliest dates for the settlement indicate that the Pityerdomb settlement was established sometime in the decades after 5500 cal BC. The latest dates similarly show little variation, falling between 5370 cal BC and 5320 cal BC, the earliest date being 5450–5410 cal BC for a sample taken from Feature 18 (a hearth).

These dates suggest that the settlement was occupied for 120 years at most, roughly between 5480 cal BC and 5360 cal BC, corresponding to not more than four or five generations.

How do the dates for Pityerdomb harmonise with the dates obtained for the late Körös and the late Starčevo culture in Transdanubia and the early *Linearbandkeramik* culture (LBK)?

The series of dates available for the late Körös culture were primarily determined by the late Ede Hertelendi.[3] The latest dates for Méhtelek correspond to the earliest dates for Pityerdomb.[4] The dates for the early Vinča site at Ószentiván VIII fall around 5400 cal BC.[5] The series for two settlements of the Szatmár II group on the northern fringes of the Great Hungarian Plain, representing the formative Alföld LBK, appear to be rather early: 5540–5422 cal BC for the initial occupation of the Füzesabony-Gubakút settlement,[6] and even earlier, 5600–5500 cal BC for the Mezőkövesd-Szentistván-Mocsolyás site.[7]

The end of the late ("Proto-Vinča") phase of the Körös culture (Battonya-Basarága, Szarvas-Site 39, Endrőd-Site 6, Deszk-Olajkút) can be put between 5490–5300 cal BC. Zoia Kalmár-Maxim's date of 6400–5710 BP for the late Criş culture in Transylvania is rather late: 5366–4541 cal BC (its end would correspond to our Late Neolithic Tisza culture!).[8] Cornelia Magda-Mantu dated phase III of the Körös–Starčevo–Criş culture to an earlier period,

[1] A description of the VERA project is available on the internet: www.nhm-wien.ac.at/NHM/prehist/Stadler/14C_project/index.html.

[2] The calibrations of the Vienna laboratory were based on *M. Stuiver – P. J. Reimer – E. Bard – J. W. Beck – G. S. Burr – K. A. Hughen– B. Kromer – G. McCormac – J. Plicht van der – M. Spark:* Radiocarbon Age calibration, 2400–0 calBP. Radiocarbon 40: 3 (1998) 1041–1083. For the calibration of the BP dates in this study, I used the procedure described by *Stuiver – Reimer* 1993 (Calib.4 program) in each case.

[3] *E. Hertelendi – N. Kalicz – P. Raczky – F. Horváth – M. Veres – É. Svingor – I. Futó – L. Bartosiewicz:* Re-evaluation of the neolithic in eastern Hungary based on calibrated radiocarbon dates. Radiocarbon 37 (1995) 239–244; *Horváth – Hertelendi 1994.*

[4] *E. Gy. Nagy:* Az Alföldi Vonaldíszes Kerámia kultúrájának kialakulása (Die Herausbildung der Alfölder Linearbandkeramik) I–II. DMÉ 1995–96 (1998) 88.

[5] *Horváth – Hertelendi 1994* 123.

[6] László Domboróczki's kind personal communication. It is nonetheless surprising that the dates for this Alföld LBK settlement with a remarkably uniform settlement structure and find assemblage indicate a rather long life-span of 300–350 years, lasting until 5200.

[7] *N. Kalicz – J. Koós:* Eine Siedlung mit ältestneolithischen Hausresten und Gräbern in Nordostungarn, in: M. Lazić (ed.): Antidóron. Completis LXV annis Dragoslavo Srejović ab amicis collegis discipulis oblatum. Centre for Archaeologcal Research/University of Belgrade, Faculty of Philosophy 17. Belgrade 1997, 125–135.

[8] *Z. Maxim:* Neo-Eneoliticul din Transilvania. Cluj-Napoca 1999, 63.

assigning to this phase Frestiana IIIb, Sacarovca I and grave 6 of Gura Baciului (Bácsi Torok) (5474 cal BC), as well as the Copalecu–Valea Răii site in Oltenia, dated to 5483–5334 cal BC. This phase would precede or only slightly overlap with Vinča A.[9] It must here be noted that Wolfram Schier dates the beginning of Vinča A to 5400 cal BC, while Roland Gläser puts it no earlier than 5300 cal BC.[10]

The latest Starčevo period can be assigned to between 5470–5290 cal BC in the light of Peter Breunig's uncalibrated dates, Roland Gläser and Ede Hertelendi's measurements and Laurens Thissen's chronology.[11] Alasdair Whittle and Dušan Borić published similar dates.[12] Stojan Dimitrijević put the end of the Starčevo culture at 5469 cal BC.[13] Four dates, 5380 cal BC, 5290 cal BC, 5420 cal BC and 5350 cal BC, have been published for the eponymous site, and the dates for Gornja Tuzla (5490 cal BC), Obre I (5420 cal BC) and Veluška Tumba (5490 cal BC) mark the final phase of the culture.[14] A date of 5510–5400 cal BC is available for Vörs-Máriaasszony-sziget, one of the north-westernmost Starčevo sites.[15] This date again confirms the conclusions drawn from the find assemblage that the Pityerdomb settlement is co-eval with the late Starčevo villages in the area.

The above radiocarbon dates provide additional proof that the latest phase of the Körös culture, the so-called "Proto-Vinča" phase, overlapped with the early Alföld LBK and that the late (Spiraloid B) phase of the Starčevo culture overlapped with the early or formative Transdanubian LBK phase. This period lasted for some 120 years in Transdanubia, although it may have been as long as 200 years in some areas.

The comparison of the radiocarbon dates for the early LBK phase in Central Europe with the ones from western Transdanubia is also very instructive. Accepting Marek Zvelebil's assumption[16] that neolithisation was a long process, shaped by the needs of the local population and the rate of the newly arrived groups' advance, we may assume an even more pronounced halt in the process of neolithisation in the region where the LBK evolved. In other words, the transition to the Neolithic in Transdanubia proceeded more slowly than in Thessaly or even the Balkans.

The radiocarbon dates for the early LBK settlements in Lower Austria seem astonishingly early at first glance (and even at a second one!). In 1996, Eva Lenneis, Peter Stadler and Helmut Windl published an overview of the available dates, including the ten new dates for the Rosenburg site. The earliest date was 5600 cal BC, the other dates fell between 5420 cal BC and 5210 cal BC.[17] The oldest date for Trench II of the Brunn-Gebirge/Wolfholz site, the earliest section of the settlement, was 5620 cal BC,[18] although an even earlier date, 5800 cal BC was gained by

[9] For the calibration of the 14C data given in BP we used the method of *Stuiver – Reimer 1993* in each case. *C.-M. Mantu:* Absolute chronology of neolithic cultures in Romania and relations with the Aegeo-Anatolian world, in: M. Otte (ed.): Préhistoire d'Anatolie. Genèse de deux mondes I. ERAUL 85. Liège 1998, 159.

[10] *W. Schier:* The relative and absolute chronology of Vinča: new evidence from the type site, in: F. Draşovean (ed.): The Vinča Culture, its Role and Cultural Connections. Timişoara 1996, 149; *Gläser 1991* 60; *R. Gläser:* Zur absoluten Datierung der Vinča-Kultur anhand 14C-Daten, in: F. Draşovean (ed.): The Vinča Culture, its Role and Cultural Connections. Timişoara 1996, 180–181.

[11] *P. Breunig:* 14C-Chronologie des vorderasiatischen, südost- und mitteleuropäischen Neolithikums. Fundamenta A 13. Köln 1987; *Horváth – Hertelendi 1994; Gläser 1991; Gläser 1993; L. Thissen:* A chronological framework for the neolithisation of the Southern Balkans, in: St. Hiller – V. Nikolov (hrsg): Karanovo III: Beiträge zum Neolithikum in Südosteuropa. Wien 2000, 193–212; *L. Thissen:* Thessaly, Franchthi and Western Turkey: clues to the neolithisation of Greece? DocPraehist 27 (2000) 141–154.

[12] *Whittle et al. 2002.*

[13] *Gläser 1993* 480.

[14] *Gläser 1991* 59.

[15] *N. Kalicz – K. T. Biró – Zs. M. Virág:* Vörs, Máriaasszony-sziget, in: Z. Bencze et al. (eds): Régészeti kutatások Magyarországon 1999 – Archaeological Investigations in Hungary 1999. Budapest 2002, 26.

[16] *M. Zvelebil:* Mesolithic prelude and neolithic revolution, in: M. Zvelebil (ed.): Hunters in Transition. Cambridge 1986; *M. Zvelebil:* The agricultural transition and the origins of neolithic society in Europe. DocPraehist 28 (2001) 6.

[17] *Lenneis – Stadler – Windl 1996* 103–104.

[18] *P. Stadler:* Ein Beitrag zur Absolutkronologie des Neolithikums aufgrund der 14C-Daten in Österreich, in: E. Lenneis – Chr. Neugebauer-Maresch – E. Ruttkay: Jungsteinzeit im Osten Österreichs. Wissenschaftliche Schriftenreihe Niederösterreich 102–105. St. Pölten – Wien 1995, 210–224; www.nhm.wien.ac.at/NHM/Prehist/Stadler/Brunn/index.html; *Stadler 1999.*

Ian Headley for the sample taken from the plastering of a hearth.[19] This can be regarded as too early and it is not confirmed by any other radiocarbon date from a bone or charcoal sample. The most probable date for the beginning of the settlement, accepted also by Alasdair Whittle, is 5620 cal BC.[20] In the above quoted 1996 study, the Rosenburg–Strögen–Brunn II horizon was dated between 5450–5140 cal BC and was correlated with Radomír Tichý's phase I, the early LBK horizon in Central Europe.[21] In her recently published monograph, Eva Lenneis suggested a date between 5450–5000 cal BC for Neckenmarkt, surviving into the late LBK phase, and a date between 5500 cal BC and 5350 cal BC for Strögen, occupied during the early LBK phase.[22] The above would suggest a date around 5600 cal BC or slightly later for the early LBK settlements of Austria and Germany. Elisabeth Ruttkay puts the beginning of these sites at 5400 cal BC,[23] Jens Lüning at 5700 cal BC, while Harald Stäuble quotes a date around 5500 cal BC for the early LBK settlements, i.e. the commencement of the Early Neolithic in these regions.[24]

Roland Gläser assigns the early phase at Eilsleben to between 5440 cal BC and 5070 cal BC, even though his chart contains earlier dates for both Eilsleben and Eitzum (he attributes these to calibration errors).[25] It is therefore surprising, to say the least, that the dates from Mohelnice are slightly later since in view of that site's more southerly location they should be earlier. The six dates for Mohelnice fall between 5520 cal BC and 5320 cal BC, with two of dates 5460 cal BC and 5480 cal BC inbetween. The same phenomenon can be observed here as in the case of Pityerdomb. If neolithisation is conceptualised as the "wave of advance" suggested by Albert Ammerman and Luigi Luca Cavalli-Sforza,[26] there is a grave contradiction between the relatively late dates in south-eastern regions and the rather early dates in north-western regions.

Two explanations can be invoked for resolving this problem. One is mechanical, in the sense that individual laboratories use different techniques and that some are more reliable than others – an issue that inadvertly crops up during informal discussions with colleagues. The other seems more acceptable. The analysis of the finds and the architecture of the Pityerdomb site suggested a boundary west–north-west of the Morava–Danube confluence, reflected in the divergent development of that region. This harmonises with Ruth Tringham's observation, namely that north-west of this boundary, the Mesolithic population played a more active role in neolithisation.[27] It is therefore possible that the Neolithic transformation differed on the northern fringes of the Starčevo culture, in the Balaton region, to its north and west in the Raba–Danube Valley and the south-western Slovakian–Lower Austrian plain, where it was a mosaic-like, long process. It is possible that some groups already founded settlements north of the Danube, when other, remote and less accessible areas were still controlled by hunter-gatherer groups, who perhaps maintained contact with the Neolithic villages, but had themselves not adopted a sedentary life-style. Similarly, it is possible that a settlement like Pityerdomb with a "use-life" of four or five generations was still occupied at the time when other early LBK groups were already reaching areas far to north. The apparent oddity of the radiocarbon data does not necessarily reflect some sort of contradiction. The series of radiocarbon dates should be viewed as complementary evidence for modelling the process of neolithisation in Transdanubia.

[19] *Stadler 1999.*

[20] *Whittle et al. 2002.*

[21] *Lenneis – Stadler – Windl 1996* 104.

[22] *E. Lenneis – J. Lüning:* Die altbandkeramischen Siedlungen von Neckenmarkt und Strögen. UPA 82. Bonn 2001 [2002], 187–190.

[23] *E. Ruttkay:* Das Neolithikum in Niederösterreich. FUFG 12. Wien 1983, 51.

[24] *J. Lüning:* Frühe Bauern in Mitteleuropa im 6. und 5. Jahrtausend v. Chr. JRGZM 35: 1 (1988) 27–98; *H. Stäuble:* Häuser und absolute Datierung der ältesten Bandkeramik. UPA 117. Frankfurt/Main 2005; *H. Stäuble:* Radiocarbon dates of the Earliest Neolithic of Central Europe. Radiocarbon 37 (1995) 227–237.

[25] *Gläser 1991* 55–56.

[26] *A. J. Ammerman– L. L. Cavalli Sforza:* A population model for the diffusion of the early farming in Europe, in: C. Renfrew (ed.): The Explanation of Culture Change. Models in Prehistory. London 1973, 343–357; *A. J. Ammerman– L. L. Cavalli Sforza:* The Neolithic Transition and Genetics of Population in Europe. Princeton 1984.

[27] *R. Tringham:* Southeastern Europe in the transition to agriculture in Europe: bridge, buffer or mosaic, in: D. T. Price (ed.): Europe's First Farmers. Cambridge 2000, 24–25. The map on p. 24 shows the areas lying above 500 m, outlining the "corridor" to the Drava–Sava Valley and Transdanubia.

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Stuiver – Reimer 1993 — *M. Stuiver – P. Reimer:* Extended 14C data base and revised CALIB 3.0 14C Calibration Programme. Radiocarbon 35 (1993) 215–230.

Whittle et al. 2002 — *A. Whittle – L. Bartosiewicz – D. Borić – P. Pettitt – M. Richards:* In the beginning: New radiocarbon dates for the early neolithic in Northern Serbia and South East Hungary, in: *Prehistoric Studies 2002* 63–117.

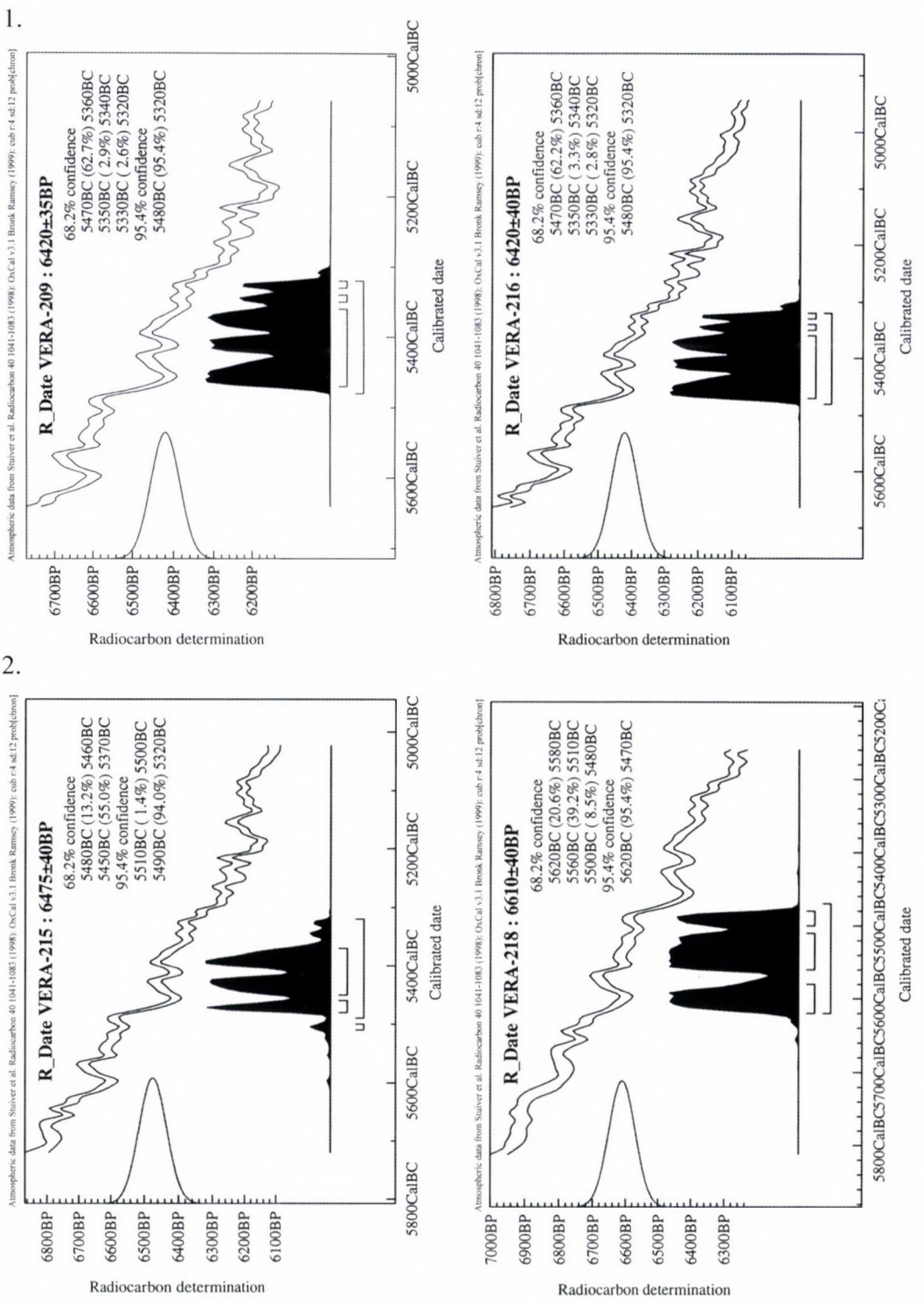

fig. 1. Radiocarbon diagrams, 1. Feature 17; 2. Feature 18

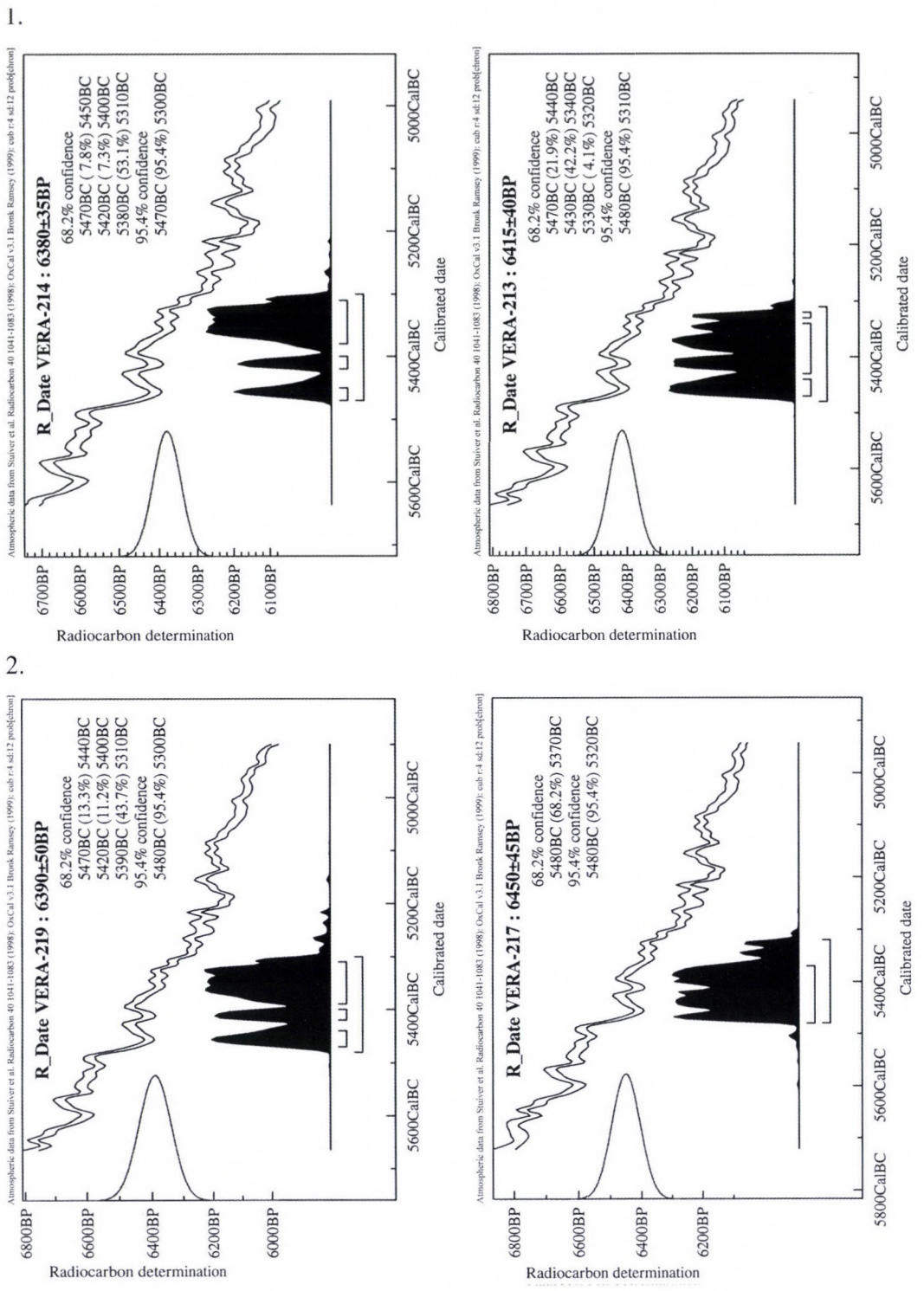

fig. 2. Radiocarbon diagrams, 1. Feature 19 and 2. Feature 20

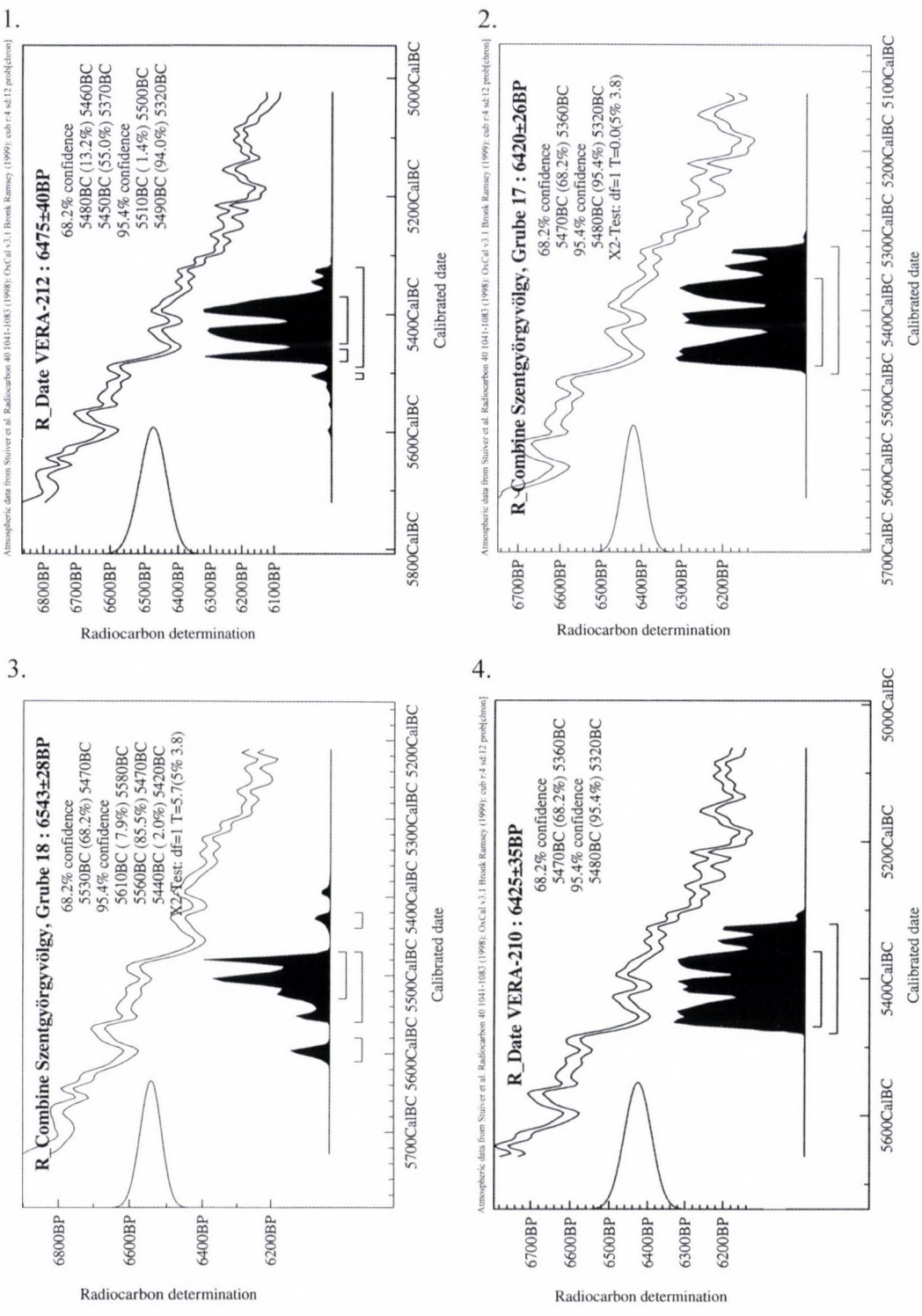

fig. 3. Radiocarbon diagrams, 1. Feature 9, 2. Feature 17, 3. Feature 18, 4. Feature 21

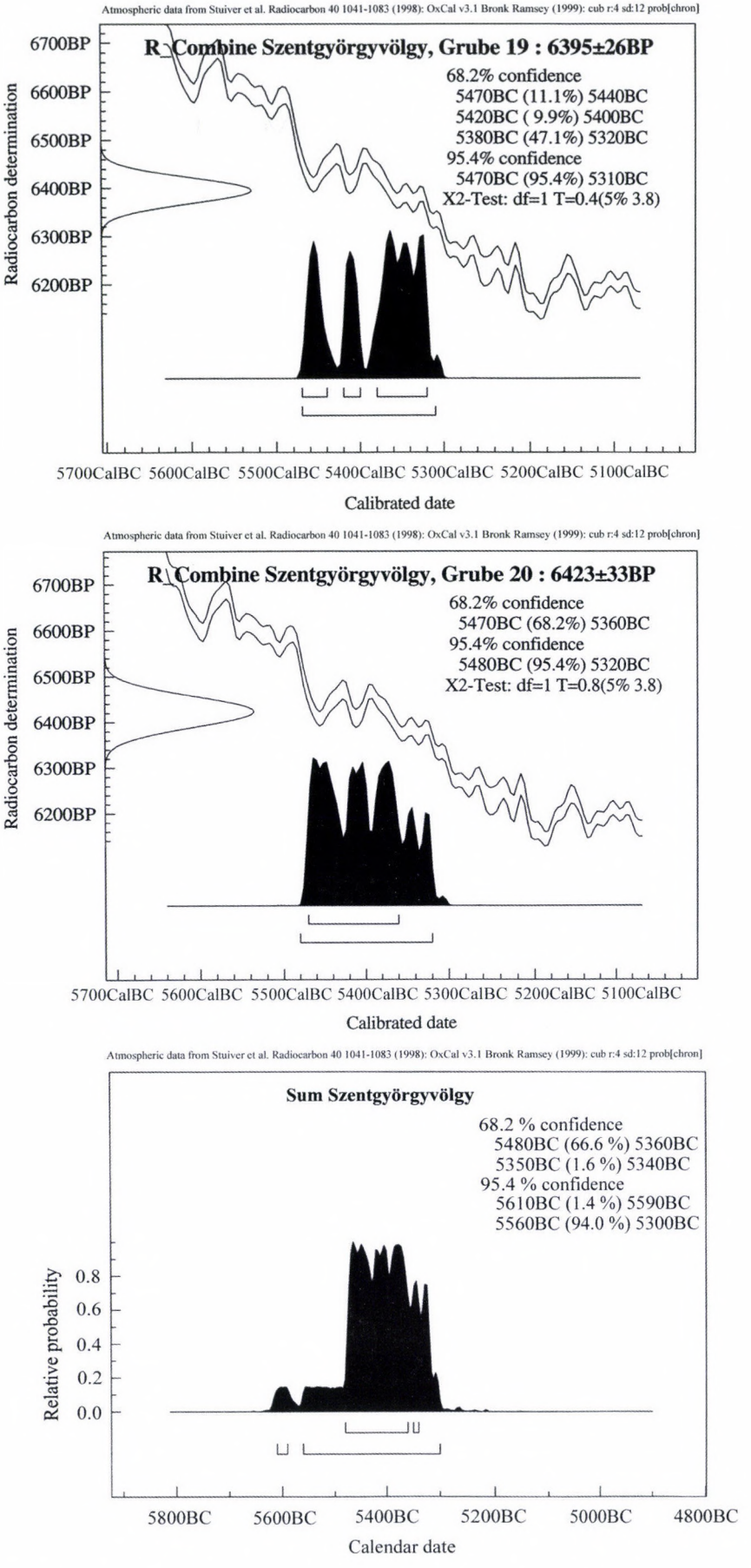

fig. 4. Radiocarbon data, Features 19 and 20; Radiocarbon data Szentgyörgyvölgy-Pityerdomb

Brigitta K. Berzsényi – Orsolya Dálnoki ANTAEUS 28 (2005) 261–270

PLANT CULTIVATION AND CROP PROCESSING AT THE FORMATIVE LBK SETTLEMENT OF SZENTGYÖRGYVÖLGY-PITYERDOMB IN TRANSDANUBIA (6TH MILLENNIUM BC)

In recent decades, plant remains from Transdanubian *Linearbandkeramik* culture (LBK) sites in Hungary have primarily been recovered in the form of imprints on daub and ceramics. Charred remains of cereals, pulses and wild plants from this period are rarely found,[1] due to the lack of systematic sampling, poor preservation or bad soil conditions. Nevertheless, carbonised plant remains prove that the inhabitants cultivated and consumed cereals and pulses, and that they gathered several wild plant species. At present, there is little evidence for where the different stages of crop processing took place on the early Neolithic settlements, whose occupants performed different crop processing activities. They most probably used specific locations for crop processing activities such as harvesting, cleaning, threshing, drying, and the final preparation for human consumption (e.g. final cleaning, manual selection of remaining weeds, grinding). No such activity areas have yet been identified on Early Neolithic LBK sites in Transdanubia. However, a systematically sampled site can provide valuable insights into past agricultural activities and household procedures.[2] The plant remains from the formative LBK site at Szentgyörgyvölgy-Pityerdomb offer a broader perspective on how the site's occupants organised their daily life as regards cereal cultivation and crop processing.

Methods

Sampling and analysis

Szentgyörgyvölgy-Pityerdomb lies in the Kerka Valley in western Transdanubia, in western Hungary. The settlement played an important role in the dissemination of the Neolithic package to Central Europe. The central European LBK culture was moulded by Early Neolithic groups from western Hungary, whose transition to the Neolithic can be best described by the western Transdanubian model.[3]

In July 1998, we had the opportunity to study the archaeobotanical remains from the earliest LBK site in Hungary. Our aim was to gain information about Early Neolithic agricultural practices and the cereal processing on the site. Unfortunately, we were unable to conduct systematic sampling and we collected fewer samples than originally planned.

Analytical procedures, flotation

Owing to the unfavourable weather and soil conditions (heavy rainfalls, clayey, water retaining soil), we used random sampling combined with judgemental sampling at this site. We took soil samples with an average of four litres from selected archaeological features, such as houses, post-holes and pits, which we hoped would provide information on the different stages of crop

[1] *Hartyányi et al. 1967–1968; Hartyányi – Nováki 1973–1974; B. P. Hartyányi – Gy. Nováki:* Samen- und Fruchtfunde in Ungarn von der Neusteinzeit bis zum 18. Jahrhundert. AgrSz 17 (1975) (E suppl.) 1–88; *Füzes 1989; Hartyányi et al. 1991.*

[2] *M. K Jones:* Sampling in palaeoethnobotany, in: W. van Zeist – K. Wasylikova – K. E. Behre (eds): Progress in Old World Palaeoethnobotany. A retrospective view on the occasion of 20 years of the International Work Group for Palaeoethnobotany. Rotterdam – Brookfield 1991, 53–63; *S. Jacomet – Ch. Brombacher:* Reconstructing intra-site patterns in Neolithic lakeshore settlements: the state of archaeobotanical research and future prospects, in: Ph. Della Casa – M. Trachsel (eds): 2005WES 04 Wetland Economies and Societies. Proceedings of the international conference in Zurich 10–13 March 2004. Collectio Archaeologica 3 (2005) 69–94.

[3] *Bánffy 2004.*

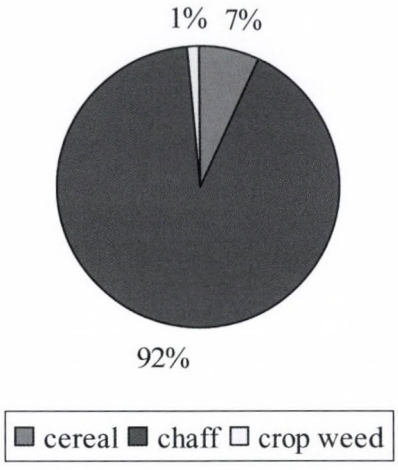

fig. 1. Plant remains from Feature 27 (Trench II)

processing and household activities. These features were scattered over a small area and they were therefore unsuitable for systematic sampling.

The flotation was carried out with water taken from the River Kerka. There was no risk of contamination by recent plant material from the river because the plant remains from the site were all carbonised. We sieved the samples using a column of three standard laboratory sieves (1 mm, 0.5 mm and 0.25 mm). Sieving was rather slow because the clayey soil tended to block the sieve meshes. Unfortunately, the poorly preserved, carbonised cereal grains were embedded in lumps of soil and became fragmented during the traditional flotation procedure.

Determination and evaluation of the plant remains

Due to the soil conditions, all plant remains from this settlement were preserved by charring. It must be noted that the charred macro-remains retrieved during the excavation were usually preserved due to special circumstances. For example, they became carbonised by parching, by applying too much heat during food preparation or if the house was destroyed by fire. In general, the preservation of the botanical material is largely accidental and influenced by the different crop processing activities. Nevertheless, "missing plant records" – plant species which are not represented in our samples – may have also been cultivated or consumed. The surviving plant remains do not always reflect the entire range of farming practices or a complete reconstruction of the Early Neolithic diet.

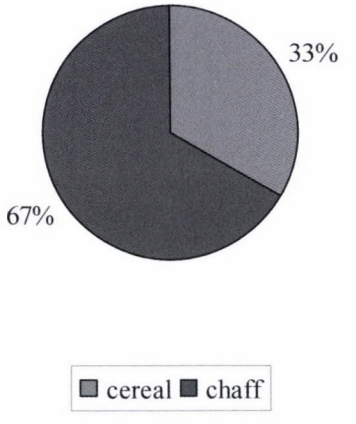

fig 2. Plant remains from Feature 30 (Trench II)

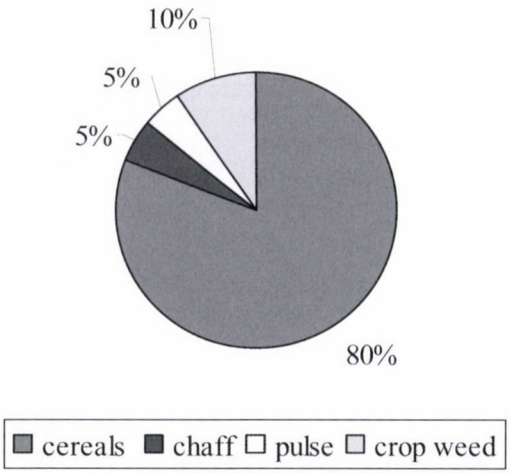

fig. 3. Plant remains from House II (Trench II)

Results

Plant remains from Feature 27 (Table 1–2, figs 1, 4)

Three samples were taken from different depths of the pit (35–40, 50–55 and 80–90 cm). Two of them contained charred plant remains *(Table 1)*. The pit was long, narrow and deep; it was the longest and widest pit at the Szentgyörgyvölgy site[4] and almost 7 metres in length. Plant remains were retrieved from the burnt debris layer, part of the pit's fill.

Different chaff components, such as spikelet forks and rachis internodes of glume wheats, accounted for 92% of all recorded plant remains. Only some naked cereal grains (7% of the total) and very few weed species, e.g. knotweed (*Polygonum* sp.: 1%) were found.

The chaff remains reflected different plant processing activities: dehusking, parching and pounding or grinding.[5] The low number of by-products and the remarkable amount of chaff suggest that following accidental parching or dehusking, some cereal grains were charred and simply swept into a refuse pit together with the other refuse.[6]

Plant remains from Feature 30 (Table 2, figs 1, 4)

Only one sample was taken from the flat, slightly rectangular feature. The average depth of this feature was 75 cm. A distinct ashy patch was noted inside. The sample was collected from the burnt ashy patch, from a depth of 70 cm.

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[4] *Bánffy 2004.*

[5] *G. C. Hillman:* Reconstructing crop husbandry practices from charred remains of crops, in: R. J. Mercer (ed.): Farming Practice in British Prehistory. Edinburgh 1981, 123–162; *Hillman 1983; C. Hastorf:* The use of paleoethnobotanical data in prehistoric studies of crop production, processing, and consumption, in: Ch. A. Hastorf – V. S. Popper (eds): Current Paleoethnobotany. Analytical Methods and Interpretations of Archaeological Plant remains. Chicago – London 1988; *M. Nesbitt – D. Samuel:* From staple crop to extinction? The archaeology and history of the hulled wheats, in: S. Padulosi – K. Hammer – J. Heller (eds): Hulled Wheats. Proceedings of the first international workshop on hulled wheats, 21–22 July 1995, Castelvecchio Pascoly, Toscany, Italy. Promoting the conservation and use of under-utilised and neglected crops 4. Proceedings of the first international workshop on hulled wheats 21–22 July 1995, 41–100. During cereal processing, different parts of the plants remain as waste, e.g. during threshing of hulled wheat the ears are fragmented into separate spikelets. When grains were treated by parching, dehusking or pounding, each spikelet falls apart into grains and light chaff: spikelet forks, rachis segments, glume bases and grains. During threshing of naked wheats, the ear is immediately fragmented into grains, light chaff, rachis segments and rachis nodes.

[6] Parching is a physico-chemical transformation by heat. It is a type of cooking. The literature on hulled wheats often refers to the necessity of parching the spikelets to render the chaff brittle, in order to free the hulled grain. The studies performed by Jens Lüning and Jutta Meurers-Balke show that a reasonable distinction is that drying involves temperatures up to about 100 °C, while parching takes place at temperatures above about 150 °C. *J. Lüning – J. Meurers-Balke:* Experimenteller Getreideanbau im Hambacher Forst, Gemeinde Elsdorf, Kr. Bergheim, Rheinland. BJ 180 (1980) 305–344.

The sample contained various carbonised chaff remains. The assemblage contained spikelet forks from einkorn, emmer and more precisely not identifiable hulled wheats (67% of the total) and cereals (33% of the total). These finds perhaps also represent cereal debris from the crop processing stages mentioned above.

Plants from House II (Table 3, figs 2, 4)
Two houses were excavated at Szentgyörgyvölgy (Houses I and II). Samples were collected from House II. The two houses are among the earliest buildings of the formative LBK horizon in Central Europe.[7] House II measured about 7 m by 14–15 m. Only one sample contained charred plant remains. Free threshing wheat *(Triticum aestivum s.l./durum/turgidum),* two-grained einkorn *(Triticum monococcum),* einkorn *(Triticum monococcum),* unidentified glume wheat, an emmer spikelet fork *(Triticum dicoccum),* and barley *(Hordeum vulgare)* could be identified among the carbonised macro-remains. The sample also yielded a single, badly preserved pea *(Pisum* cf. *sativum)* and a fragmented goosefoot seed (*Chenopodium* sp.) (5% each).

The remains indicate that the Early Neolithic occupants cultivated and consumed emmer, einkorn, naked wheat and barley. The single chaff debris from imperfectly threshed wheat can be regarded as part of the household refuse.

Difficulties in the identification of two-grained einkorn
Two-grained einkorn was also identified among the plant remains from Szentgyörgyvölgy. The occurrence of two-grained einkorn is quite remarkable in the archaeobotanical sample *(Tables, fig. 4).*[8] It has recently been demonstrated that two-grained einkorn can produce morphologically different grains. The question is how and where two-grained domesticated einkorn varieties reached Southern, Eastern and Central Europe. This is an open question in current archaeobotanical research.[9] Although two-grained einkorn is usually lacking from the formative phase of the LBK culture, it has been identified in the Early Neolithic of the Balkans, Bulgaria, and Greece.[10]

Even though two-grained einkorn occurs in low amounts, this does not mean that the role of this variety should be neglected. Its occurrence is very different compared to sites from which two-grained einkorn is absolutely lacking, or to sites on which its proportion is too high to be simply the result of spontaneous mutation.[11]

Regional variations of morphological characters (grain size etc.) can also be considered. In view of the occurrence of early cereals, a species determination based on grain morphology alone is problematic, even if these finds survived in excellent condition. The mixing of the morphological structures of different species cannot be wholly excluded. Also, the morphological traits of cereal species differed from modern cultivars. It would be futile to compare these Early Neolithic cereals with modern species. A more frutiful approach is the comparison of known cereal remains (and their morphological traits) with the cereal records from broadly contemporary sites.[12]

Early Neolithic household activities at Szentgyörgyvölgy-Pityerdomb: crops and weeds
Harvesting and crop processing activities can be broadly divided into two main types: activities outside and inside the houses, depending on the climate, local working conditions and probably also social factors. Harvesting, threshing, drying and winnowing were activities performed

[7] *Bánffy 2004.*
[8] Uschi Maier's kind personal communication; drawings by Hans-Peter Stika.
[9] *Kreuz – Boenke 2002:* Plant remains reveal both one-grained and two-grained forms of cultivated einkorn. The two-grained type always belongs to strains, which genetically are potentially two-grained, whereas one-grain forms may originate from both one-grained and two-grained strains.
[10] *H. Kroll:* Einkorn from Feudvar, Vojvodina, II. What is the difference between emmer like two seeded einkorn and emmer. Review of Palaeobotany and Palynology 73 (1992, 181–185).
[11] *Kreuz – Boenke 2002.*
[12] *S. Jacomet:* Prähistorische Getreidefunde. Eine Anleitung zur Bestimmung prähistorischer Gersten- und Weizenfunde. Basel 1987.

outside the houses.[13] These crop processing activities were probably performed on the fields, or in special seasonal buildings, or open areas. Dehusking, hand-cleaning/sorting, grinding and pounding, as well as cooking, "bread" baking or porridge preparation was probably done either inside the house or in communal areas near the houses.

House II mostly yielded by-products, a few chaff fragments and one single weed species, partly in charred condition *(Table 3, figs 2, 4)*. These plant remains suggest that cereal processing, such as final cleaning, hand sorting and dehusking, was a daily chore in House II of the Szentgyörgyvölgy settlement. Cleaned grains probably represent preparation for human consumption; this may have been one of the main activities inside the house.

Only two weed species were identified. One is a poorly preserved goosefoot (*Chenopodium* sp., Chenopodiaceae), the other an unidentified knotweed (*Polygonum* sp., Polygonaceae), found together with the cereals and chaff fragments.

The range of cultivated and wild plants from the Early Neolithic LBK Culture *(Table 4)*

The range of cultivated and gathered species reconstructable from the plant remains recovered from the early LBK sites in Transdanubia is rather modest. This might be a reflection of the scarcity of archaeobotanical studies, rather than an indication of the "poorness" of the Hungarian Early Neolithic. Plant remains mostly survived in the form of imprints (indirect evidence) on daub or pottery, and rarely in the form of caryopses and fruits. The plant macrofossil record for the early Transdanubian LBK suggests that arable farming was based mainly on glume wheats and rarely on free threshing wheat *(Table 4)*. As regards cultivated pulses, only a pea fragment from Szentgyörgyvölgy is known to date.

Of the hulled wheat species, emmer *(Triticum dicoccum)*, einkorn *(Triticum monococcum)*, and spelt *(Triticum spelta)* have been identified alongside free threshing wheats, such as bread wheat *(Triticum aestivum)*, two-row barley *(Hordeum cf. distichon)*, hulled and naked barley (*Hordeum vulgare, Hordeum vulgare* var. *nudum*), broomcorn millet *(Panicum miliaceum)* and oat (*Avena* sp.) from this period in the form of imprints and, more rarely, as caryopses. The plant remains suggest that they were cultivated and consumed or used as fodder (e.g. barley, broomcorn millet) or fuel during the Early Neolithic LBK in Transdanubia.[14]

The presence of wild einkorn *(Triticum boeoticum)* indicates that this wild species arrived together with the cultivated cereals. It may have spread as a weed in cereal fields at the beginning of the Early Neolithic. The caryopses are also edible and if they remained among the cleaned cereals, they did not cause any problems if consumed.[15]

Unfortunately, weeds are rarely represented on Transdanubian LBK sites. Weeds provide important information on sowing and harvesting times, as well as harvesting techniques. Weeds were mainly documented as imprints on daub or pottery (*Table 4;* "indirect evidence"), but rarely in the form of carbonised seeds and fruits (*Table 4;* "direct evidence"). Documented species include corn cockle (*Agrostemma githago,* Caryophyllaceae), brome (*Bromus* cf. *sterilis,* Poaceae), vetch (cf. *Vicia* sp., Fabaceae), knotweed (*Polygonum* sp., Polygonaceae), goosefoot (*Chenopodium* sp., Chenopodiaceae) and agrimony (*Agrimonia eupatoria,* Rosaceae).

Mat and reed remains indicate that this organic material was usen in house construction.

Conclusion

The archaeobotanical finds from the Early Neolithic site at Szentgyörgyvölgy were dominated by cereal remains, mainly from hulled wheat, while free threshing wheat occurred in smaller number. Barley was also found, but in smaller amounts than wheats. Of the pulses, a badly preserved pea was identified. Although the number of samples was low, the archaeobotanical

[13] *Hillman 1983.*

[14] *Hartyányi et al. 1967–1968; Hartyányi – Nováki 1973–1974; Hartyányi et al. 1991; Füzes 1989; F. Gyulai:* Archaeobotanika. A kultúrnövények története a Kárpát-medencében a régészeti-növénytani vizsgálatok alapján [Archaeobotany. The history of cultivated plants in the Carpathian Basin in the light of archaeological and palaeobotanical research]. Debrecen 2001.

[15] *Füzes 1989.*

evidence suggests that the occupants performed the final cleaning of the crop prior to consumption inside House II. The cereal waste was deposited in the pits flanking the house, together with accidentally burnt grains. In contrast, threshing, winnowing and raking were most likely performed farther away from the houses since our samples did not contain a particularly high number of weeds, chaff and straw fragments, or plant species from the natural vegetation. The low number of weeds suggests that the waste came from final cleaning activities.

Plant remains from the early LBK sites in Germany and Austria (LBK Phase I) have revealed that cultivated species included hulled wheat species, such as einkorn *(Triticum monococcum)* and emmer *(Triticum dicoccum),* as well as pulses: pea *(Pisum sativum)* and lentil *(Lens culinaris).* Oil plant flax *(Linum usitatissimum)* has also been identified. Barley and broomcorn millet are both documented through a few single finds, meaning that there is no clear indication of barley and millet cultivation; most probably they just occurred accidentally with other crops. Barley became a cultivated plant during the Middle Neolithic in Germany, broomcorn millet most probably in the Late Neolithic.[16]

A comparison of the early LBK record from Central Europe with the evidence from the Transdanubian LBK reveals similarities in crop cultivation. However, in contrast to the Central European LBK sites, pulses rarely appear on Transdanubian sites. Cereals and pulses were the dominant crops of the Early Neolithic settlements in the central and eastern LBK distribution. Cereals were probably cultivated separately, although einkorn and emmer were sometimes sown together.[17]

Even though spelt, broomcorn millet and barley (naked and hulled) appear during the Early Neolithic in Hungary, it is uncertain whether these species were in fact cultivated. Both been found in low amounts only, as imprints and caryopses. It is possible that the early appearance of these species can be explained by contamination within other cereal crops, rather than by conscious cultivation. More botanical data and new determinations of imprints are needed for resolving this issue.

[16] *A. Kreuz – E. Marinova – E. Schafer – J. Wiethold:* A comparison of early Neolithic crop and weed assemblages from the Linearbandkeramik and the Bulgarian Neolithic cultures differences and similarities. Vegetation History and Archaeobotany 14 (2005) 237–258.

[17] *Füzes 1989; G. Jones – P. Halsted:* Maslins, mixtures and monocrops. On the interpretation of archaeobotanical crop samples of heterogeneous composition. JAS 22 (1995) 103–114.

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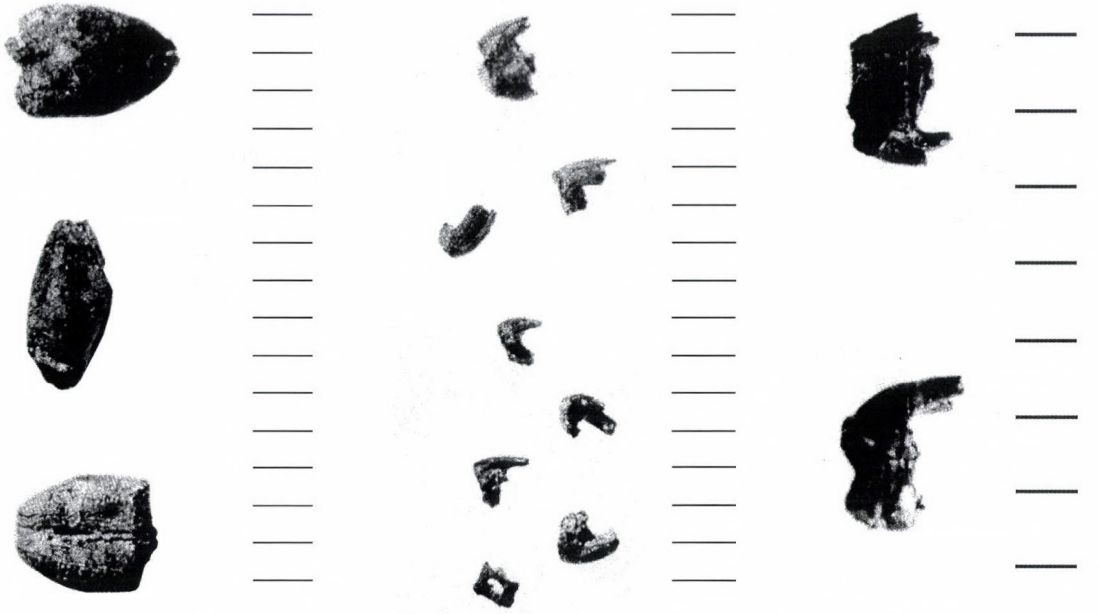


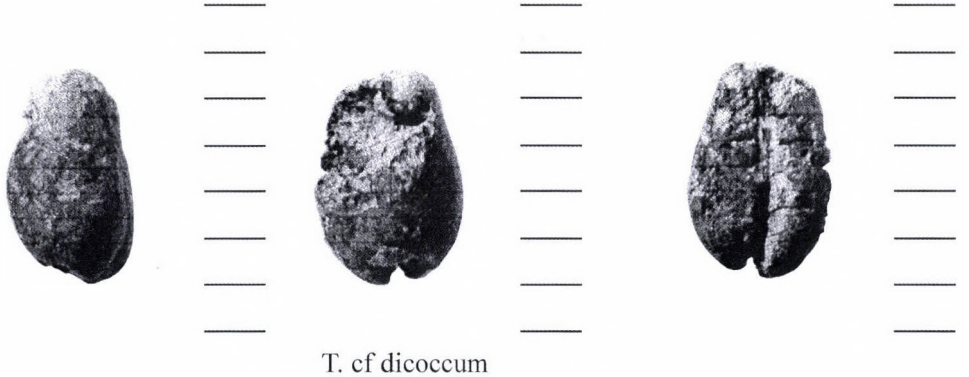
Hordeum vulgare

Triticun monococcum
furca bicornis

T. dicoccum
furca bicornis



Triticun dicoccum



T. cf dicoccum

fig. 4. Plant remains from Szentgyörgyvölgy-Pityerdomb

Poaceae	English name	N	Product-waste
Triticum monococcum	einkorn	1	cereal
Triticum spec.	glume wheat	4	cereal
Triticum dicoccum/spelta f. b.	emmer/spelt spikelet fork	1	cereal threshing debris
Triticum dicoccum/f. b.	emmer spikelet fork	50	cereal threshing debris
Triticum monococcum/f. b.	einkorn spikelet fork	6	cereal threshing debris
Triticum monococcum/dicoccum f. b.	einkorn/emmer spikelet fork	8	cereal threshing debris
Triticum sp. rachis fragm.	glume wheat	1	cereal threshing debris
Polygonaceae			
Polygonum spec.	knotweed	1	weed
Sum/ 12 litres		72	

Table 1. Plant remains from Feature 27 (Trench II)

Poaceae	English name	N	Product-waste
Triticum monococcum f. b.	einkorn spikelet fork	5	cereal threshing debris
Triticum dicoccum f. b.	emmer spikelet fork	1	cereal threshing debris
		1	cereal
cereal	cerealiaindet fragm.	2	cereal
Sum/4 litres		9	

Table 2. Plant remains from Feature 30 (Trench II)

Poaceae	English name	N	Product-waste
Triticum aestivum	naked wheat	1	cereal
Triticum monococcum	two seeded einkorn	1	cereal
Triticum cf. monococcum	einkorn	3	cereal
Triticum sp.	wheat fragment	1	cereal
Cerealia indet. fragm.	cereal	6	cereal
Hordeum vulgare	barley	3	cereal
Triticum dicoccum f. b.	emmer spikelet fork	1	cereal threshing debris
Fabaceae			
Pisum cf. sativum fragm.	pea	1	pulse crop
Chenopodiaceae			
Chenopodium sp.	goosefoot	2	weed
Sum/4.5 litres		21	

Table 3. Plant remains from House II (Trench II)

Zánka-Vasútállomás		
Types of plant remains	**Direct evidence (plant macrofossils)**	**Indirect evidence (imprints on daub and pottery)**
Naked caryopsis	Triticum monococcum, Triticum dicoccum, Triticum aestivum, Hordeum vulgare subsp. distichon, Hordeum sp., Panicum miliaceum, T. aestivum subsp. compactum, Triticum sp.	Triticum aestivum, Hordeum vulgare var. nudum, Hordeum sp., Hordeum distichon cf. nudum, Hordeum vulgare, Panicum miliaceum
Spikelet fork **Spikelet** **Glume** **Palea** **Rachis fragments**	Triticum monococcum --- --- ---	Triticum monococcum, T. dicoccum, Triticum sp., Triticum monococcum, Triticum dicoccum, Triticum spelta, Triticum sp., Triticum monococcum, T. dicoccum, Triticum sp. Triticm sp., Poaceae
Weeds (Archaeophyt) **Caryopsis**	Agrostemma githago, Bromus cf. sterilis	Triticum monococcum, Triticum aestivum, Triticum sp., Triticum spelta Agrostemma githago Agrimonia eupatoria
Spikelet, spikelet fork	---	T. monococcum subsp. boeticum
Rhizom, leaf, internode	---	Phragmites communis
Tapolca-Plébániakert (mid-5th millennium BC) – Indirect evidence		
Caryopsis **Glume** **Spikelet fork** **Spikelet** **Internode**	Triticum cf. aestivum, Triticum sp, Lens culinaris Triticum cf. dicoccum, Hordeum sp., Triticum sp. Triticum monococcum, Triticum dicoccum, Triticum monococcum Poaceae	
Becsehely-Újmajor – Direct evidence		
Caryopsis **naked caryopsis**	Triticum monococcum subsp. Boeticum, Triticum monococcum Triticum spelta, Triticum aestivum, Triticum sp, cfr. Vicia sp. Triticum dicoccum	
Balatonszentgyörgy – Indirect evidence		
Glume **Spikelet fork** **Spikelet**	Triticum sp. Triticum monococcum Triticum monococcum	

Table 4. Plant remains from the early Transdanubian LBK (after *Füzes 1989*)

Mária Bondár

ANTAEUS 28 (2005) 271–283

THE COPPER AGE SETTLEMENT AT ZALABAKSA

Remains of a Copper Age settlement were uncovered at Zalabaksa, a settlement surveyed as part of the Kerka Valley Micro-Region Project.

In the autumn of 1995, Eszter Bánffy, Mária Bondár, Ferenc Redő and Béla Miklós Szőke identified a roughly 10 m by 10 m large grey patch near the Jewish cemetery. A few worn, indistinct Copper Age and medieval sherds were collected *(fig. 17. 1–27)*. In the spring of 1996, Eszter Bánffy, Mária Bondár and Ferenc Redő collected more sherds during their field survey *(fig. 20. 9–22)*.[1]

The finds indicated the presence of a Copper Age settlement. Since there are few known Copper Age sites in this area – the most important of these being Becsvölgye, where a richly decorated figurine fragment was found in 1951[2] – we conducted a sounding excavation at Zalabaksa with the aim of determining the nature and the exact age of the site.

The modest OTKA fund and the generosity of the local council enabled us to conduct a three weeks long excavation in the summer of 1996 and 1997.[3] We opened four trenches, covering a 216 m^2 large area, for investigating the site. This report offers an overview of the excavation and its findings.

The site

The site lies on the left side of Road 86, by the northern end of Zalabaksa, south of the abandoned Jewish cemetery, on the hill between the cemetery and the Castrol car dismantler *(fig. 1)*. The area does not have a separate geographic name according to the 1:10,000 map; the locals call the area "Zsidótemető" [Jewish cemetery], a name we have adopted and retained. The one-time Jewish cemetery contains no more than a few gravestones, enclosed within a hedge. It is under constant decay, with even the gravestones often removed. The area of the site was owned by the local forestry at the time of the investigation, which leased it to various individuals for cultivation.

Description of the excavation

In 1996, I opened two trial trenches in order to find the patches, i.e. the one-time settlement features observed during the field survey. The soil was extremely compact, yellow clay, a type primarily characteristic of the Lenti Basin. Detailed observations, the identification of settlement features based on discolorations in the soil was only possible at dawn and in the early morning hours owing to the almost unbearable heat and the compact clay. Owing to the compactness of the soil and the heat we could only proceed rather slowly. We removed the humus every two meters, watered the soil and then covered it with plastic foil.

Trench I

The first trial trench, oriented in a north to south direction and measuring 8 m by 3 m, was opened in the area of the intensive patch observed during the field survey. We removed the humus along the entire length of the trench. The reddish layer mixed with specks of charcoal and small fragments of burnt daub could be well distinguished from the overlying reddish, ferriferous clay under the humus layer. We found two post-holes in the trench, lying some 1.5 m from each other.

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[1] For a description of the finds collected during the field survey, cf. pp. 69–71, site 44, in this volume.

[2] *J. Korek:* Adatok Zala megye őskorához (Angaben zur Urgeschichte des Komitates Zala), in: I. Szentmihályi (ed.): A Göcsej Múzeum Jubileumi Emlékkönyve 1950–1960. Zalaegerszeg 1960, 67–82.

[3] I would here like to thank Mayor Ottó Horváth for his generous and unfailing support.

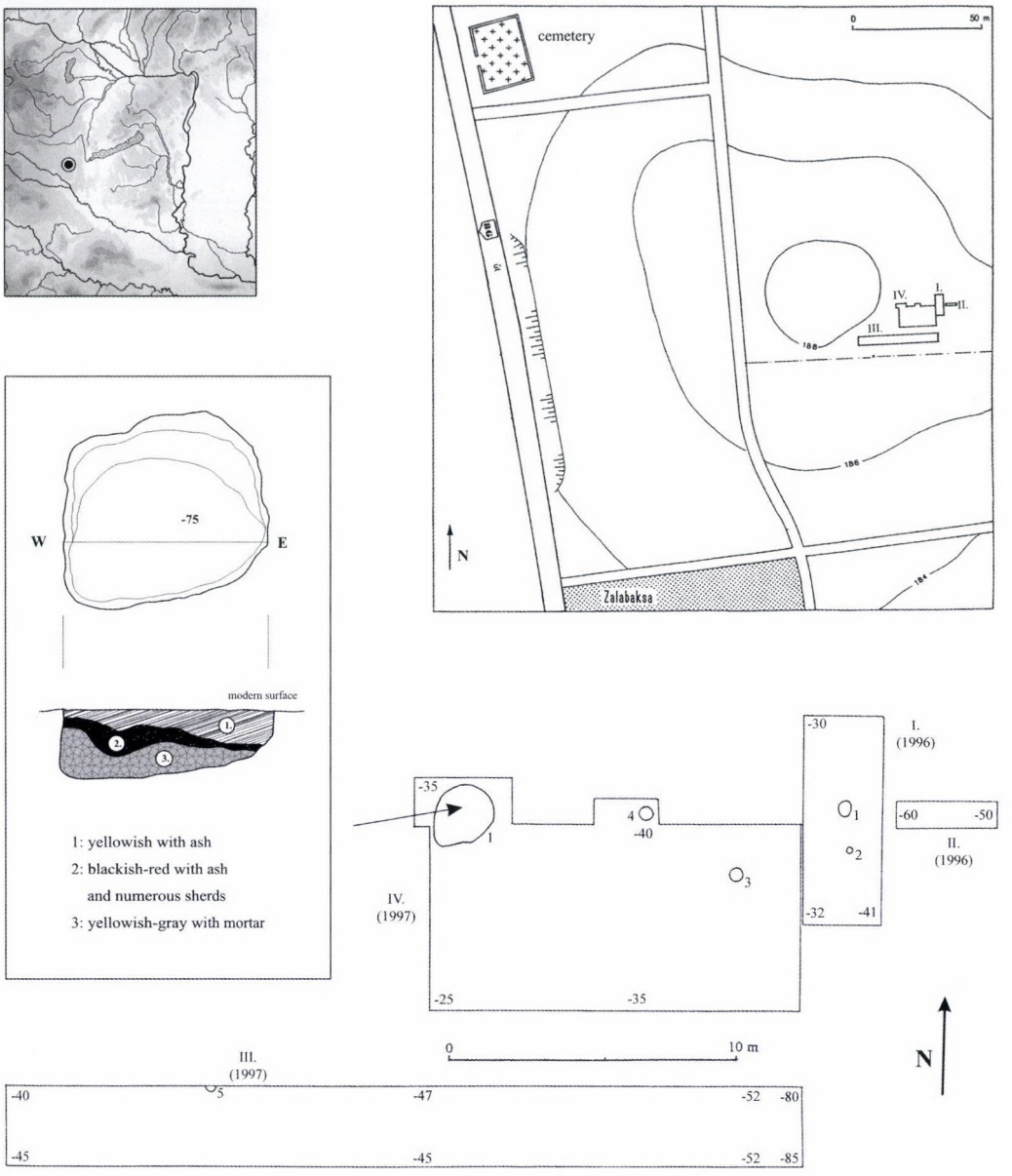

fig. 1. Zalabaksa-Zsidótemető. Map of the excavation

Post-hole 1 had a diameter of 50 cm and a depth of 80 cm with a loose, light grey fill. A pebble and a worn, thick-walled, reddish body sherd lay at a depth of 30 cm. Three other indistinct, worn Copper Age sherds and another pebble were recovered from a depth of 70 cm during its clearing.

Post-hole 2 had a diameter of 20 cm and a depth of 57 cm. It did not contain any finds.

We opened a new trench in order to determine whether the reddish layer mixed with charcoal and burnt daub fragments was an artificial, archaeological feature or a natural phenomenon.

Trench II

The second trial trench, measuring 4 m by 1 m, was opened in line with the large post-hole in Trench I; the trench was perpendicular to the first trench and lay 0.5 m from it. The yellowish clayey soil was underlain by a mixed greyish clay layer, under which we found a layer of reddish clay. We investigated the area to a depth of three spade spits.

The large, deep post-hole and the reddish fill mixed with charcoal specks and burnt daub fragments suggested a building. Unfortunately, it proved impossible to assign the pottery

sherds found during the field survey to a specific Copper Age culture and neither was it clear whether there was a building in the excavated area during the five day sounding excavation. Knowing that most Copper Age settlements are characterised by a rather loose settlement structure with houses standing far apart from each other, it is rather difficult to find house remains or a continuous row of post-holes on a smaller surface.

We covered Trench I with a plastic foil before refilling it in the hope that we could continue the excavation the next year in order to determine the age of the Copper Age settlement and the extent of the building to which the post-holes had belonged. We hoped that we could remove the upper humus layer mechanically and thus investigate a larger area.

In 1997, we received enough funds to conduct a two-week excavation. The mayor of Zalabaksa provided a bulldozer for the excavation. Unfortunately, the driver was rather inexperienced and we could not remove the upper humus layer as we had originally planned; only a 15 cm thick layer was removed mechanically from a 25 m by 40 m large area. We had to continue the excavation manually, which greatly limited the potential results in view of the available funds and the time at our disposal.

Trench III

We opened an east–west oriented, 30 m by 3 m large trench in the area cleared by the bulldozer. The virgin soil lay at a depth of 40 cm in the western half of the trench, while the reddish layer mixed with specks of charcoal and burnt daub fragments was noted in its eastern half. We also recovered a few pottery sherds. The trench did not contain any settlement features, except for the section of a post-hole (post-hole 5, with a diameter of 40 cm and a depth of 35 cm).

According to the locals, the "fill" with charcoal specks and burnt daub fragments did not represent the remains of a levelled prehistoric building, but was natural clay, similar to the one from Zalabaksa-Cup used by the brick factory before it was closed down. There were quite many potters active in the area; as a matter of fact, we noted several sources of good quality clay for pottery manufacture in the ploughland.

In the second week of the excavation, the mayor provided a new, more experienced bulldozer operator. Even so, we had to discard our original plan for the investigation of a larger area and the humus was only removed from a 20 m by 10 m large area between the area excavated in 1996 and Trench III. The outlines of a pit and two post-holes could be observed after the removal of the upper humus layer.

Trench IV

The new trench was opened in the mechanically cleared area. The trench measured 7 m by 14 m, its distance from Trench III was 3 m. After clearing, we immediately covered the visible settlement features – two post-holes and a larger pit – with plastic foil to prevent the soil from drying out.

Post-hole 3 had a diameter of 30 cm and a depth of 40 cm. It yielded three indistinct Copper Age body sherds.

Post-hole 4 had a diameter of 40 cm, a depth of 45 cm. Its fill contained small, indistinct Copper Age sherds.

Pit 1 had an irregular shape. Its sides were straight and it had a dished floor. Only a smaller part fell into the trench and we therefore had to enlarge the trench in that area. Its diameter was roughly 230 cm, its depth was 75 cm.

We halved the pit, first clearing its southern half. The pit was outlined by a roughly 15–20 cm wide black patch with burnt daub fragments. The fill of the pit was made up of yellowish-black clay mixed with burnt daub fragments, which did not contain any finds, under which lay a loose, black layer containing burnt daub fragments and crumbling pottery sherds. This layer was roughly 20 cm thick and it yielded various finds. It was followed by a yellowish pebbly layer and a greyish one. The finds from the northern half of the pit too were recovered from the black layer mixed with charcoal. Most of the finds came from this pit.

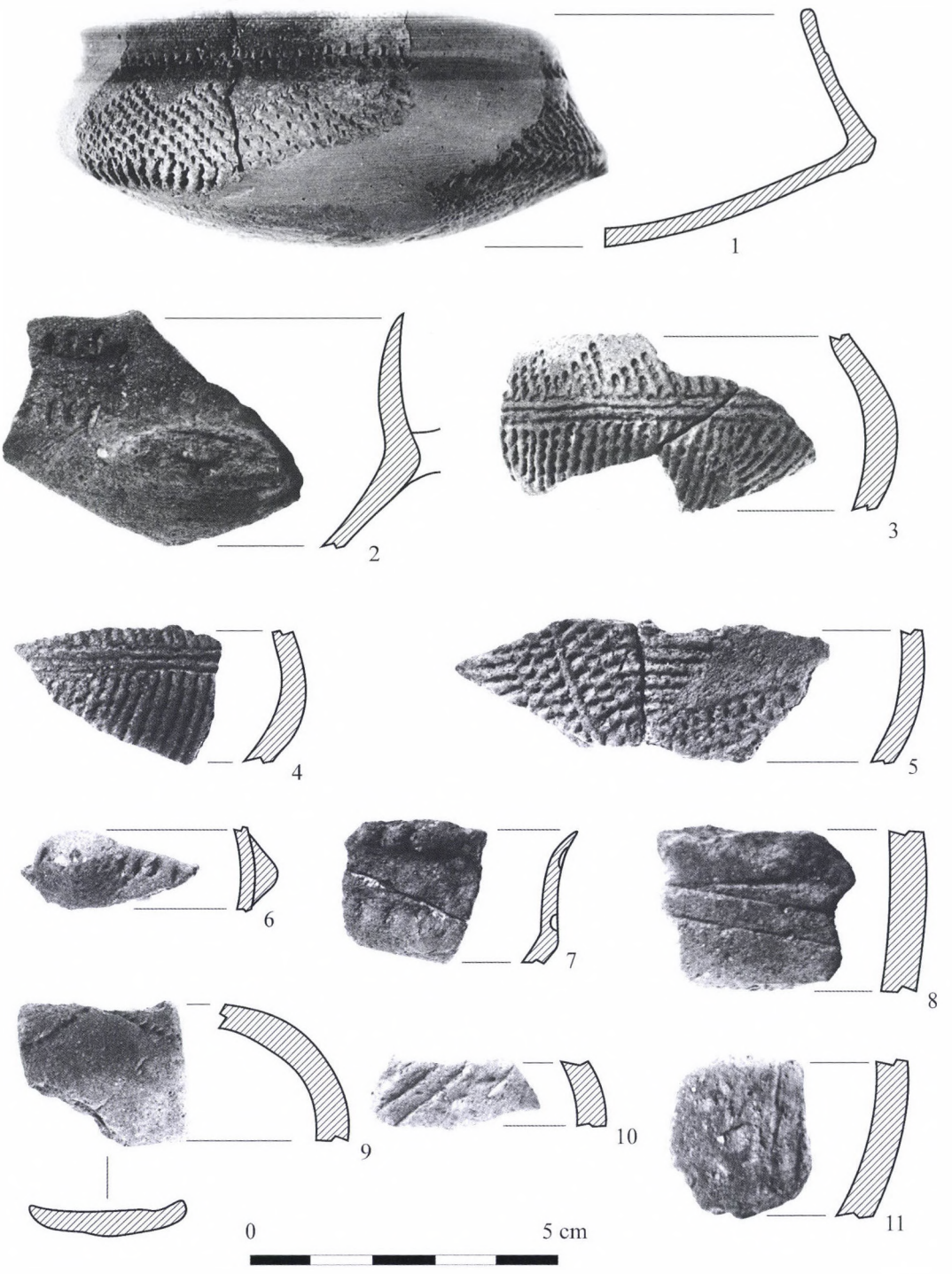

fig. 2. Zalabaksa-Zsidótemető. Finds from pit 1

Description of the finds

1. One handled cup. Dark grey biconical cup with short neck and rounded belly, decorated with impressions around the neck and impressions arranged into triangles on the belly. The handle broke off. The cup was assembled from its fragments. Diam. of mouth: 9 cm, height: 4.5 cm *(fig. 2. 1)*.
2. Fragment of a one-handled cup. Small, brownish cup decorated with impressions under the rim and on the neck. The handle, originally rising above the rim and resting on the vessel shoulder, is broken. It is unclear whether the belly was also decorated *(fig. 2. 2)*.
3. Cup fragments. Fragments of greyish and brownish thin-walled cups decorated with impressions *(fig. 2. 3–5)*.
4. Body sherd from a small, brownish cup decorated with a small knob encircled by a pattern of short stabs on its belly *(fig. 2. 6)*.
5. Neck fragment of a reddish, thin-walled cup decorated with a pattern of short stabs arranged into two horizontal rows *(fig. 2. 7)*.
6. Brownish body sherds decorated with incised lines *(fig. 2. 8, 10–11)*.
7. Fragment of a brownish, narrow strap handle decorated with a pattern of short stabs arranged into two arcs along the handle's axis *(fig. 2. 9)*.
8. Rim and body sherds from a large, thick-walled, greyish conical bowl with funnel neck *(fig. 3. 1)*.
9. Brownish, carefully made, large storage jar (?) with a narrow, horizontally set subcutaneous handle under the rim *(fig. 3. 2)*.
10. Base fragment from a light grey, thick-walled pedestalled vessel tempered with chaff *(fig. 3. 3)* and a body sherd from a similar vessel.
11. Brownish storage jar (?) with characteristic profile decorated with a small, round, perforated knob on its neck *(fig. 3. 4)*.
12. Brick coloured, poorly fired body sherd decorated with an upward pointing, small, pointed knob *(fig. 3. 5)*.
13. Body sherd from a large, brownish storage jar decorated with a finger impressed rib on the belly *(fig. 3. 6)*.
14. Body sherd from a light brownish storage jar decorated with a small loop handle *(fig. 3. 7)*.
15. Fragment of a brown, thin-walled, conical bowl with funnel neck *(fig. 4. 1)*.
16. Rim and body sherds from brick coloured, poorly fired pots *(fig. 4. 2)*.
17. Rim fragments from reddish-brown, thin-walled pots with cylindrical neck, assembled from their fragments *(figs 4. 3; 5. 9)*.
18. Rim and neck fragments from larger, light brown, thin-walled pots assembled from their fragments *(figs 4. 4; 5. 15)*.
19. Rim fragments *(fig. 4. 5, 7)* and body sherds from large, reddish-brown, thick-walled storage jar; one sherd has a handle set on the shoulder *(fig. 5. 5)*.
20. Body sherd from a large, dark brown, biconical storage jar with the stump of the handle on the shoulder *(fig. 4. 6)*.
21. Rim fragments from dark grey and brownish pots with characteristic, inward angular profile along a short section *(fig. 5. 1–3)*.
22. Rim fragment from a greyish, thick-walled, hemispherical bowl (?) *(fig. 5. 4)*.
23. Rim fragments from greyish, thin-walled jugs *(fig. 5. 6)*.
24. Rim fragment from a small, greyish bowl with straight cut rim *(fig. 5. 7)*.
25. Fragments of brick coloured loop handles and brownish and reddish-brown strap handles *(fig. 5. 8, 10)*.
26. Rim fragment from a light grey jug with characteristic profile and the stump of a handle rising above the rim *(fig. 5. 11)*.
27. Body and base fragments from reddish, thick-walled storage jars *(fig. 5. 12, 14)*.
28. Undecorated body and base sherds from reddish, thick-walled jugs *(fig. 5. 13)*.
29. Body sherd from a greyish-brown, large jug decorated with slightly curving, obliquely incised parallel lines *(fig. 6. 1)*.
30. Handle fragment of a grey clay ladle *(fig. 6. 2)*.
31. Three cylindrical, perforated clay beads of varying size *(fig. 6. 3, 6, 8)*.
32. Base fragment of a reddish strainer *(fig. 6. 4)*.
33. Body sherd from a greyish cup decorated with punctates *(fig. 6. 5)*.
34. Reddish and light brown chert fragments *(fig. 6. 7)*.
35. Large, light brown, flattened biconical spindle whorl *(fig. 6. 9)*.
36. Undecorated fragments from the basal part of greyish jugs and storage jars.

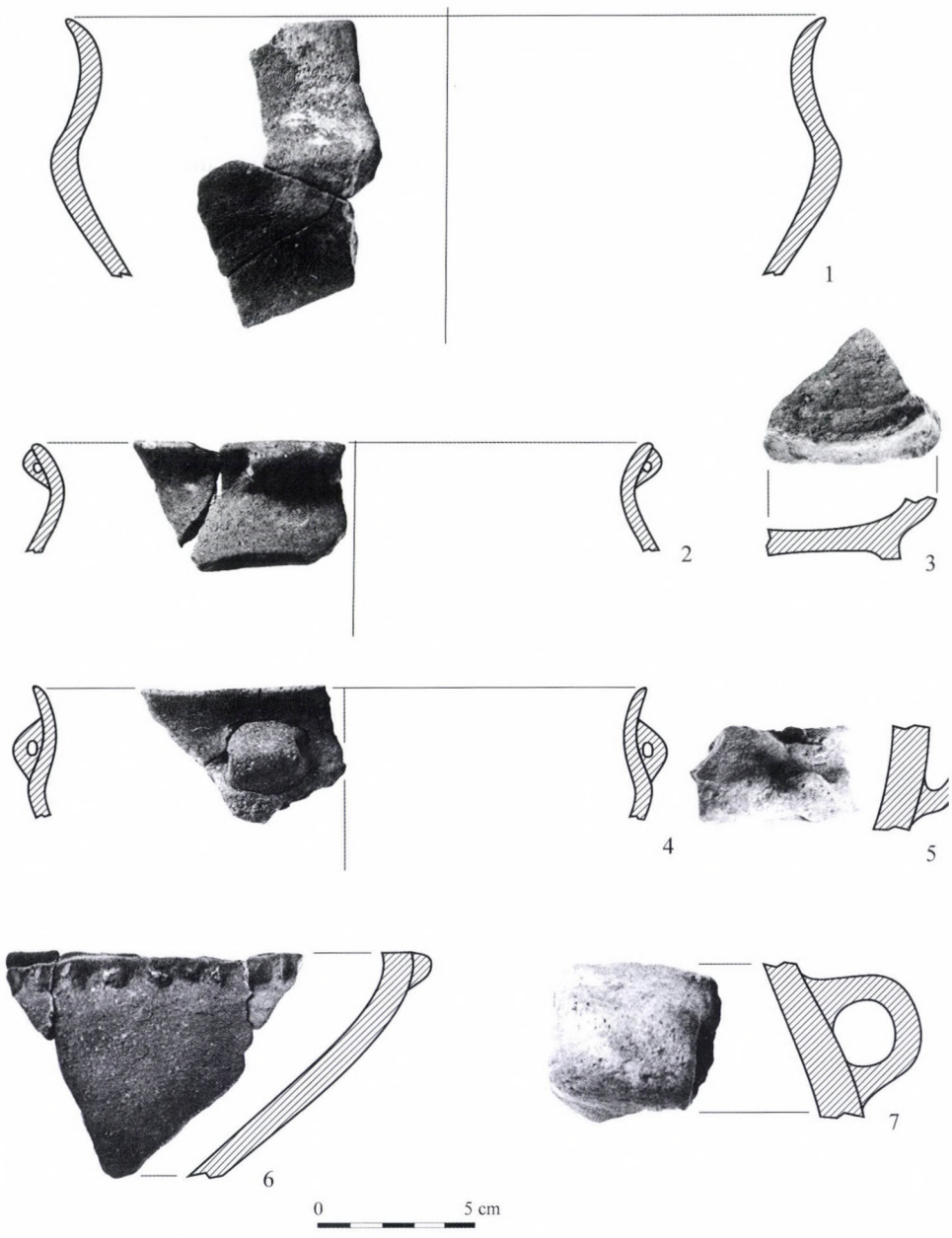

fig. 3. Zalabaksa-Zsidótemető. Finds from pit 1

37. Body sherds from a greyish, biconical bowl with rounded belly.
38. Body and base sherds from dark grey, thick-walled storage jars.
39. Body and base sherds from light brown, thin-walled pots.
40. Fragment of a light grey, short loop handle.
41. Rim fragment of a dark brown pot with characteristic profile.
42. Body sherd from a dark brown, thick-walled pot.
43. Rim fragment from a brownish, carefully made jug with curving rim and smoothed surface.
44. Body sherds from dark brown and reddish, thin-walled jugs decorated with small, round knobs.
45. Rim fragment from a reddish, thin-walled jug.
46. Rim and body fragment from a grey and red mottled vessel.
47. Body sherd from a greyish brown vessel with smoothed surface.
48. Loop handle fragment from a greyish brown jug.
49. Rim fragments from greyish, thick-walled bowls.
50. Rim fragments from reddish, thin-walled jugs.
51. Body sherd from a brownish-red cup with the stub of the handle.

The findings of the excavation

A glance at the finds from the pit excavated at the Zalabaksa site reveals that the cultural attribution of the settlement would be rather difficult on the basis of the analogies to individual sherds. One part of the pottery finds would not be alien to the Balaton–Lasinja culture, while others, such as the bowl with characteristic profile and the subcutaneous handle, are also typical of the so-called Protoboleráz material as defined by Nándor Kalicz (e.g. from the Keszthely-Fenékpuszta site).

Several traits recalling the Balaton–Lasinja culture can be noted among the pottery finds (greyish-blue, worn surface; poorly fired fabric; bowls with a sharp carination; ladle; pedestalled bowl; clay beads). Had the finds not included decorated vessel fragments, the site could well be regarded as a settlement of the Balaton–Lasinja culture. The few sherds decorated with a grid pattern and incised lines *(figs 2; 6. 1),* the bowl with characteristic profile and the vessels with subcutaneous handles *(fig. 3. 1–2)* and the pots with characteristic profile *(figs 3. 4; 5. 1–3),* however, indicate that the pit was a settlement feature of the *Furchenstich* (Stroke Ornamented Pottery) culture. The finds from the closed pit at the Zalabaksa site can thus be assigned to the *Furchenstich* pottery culture. These finds come from a period, which was bound to the preceding Balaton–Lasinja culture with many strands, and they represent the household wares of a community, which integrated many new elements into its material culture.[4]

Furchenstich pottery is characterised by a handful of vessel types: a few bowls, one-handled jugs and wide-mouthed cups, coming both in undecorated and decorated varieties, amphoras with a short handle and ribbed decoration, and pots with slightly coarsened surface and the occasional scalloped rim *(fig. 7).* Fine wares were usually carefully made vessels, often with a polished surface. The cups and jugs in this category are decorated with bundles of incised lines, patterns of stabs arranged into bands and highlighted with lime incrustation. Coarse pottery is characterised by vessels with a coarsened surface. These pottery types all occur among the finds from Zalabaksa.

Owing to the excavation circumstances described in the above, the settlement features uncovered at Zalabaksa are unsuitable for reconstructing the layout of the settlement. It seems quite certain that the large post-holes were dug for the timbers of a rather massive building. We know little about the houses and the settlement structure of the *Furchenstich* pottery culture.[5] While our knowledge of the houses and the settlements of the preceding Balaton–Lasinja period has been greatly expanded owing to the large-scale investigations conducted at Zalavár-Basasziget,[6] Kaposvár-61-es út,[7] and in the Győr area,[8] only pits have been uncovered on *Furchenstich* sites, meaning that other settlement features of this culture have not been excavated even during the course of large-scale excavations.

The internal periodisation of the Middle Copper Age has been greatly refined by research conducted during the past few decades.

Originally regarded as a cultural complex with three separate phases (Balaton group and Balaton–Lasinja culture),[9] the Balaton complex is now interpreted as three

[4] In contrast to László András Horváth, who assigned the Zalabaksa site to the Protoboleráz horizon (*Horváth 2001* Abb. 5), I have assigned this site to the *Furchenstich* pottery culture.

[5] *Virág 1996* 24; *Horváth – H. Simon 2003* 127–128.

[6] *Zs. Virág:* Vorbericht über die Ergebnisse der Freilegung der kupferzeitlichen Siedlung von Zalavár–Basasziget (Angaben zur Siedlungsstruktur und Wirtschaft der Balaton–Lasinja [I.]-Kultur). ZalaiMúz 2 (1990) 71–77; *Virág 1996.*

[7] *K. Somogyi:* A Balaton–Lasinja kultúra leletanyaga Somogy megyében (Die Funde der Balaton–Lasinja–Kultur im Komitat Somogy). CommArchHung 2000 5–48; *K. Somogyi:* Előzetes jelentés a Kaposvár-61-es út elkerülő szakasz 1. sz. lelőhelyén végzett feltárásról (Preliminary report of the excavation of Site No. 1 situated on the encircling section of Road 61 around Kaposvár). SMK 14 (2000) 245–249.

[8] *Zs. M. Virág — M. Bondár:* Rézkor. Települések [Copper Age. Settlements], in: Zs. Visy (ed.): Magyar régészet az ezredfordulón. Budapest 2003, 128.

[9] *N. Kalicz:* A rézkori balatoni csoport Veszprém megyében (Die kupferzeitliche Balaton-Gruppe im Komitat Veszprém). VMMK 8 (1969) 83–89; *Kalicz 1969–1970; N. Kalicz:* Über die chronologische Stellung der Balaton-Gruppe in Ungarn, in: B. Chropovský (hrsg.): Symposium über die Entstehung und Chronologie der Badener Kultur (Symposium 8.–11. Dezember 1969, Nitra). Bratislava 1973, 131–136; N. Kalicz: Újabb adatok a rézkori Hunyadi-halom csoport időrendjéhez (Neue Beiträge zur Chronologie der kupferzeitlichen Hunyadi-halom-Gruppe). SzMMÉ 1979–1980, 43–62.

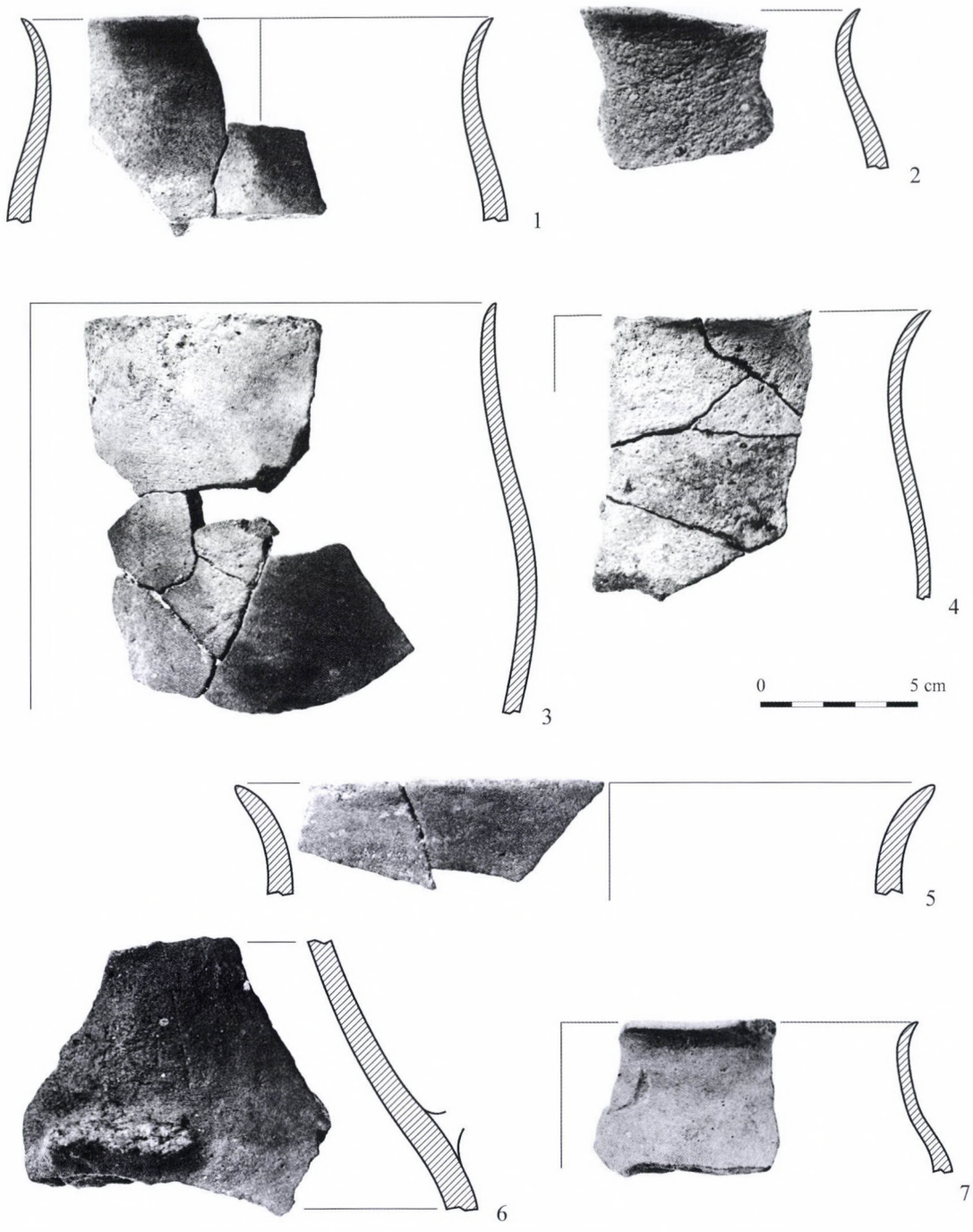

fig. 4. Zalabaksa-Zsidótemető. Finds from pit 1

separate cultures, which emerged under different cultural impacts. These diverse cultural components were discussed by Nándor Kalicz in his first overview.[10] Balaton I was dominated by southern elements, principally Vinča influences,[11] while in the Balaton II–III period, cultural contacts shifted more to the west, with cultural impacts from the eastern Alpine region.[12] In his study on the historical context of the Balaton–Lasinja culture, Kalicz defined Balaton–Lasinja I and Balaton–Lasinja II–III as two separate cultures,[13] and suggested that the latter should rather be labelled *Furchenstich* pottery culture.[14] In

[10] *Kalicz 1969–70* 87–88.
[11] *Kalicz 1969–70* 87.
[12] *Kalicz 1969–70* 88.
[13] *N. Kalicz:* The Balaton–Lasinja culture groups in Western Hungary, Austria and Nothwestern Yugoslavia. Concerning their distribution and origin. JIES 8 (1980) 247–267; *Kalicz 1982 3, 9.*
[14] *Kalicz 1982* 8.

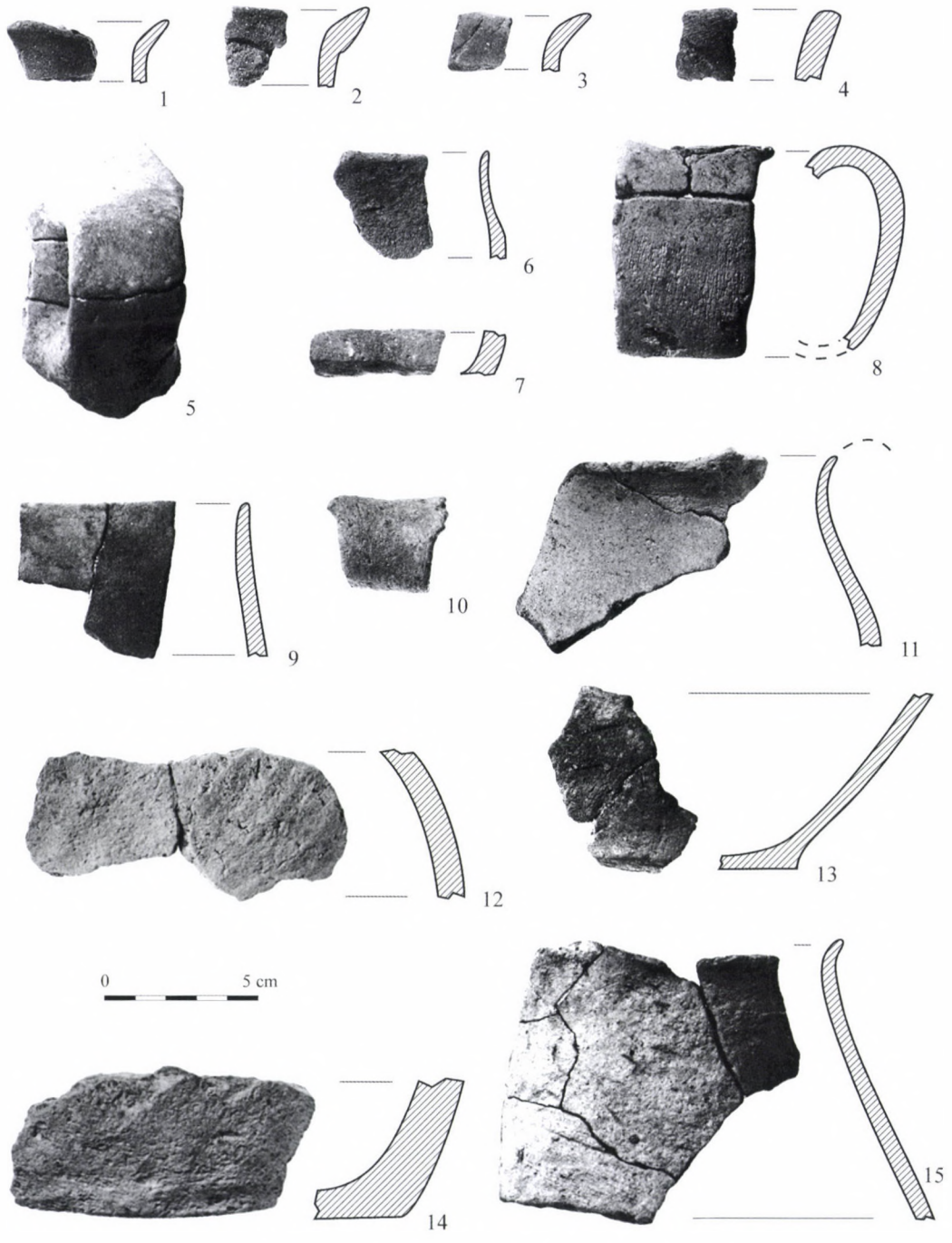

fig. 5. Zalabaksa-Zsidótemető. Finds from pit 1

his most recent studies, Kalicz regarded Balaton I as corresponding to the Lasinja I culture and he used this label for the Balaton–Lasinja culture.[15] The periodisation of the Balaton–Lasinja II–III culture was similarly refined: a part of the sites earlier assigned to Balaton–Lasinja II and Balaton–Lasinja III are now known to be *Furchenstich* sites, while a new cultural unit, the Protoboleráz culture has also been distinguished among the Balaton III sites.[16] The typological separation of the Protoboleráz culture was based on the observation that while several *Furchenstich* forms survived, low, wide-mouthed, one-handled cups

[15] *Kalicz 1991* Abb. 4; *N. Kalicz:* Die Balaton–Lasinja Kultur und ihre südlichen Beziehungen. SP 11–12 (1992) 313–315; *Kalicz 1993* 329; N. Kalicz: Die Balaton–Lasinja-Kultur in der Kupferzeit Südost- und Mitteleuropas, in: T. Kovács (hrsg.): Neuere Daten zur Siedlungsgeschichte und Chronologie der Kupferzeit des Karpatenbeckens. IPH 7. Budapest 1995, 37.

[16] *Kalicz 1991* 375, 380; *Kalicz 1993* 329; *Kalicz 2001.*

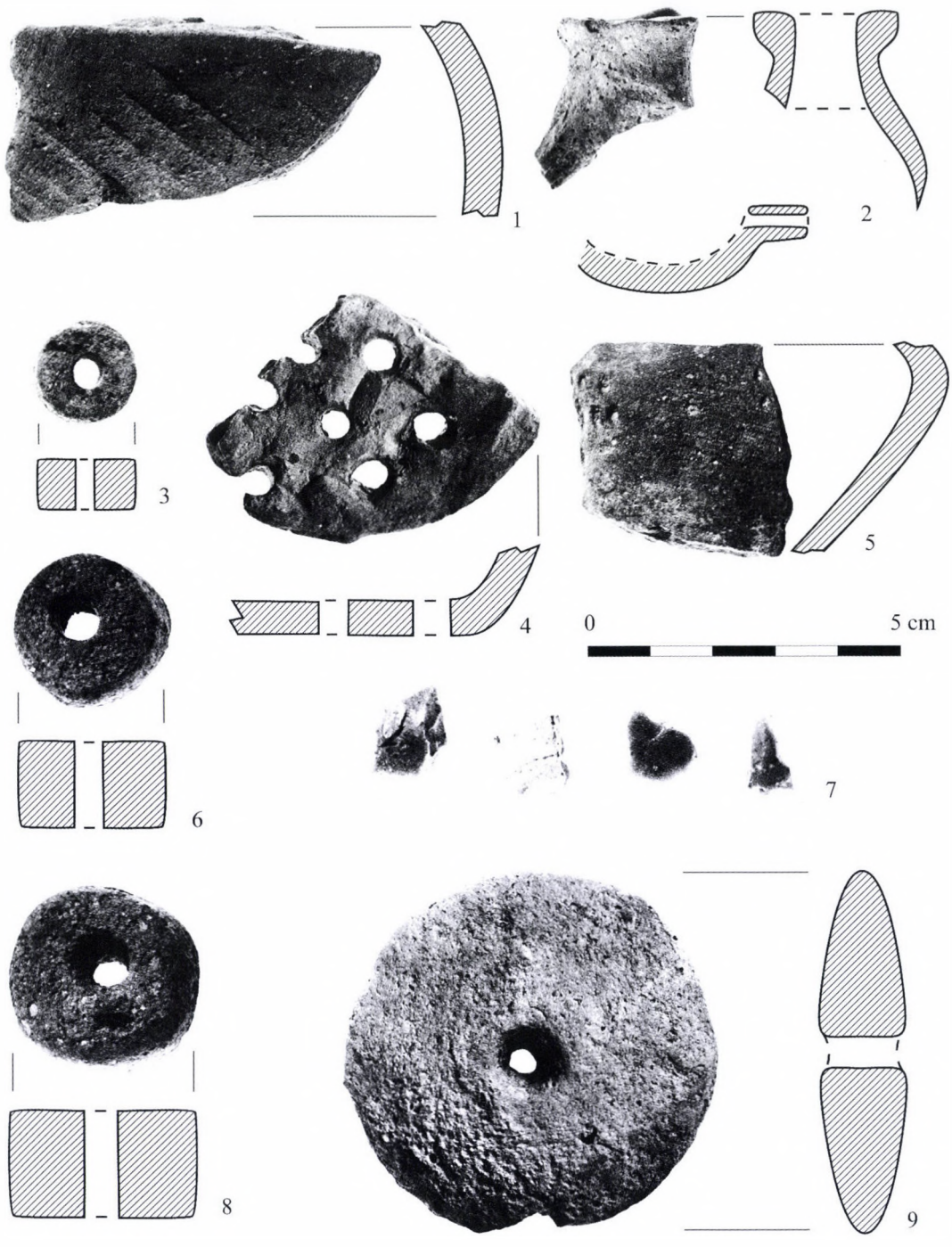

fig. 6. Zalabaksa-Zsidótemető. Finds from pit 1

with the characteristic ornamentation are lacking from Protoboleráz, and new elements, such as channelling, made their appearance. *Kerbschnitt* (excised patterns), *Furchenstich* (stab and drag) and incised network patterns disappeared or were transformed. Incrustation too disappeared.[17] According to Kalicz's most recent overview,[18] thirty-three sites can be assigned to the Protoboleráz horizon in the Carpathian Basin, with ten new sites identified during the past ten years.[19] This new cultural unit, however, is a source of uncertainties in the cultural attribution of find assemblages and also in archaeological terminology. The

[17] *Kalicz 1991* 375, 380.
[18] *Kalicz 2001* 417.
[19] *Kalicz 1991* Abb. 17; *Kalicz 2001* Karte 1.

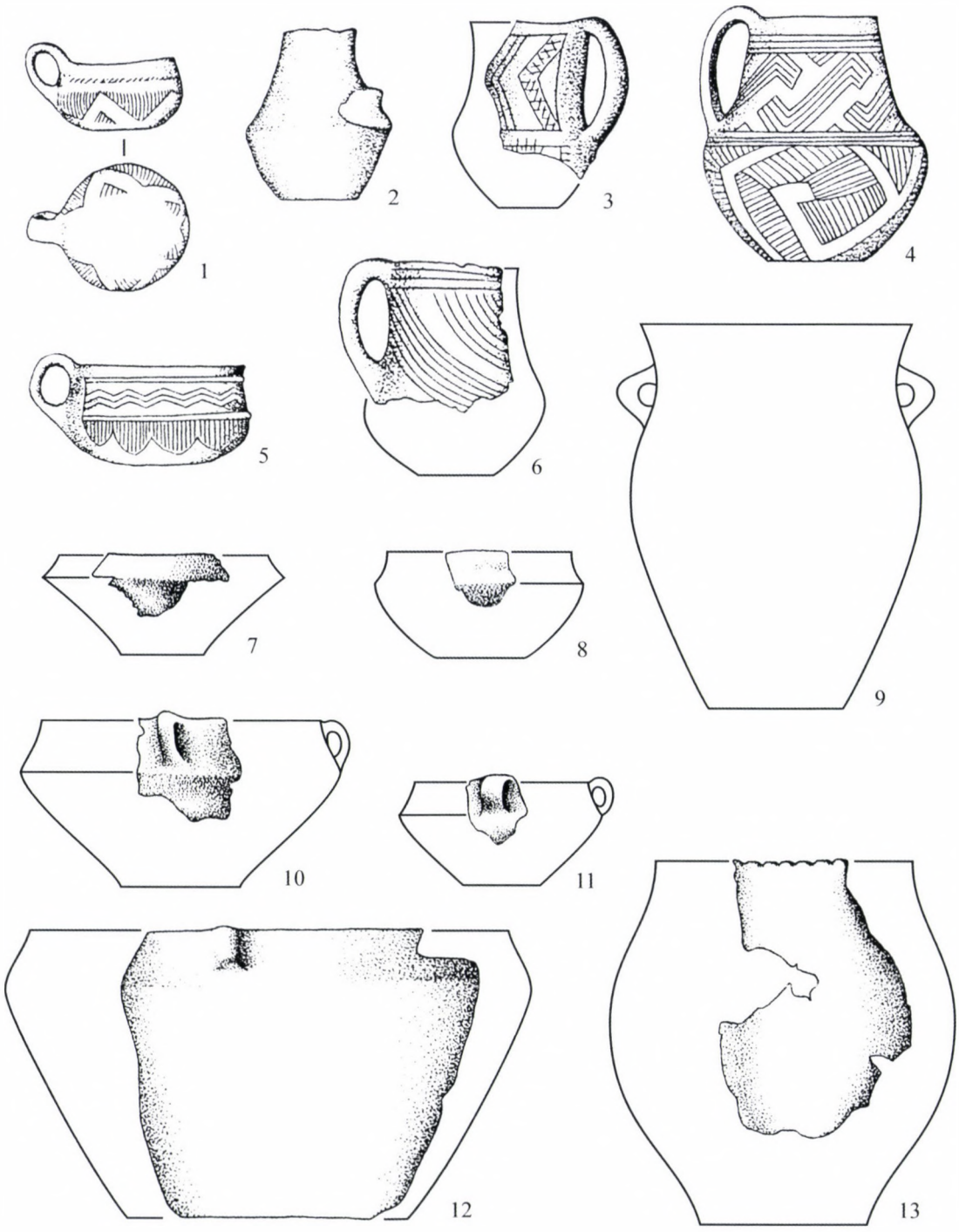

fig. 7. Type chart (after *Kalicz 1991* and *Točík 1969*)

demonstration of typological differences is currently based on stray finds and is sometimes quite vague. As a matter of fact, I have my doubts whether certain sites can indeed be assigned to the Protoboleráz horizon.[20] Excavations conducted over extensive areas using up-to-date techniques will no doubt contribute to resolving this issue.

[20] *M. Bondár:* L'état des recherches sur la culture de Baden en Hongrie. (Les découvertes récentes concernant la période ancienne), in: *Roman – Diamandi 2002* 440; *M. Bondár:* A badeni kultúra kutatási helyzete Magyarországon. Vázlat (Der Forschungsstand der Badener Kultur in Ungarn. Abriss). MFMÉ – Studia Archaeologica 8 (2002) 9.

The *Furchenstich* pottery culture (known as the Bajč–Retz–Gajáry and Kevderc–Djerdap complex in neighbouring countries) has been discussed in several studies.[21] László András Horváth too has devoted several studies to the *Furchenstich* finds from Hungarian sites and the research of this culture.[22] He has offered an excellent overview of the chronology, the settlements and the few known burial of the *Furchenstich* pottery culture, together with an analysis of the pottery types and the metal finds.[23]

Summary

One result of the Kerka Valley Micro-Region Project was the investigation of a Middle Copper Age settlement, where one of the features yielded a rich assemblage of *Furchenstich* pottery.

Very little was known about the Copper Age in this region before the micro-region investigation, even though the discs from Csáford and the idol from Becsvölgye indicated that this region had been settled by larger communities during the Middle Copper Age. However, only a few stray finds were known before the systematic field surveys. A total of five new Copper Age sites were identified in the Kerka Valley (Szentgyörgyvölgy-Katolikus templomdomb, Csesztreg-Sarjas kertek, déli vég, Ramocsa-Cikkelyes, Kerkakutas-Cupi patak and Nemesnép-Kövecses-dűlő); one of these, the Csesztreg site was occupied by a *Furchenstich* community. Another twelve sites are known from the eastern part of County Zala.[24] In other words, we now know that the region which was a *"terra incognita"* owing to the lack of research, had been continuously settled, as shown by the growing number of newly identified sites. The excavations conducted in association with the motorway construction projects will undoubtedly enrich our knowledge of the life of the Middle Copper Age communities in this region.

[21] *O. Seewald:* Die jungneolithische Siedlung in Retz (Niederdonau). PHWien 7 (1940) 1–15; *A. Točík:* Keramika zdobená brázdeným vpichom na juhozápadnom Slovensku (Die Furchenstichkeramik in der Südwest-Slowakei). PA 52 (1961) 321–344; *A. Točík:* Záchraný výskum v Bajči–Vlkanove v rokoch 1959–1960 (Rettungsgrabung von Bajč-Vlkanovo in den Jahren 1959–1960). ŠZ 12 (1964) 5–185; *E. Ruttkay:* Eine neue Grube mit Furchenstichkeramik aus Niederösterreich. AKorr 1 (1971) 141–146; *V. Janák:* Keramika typu Retz–Křepice–Bajč ve Středním Podunají a problémy jejího vzniku (Die Keramik vom Typus Retz–Křepice–Bajč im mittleren Donaugebiet und ihre Entstehungsprobleme. SPFFBU 20–21 (1976) 25–33; *S. Dimitrijević:* Zur Frage der Retz–Gajary Kultur in Nordjugoslawien und ihrer Stellung im Pannonischen Raum. BRGK 61 (1980) 15–89; *E. Ruttkay:* Zur Problematik der Furchenstichkeramik aus östlichen Alpenvorlandes: Beitrag zum Scheibenhenkelhorizont. SlA 36 (1988) 225–240; *E. Ruttkay:* Das Ende der donauländischen Welt. MAGW 121 (1991) 159–181; *E. Ruttkay:* Spätneolithikum, in: E. Lenneis – Chr. Neugebauer-Maresch – E. Ruttkay (hrsg.): Jungsteinzeit im Osten Österreichs. Wissenschaftliche Schriftenreihe Niederösterreich 102/103/104/105. St. Pölten – Wien 1995, 108–209; *E. Ruttkay:* Zur jungneolithischen Furchenstichkeramik im östlichen Mitteleuropa. Die Fazies Gajary, in: C. Becker et al. (hrsg.): Chronos. Beiträge zur Prähistorischen Archäologie zwischen Nord- und Südosteuropa. Festschrift für Bernhard Hänsel. Espelkamp 1997, 165–180; *J. Pavúk:* Hausgrundriss und Furchenstichkeramik der Gruppe Bajč–Retz aus Čataj in der Slowakei, in: *Roman – Diamandi 2002* 563–578.

[22] *L. A. Horváth:* Beziehungen zwischen der Tiefebene und Transdanubien in der mittleren Kupferzeit. ZalaiMúz 2 (1990) 113–135; *L. A. Horváth:* A Kárpát-medence középső rézkorának történeti és kronológiai kérdései (A tűzdelt barázdás keramika helyzete az Alföldön) [Historical and chronological issues of the Middle Copper Age in the Carpathian Basin. Furchenstich pottery in the Great Hungarian Plain]. Budapest 1993. PhD Dissertation; *L. A. Horváth:* Beiträge zur Chronologie der mittleren Kupferzeit in der Grossen Ungarischen Tiefebe. ActaArchHung 46 (1994) 73–105; *L. A. Horváth – K. H. Simon:* A neolitikum és rézkor Zalaegerszeg környékén [The Neolithic and the Copper Age in the Zalaegerszeg area], in: I. Kapiller (ed.): Zalaegerszeg évszázadai. Várostörténeti tanulmányok. Zalaegerszeg 1997, 7–48; *Horváth 2001.*

[23] *Horváth – H. Simon 2003.*

[24] *Horváth – H. Simon 2003* 124–126.

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Virág 1996 — *Zs. Virág:* Középső rézkor [Middle Copper Age], in: *Évezredek 1996* 22–24, 30–31.

Ferenc Redő

ANTAEUS 28 (2005) 285–306

THE INVESTIGATION OF THE ROMAN VILLA AT ZALABAKSA

Very modest funds were available for the investigation of the site. We could only excavate for twelve weeks altogether in three seasons, with three or four labourers.[1] This was barely enough to determine the nature of the site, its main architectural periods and its date. There is very little information on the various buildings and features and their size, and we failed to find the main building. Still, the data we have gained contributes to a better understanding of the history of the Kerka Valley and also highlights the importance of the Roman site at Zalabaksa.

Previous research – The Roman tombstone from Zalabaksa

One of the main objectives of the Kerka Valley Micro-Region Project was to identify the line of the Amber Road. Arriving from the south, the road ran northward along the eastern edge of the Hetés Plain, passing by Zalabaksa before disappearing among the Göcsej Hills *(fig. 1)*.

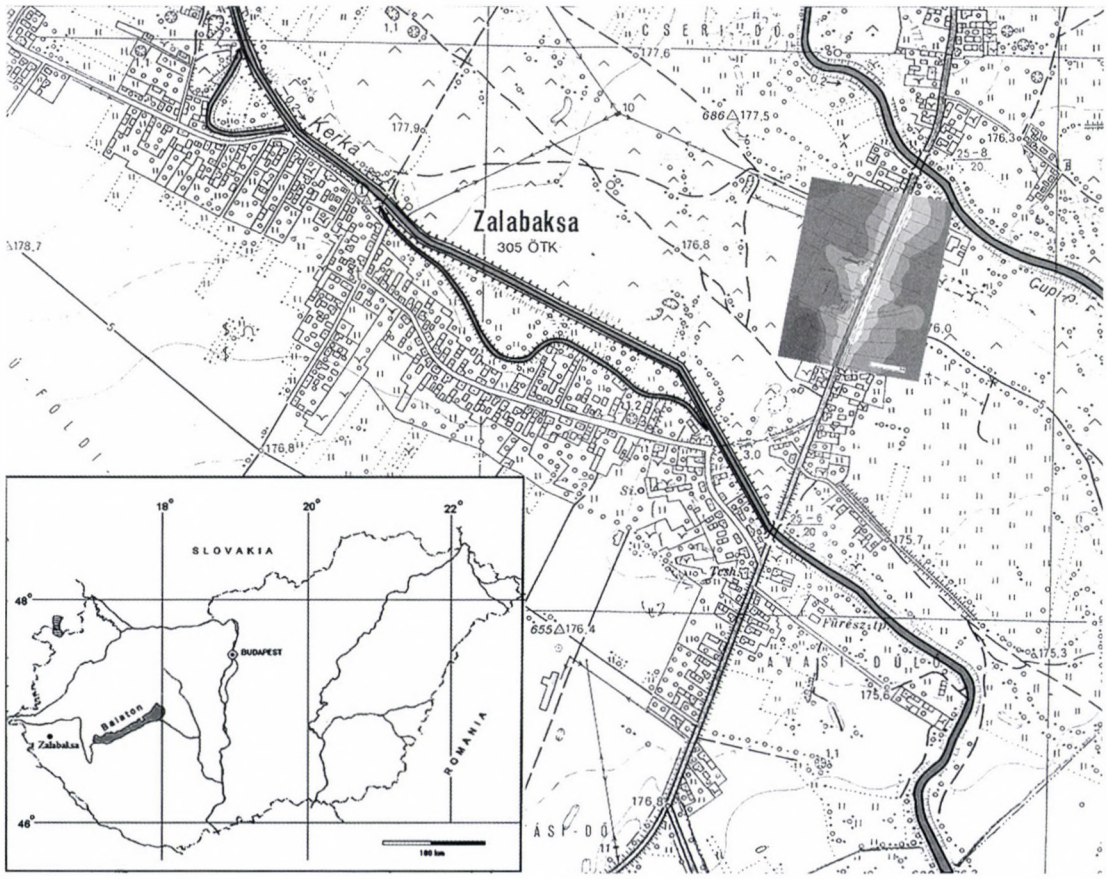

fig. 1. Map of the site

Earlier field surveys had yielded finds indicating a Roman site extending along both banks of the Kerka and Cupi streams flowing through the village, and along Road 86 traversing Zalabaksa in a roughly north to south direction.[2] The greatest concentration of finds was noted

[1] We would have achieved even less, had the community not been generous with its help. We are greatly indebted to Mayor Ottó Horváth and Principal Imre Pácsony.

[2] Cf. note 2 in the study "The Kerka Valley in the Roman Age", in this volume (pp. 101–115).



fig. 2. Tombstone of Publius Naevius Apollonius from Zalabaksa

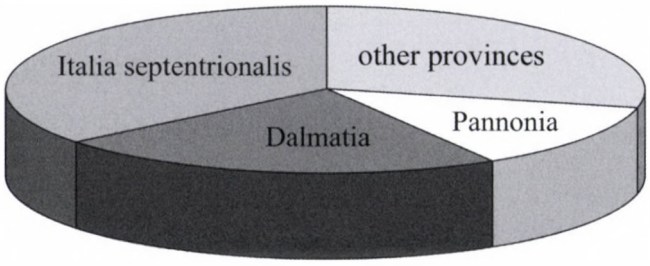

fig. 3. Distribution of the name Naevius in the Roman Empire

along the road section between the two streams. Remains of the Roman settlement were detected when the gas-pipes were laid.

Little was known about the Roman settlement before our field surveys, although one outstanding find was discovered in the area. When the bridge over the Kerka Stream was built in 1952, Tamás Pekáry brought to light a Roman tombstone broken in two during his rescue excavation. One half of the tombstone lay in the water and was strongly worn,[3] but even so, the inscription can be read for the greater part and enough survived of its sculpted panel to warrant a separate study.[4] Seeing that this tombstone is crucial to determining the nature of the Roman settlement, it shall be discussed at greater length *(fig. 2)*.

The tombstone was larger than average. It broke in two at roughly its lower fifth. The tombstone was damaged by the water, which eroded the stone on the left side. A part of its inscription is illegible, again owing to the damage caused by the water, The tombstone was about 240 long, 120 cm wide and 30 cm thick. It was no doubt erected by a wealthy person since the transportation of a grave stele of this size was a costly affair. The tombstone was carved from crystalline limestone (so-called Styrian marble), imported from Noricum.

The inscription reads as follows:

[P(ublius)] Naevius P(ublii) lib(ertus) / Apollonius sibi / [e]t Vibiae Firmai co(niugi) / [et Nae]vio Constant[i / filio ?

The most important information is that the tombstone was erected by a libertus, who had been freed by a certain Publius Naevius. The distribution of the name Naevius in the empire reveals that this family name occurred most frequently in northern Italy and Dalmatia[5] *(fig. 3),* with about one-half of the occurrences documented in this region, It therefore seems likely that the *familia,* which had freed him, came from northern Italy. The *cognomen* Apollonius too occurs most frequently in Italy, but it is less common in Dalmatia and Pannonia. In three instances, an *origo* is also mentioned, i.e. a reference to the origins of its bearer. One of these comes from Concordia, the northern corner of the Adriatic, the very area, where the name Naevius occurs quite frequently; the other two are oriental: *natione Surus* and *domo Antiochia.*[6]

It seems likely therefore that Apollonius was an educated slave from the east, who had been bought by a northern Italian merchant or artisan family, and had been sent to Pannonia following the region's Roman conquest. His liberation was a sensible move on his owner's part, since he did not turn his back on the family's business as a *libertus,* but continued working there, most likely for his own benefit. The size and quality of his tombstone is eloquent testimony that his business prospered. Apollonius, *libertus* of Publius Naevius,

[3] *L. Barkóczy – A. Mócsy:* Die Römische Inschriften Ungarns. 2. Lieferung. Salla, Mogentiana, Mursella, Brigetio. Budapest 1976, No. 285; *CSIR* U VIII, No. 17, Taf. 14. 1.1–1.3.

[4] In a paper read at the meeting of the Society for Classical Studies in 2004, István Tóth analysed the depiction from the perspective of religious history.

[5] *A. Mócsy – R. Feldmann – E. Marton – M. Szilágyi (eds):* Nomenclator provinciarum Europae Latinarum et Galliae Cisalpinae cum indice inverso. DissPann Ser III. Vol. 1. Budapest 1983, 197.

[6] *B. Lőrincz – R. Redő:* Onomasticon provinciae Europae Latinarum. Vol. I. Ana – Bysanus. Archaeolingua. Budapest 1994, 146.

was apparently a wealthy man, who did not regard his sojourn in Pannonia as a temporary condition. He settled here and erected a splendid monument to himself and his family.[7]

The sculpted decoration of the tombstone is quite remarkable. Coiled in the triangular areas left free by the pediment of the stylised grave aedicula are winged, gryphon-headed sea serpents with dolphins' fins. They resemble the creatures on the lower part of a tombstone from Magyarszerdahely, the only difference being that on the Zalabaksa stele, the sea serpents fill the area more harmoniously.[8]

A Medusa head flanked by birds is set in the pediment. It is rather worn and in a poor condition. A similar Medusa head appears on a tombstone from Becsehely, on which the pointed corners of the pediment are filled with ivy leaves.[9] Only the right side of the pediment on the fragmentary stele from Zalaszentgyörgy has survived.[10] The pediment is decorated with birds resembling the ones on the Zalabaksa tombstone and it seems likely that there was a Medusa head in the centre. A similar motif decorates a tombstone from Zalalövő, although not set in a pediment.[11]

The moulding under the pediment is decorated with acanthus leaves. Underneath is a sculpted panel, which is unusual compared to the analogous finds quoted from Becsehely, Zalaszentgyörgy and Magyarszerdahely, on which the inscription was set underneath the pediment (although the latter are admittedly smaller tombstones than the one from Zalabaksa). Apollonius' tombstone is much larger and more lavishly ornamented. It can best be compared to the design of the stele exhibited in the main square of Ptuj,[12] and good analogies can also be quoted from Szombathely and Weiz, as well as from Zalalövő, where a stele with a probably similar composition was found. This composition is characterised by a sculpted panel under the pediment, which is as prominent as the one containing the inscription, from which it is separated by a frieze. Both panels are flanked by columns, probably emphasising their resemblance to grave *aediculae.* The columns are usually decorated with a scale pattern or twisted channelling, or a combination of the two. Decorative motifs can also be seen underneath the inscription, but these are not set between columns. The Zalabaksa tombstone is ornamented with a shell set between two dolphins on its lower part.

One conspicuous feature of Apollonius' tombstone is that the composition of the sculpted panel and its execution is inferior compared to the other decorative elements, whose tiniest details testify to the hand of a skilled craftsman. The delicately flowing frieze of acanthus leaves is as lovely as the frieze of the superbly carved three eagles with outspread wings holding garlands entwined with ribbons in their beak above the inscription. Although the dolphins and the shell at the stele's base are strongly worn, it is quite obvious that the composition filled the available space, and that its symmetry and vitality are perfect.

There is a glaring contrast between the artistic quality of the friezes and the decorative motifs adorning the tombstone's base and its upper corners and the shoddiness of the sculpted panel. The reason for this difference can be sought in the fact that the sculpted panel was a rather unique element compared to the other decorative motifs, to which good analogies can be quoted from the region's towns and their *territorium* (Poetovio, Flavia Solva, Savaria). The presence of a sculpted main panel was rather unusual on tombstones at the time.

This unique element is vital to the characterisation of the person, who commissioned the stele, and the interpretation of the site; the actual meaning of the depiction is secondary in this

[7] For the *libertus* engaged in trade in Pannonia, cf. *I. Bilkei:* A Canius kereskedőcsalád Pannóniában [The Canius merchant family in Pannonia]. ZGy 16 (1980–81) 3–12.

[8] The gravestones quoted in the following have been discussed at greater length by *A. Mócsy:* Római sírkő Magyarszerdahelyről (Römische Grabstein aus Magyarszerdahely). FolArch 9 (1957) 83–90; *A. Mócsy:* Eine Gruppe vom Marmorstelen in Westpannonien. ZNM 8 (1975) 163–168; *A. Mócsy:* Zala megye római-kori kőemlékeiről (Steindenkmäler aus der Römerzeit im Komitat Zala). ZGy 6 (1976) 21–32; *I. Bilkei:* Újabb római kőemlékek Zalából (Neuere römischen Steindenkmäler aus Zala). ZGy 25 (1986) 13–19; *I. Bilkei:* A Keszthelyi Balatoni Múzeum római kőtára (Die römische Steinsammlung im Balaton-Museum Keszthely). ZalaiMúz 2 (1990) 117–145; *Pochmarski 1998* 41–60. A recent overview can be found in vol. VIII of the *CSIR U,* No. 22, Taf. 15. 3.

[9] *CSIR U* VIII, No. 18, Taf. 14. 2.

[10] *CSIR U* VIII, No. 15, Taf. 13. 3.1–2.

[11] *CSIR U* VIII, No. 13, Taf. 13.1.

[12] *Pochmarski 1998* 57, Abb. 8.

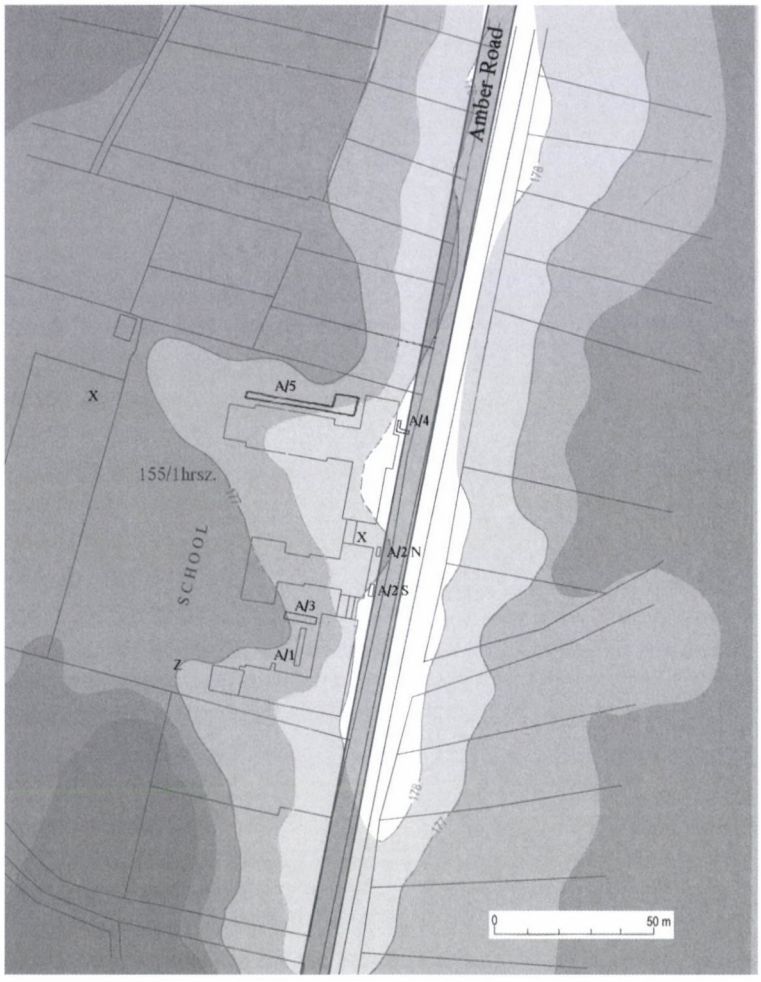

fig. 4. Zalabaksa. Location of trenches and other topographical features

respect. The person commemorated by the tombstone dating from the close of the 1st century or the first third of the 2nd century arrived to the Kerka's banks a little earlier, at the time when civilian life had just begun in this region.

His social position has been described above. To which we may add that the artistic standard he demanded from the stone-mason exceeded by far what was customary at the time in the broader area. His idea of style was grander than the average and called for a different artistic content. The mason was apparently unprepared for commissions of this type and his pattern-book did not contain the requested figures. He could hardly refuse his customer's demands and he was probably the best among the masons working in the area. The gravestone captures a unique moment in art history, when a craftsman, not in command of the necessary skills, is faced with the task of catering to a new, previously unknown and unusual artistic demand in the region. Cultural clashes of this type broaden the cultural horizon and enrich artistic taste in a given region, which in this case was the newly-organised province of Pannonia, which had just recently been pacified into a civilian region from a military arena.

One of the occupants of the Roman Age settlement at Zalabaksa, who is known by name from his tombstone, was a wealthy, economically prosperous and culturally sensitive man. His home, which we hoped to find, could not have been a town or even a larger village – Zalabaksa lies a mere fifteen kilometres from Salla, and the settlement network was not too dense in the province. We therefore assumed that P. Naevius Apollonius lived on a villa estate, whose economy was not necessarily based on agriculture. The villas engaged in farming rarely lay directly on a main road. They were usually sited in the centre of the *fundus,* from where even

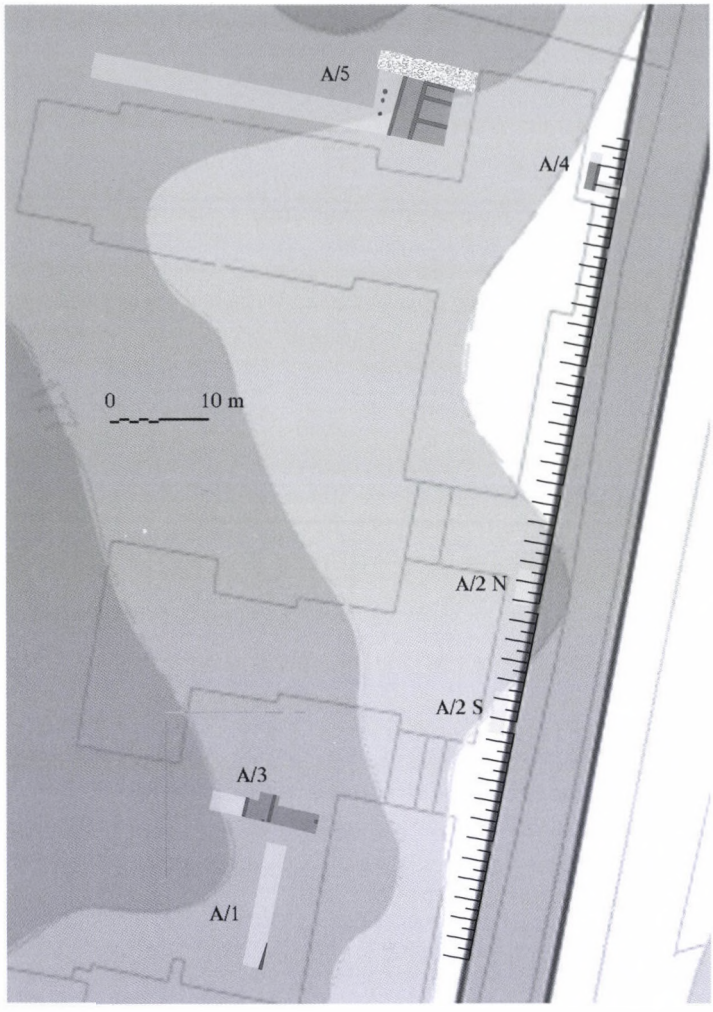

fig. 5. Zalabaksa-Iskola. Overview of constructed features.
Plan of the excavation with the modern buildings

the estate's most distant point could be easily reached. The Zalabaksa site lay by the Amber Road, suggesting that the villa's economy was centred around a craft or merchant activity, for which good transportation was vital.

The preliminary information on the site indicated that there had been a prospering villa estate engaged in some industrial or merchant enterprise along the section of the Amber Road running between the Kerka and the Cupi streams.

The excavation

We excavated the site for three seasons on a rather modest scale. I opened the trenches in the schoolyard and its area *(fig. 4),* for this was the place where we would least disturb the community's life during summer and the school holidays. The school lies beside Road 86; it is made up of an older, pre-war building and newer buildings serving educational and cultural purposes built in the 1970s. The buildings lie parallel to the road, on its western side; the school's gym hall is perpendicular to road. Behind the buildings, a little to their west, are the sports fields and the experimental school garden.

During our preliminary field survey we collected Roman finds during the laying of the gas-pipe between the road and the buildings. One of the locals, who had participated in the construction of the leisure centre, found a coin of Vitellius[13] and the remains of a stone wall by

[13] László Sohár's kind personal communication.

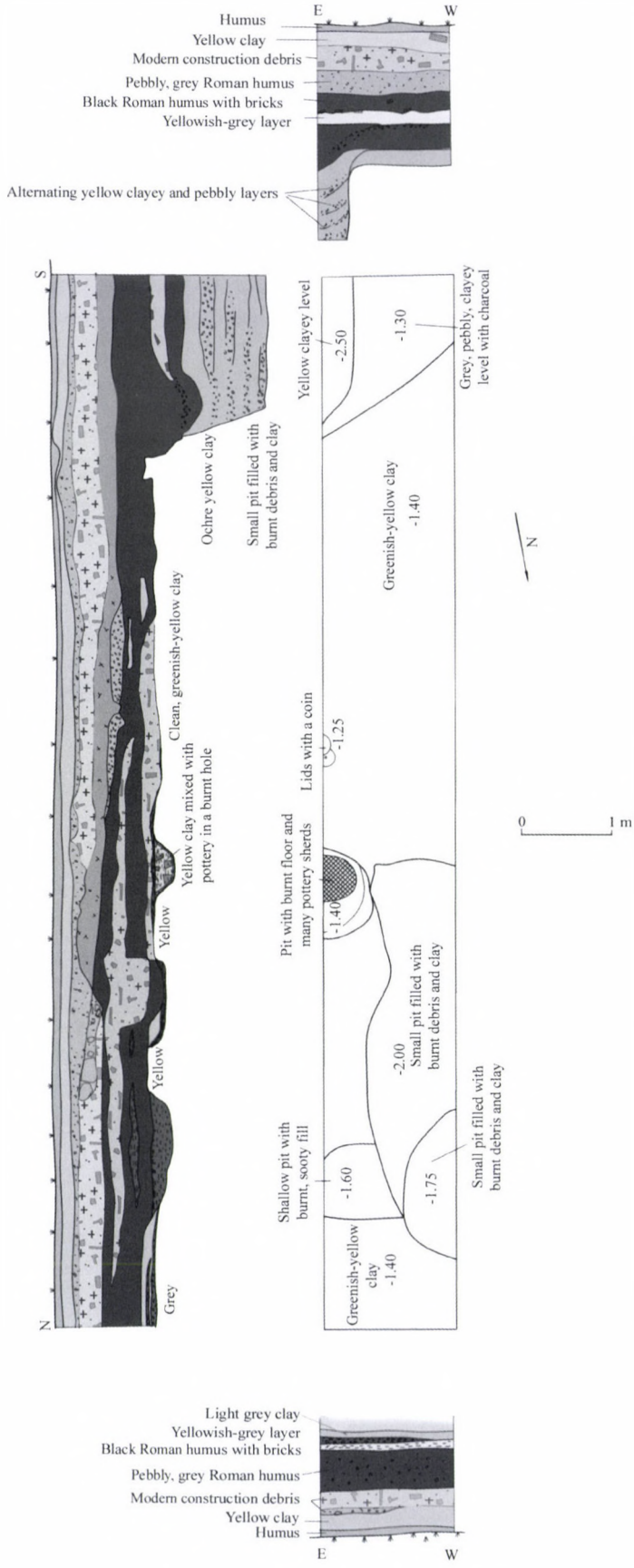

fig. 6. Zalabaksa-Iskola. Trench A/1

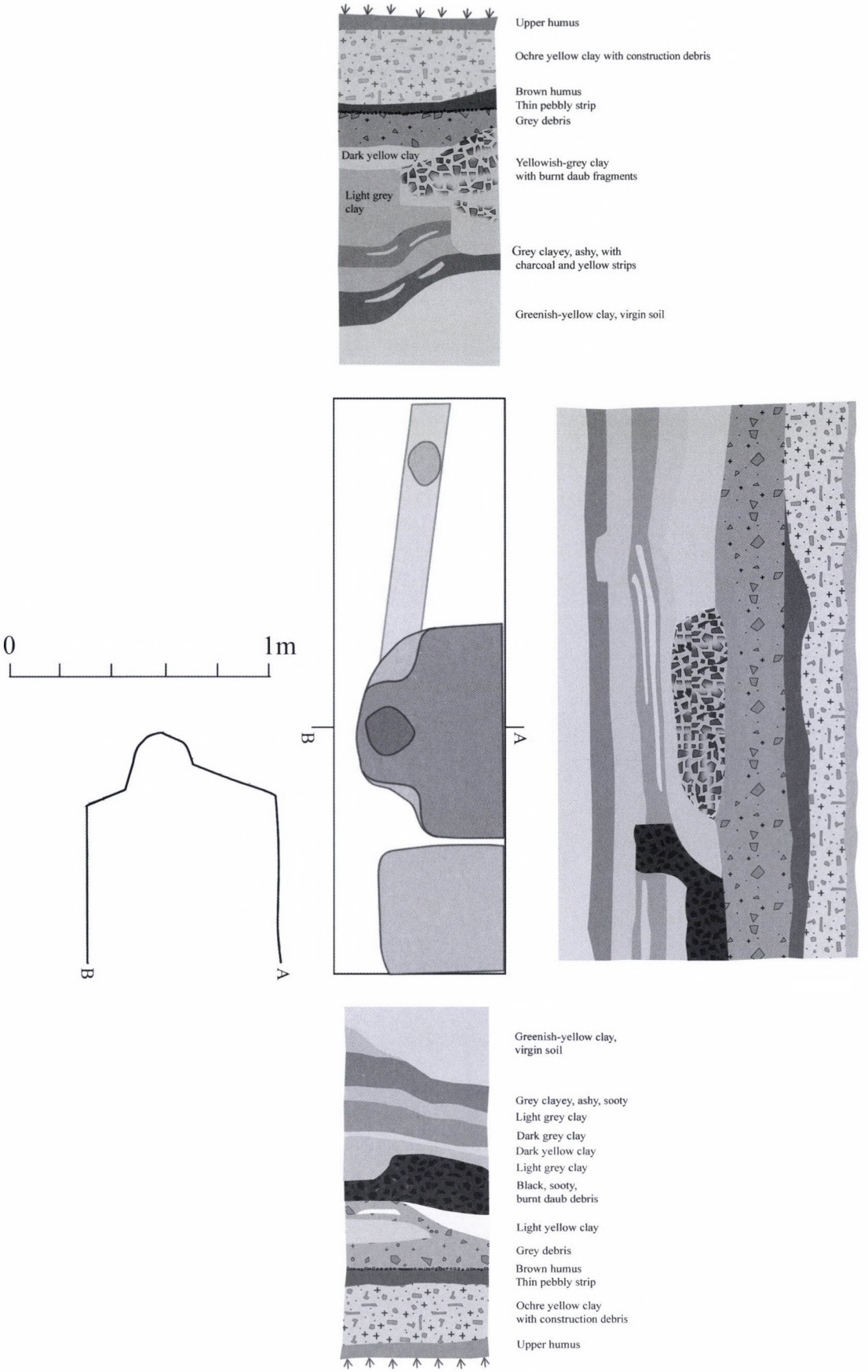

fig. 7. Zalabaksa-Iskola. Trench A/2

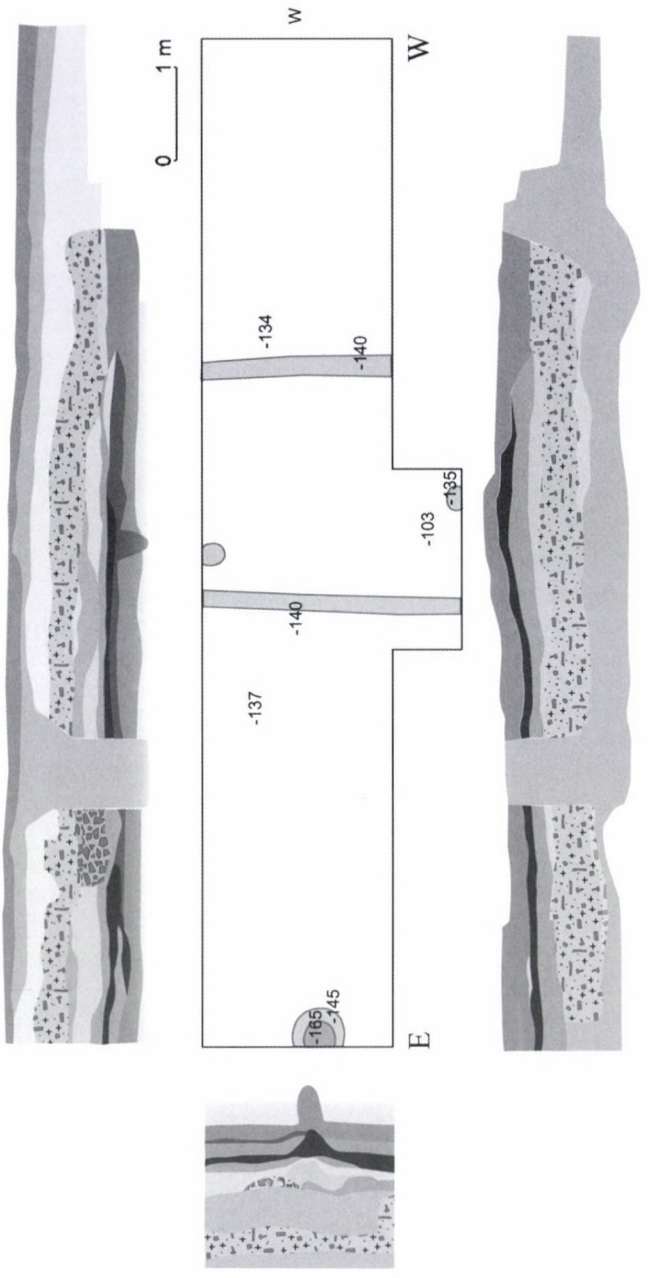

fig. 8. Zalabaksa-Iskola. Trench A/3

the building's entrance. The schoolteachers told us that their pupils often came across pottery sherds when planting fruit tree seedlings in the school garden.

In 1998, we cleared two trenches (A1 and A2). Opened in the yard of the old school building, Trench A1, measuring 2 m by 12 m, was north–south oriented *(fig. 5)*. We uncovered an area yielding a rich array of finds, but few settlement features under the concrete covering the yard. We did not find any features, which could be associated with a building. Several irregularly shaped pits containing pottery fragments lay in the trench's northern part. We uncovered a pit with vertical walls in the trench's south-eastern corner, whose fill contained alternating layers of clay and gravel, with a dominance of clay *(fig. 6)*. It did not contain any finds. We tentatively interpreted this pit as a foundation trench owing to its vertical walls. This construction technique was observed on other Roman sites in the area: a 50 to 70 cm deep

[14] For the wall remains uncovered in Areas F and K, cf. *Redő et al.:* Römische Forschungen in Zalalövő 1976. ActaArchHung 30 (1978) 349–430. The finds from Area AA are still unpublished. Cf. the Archives of the Göcsej Museum.

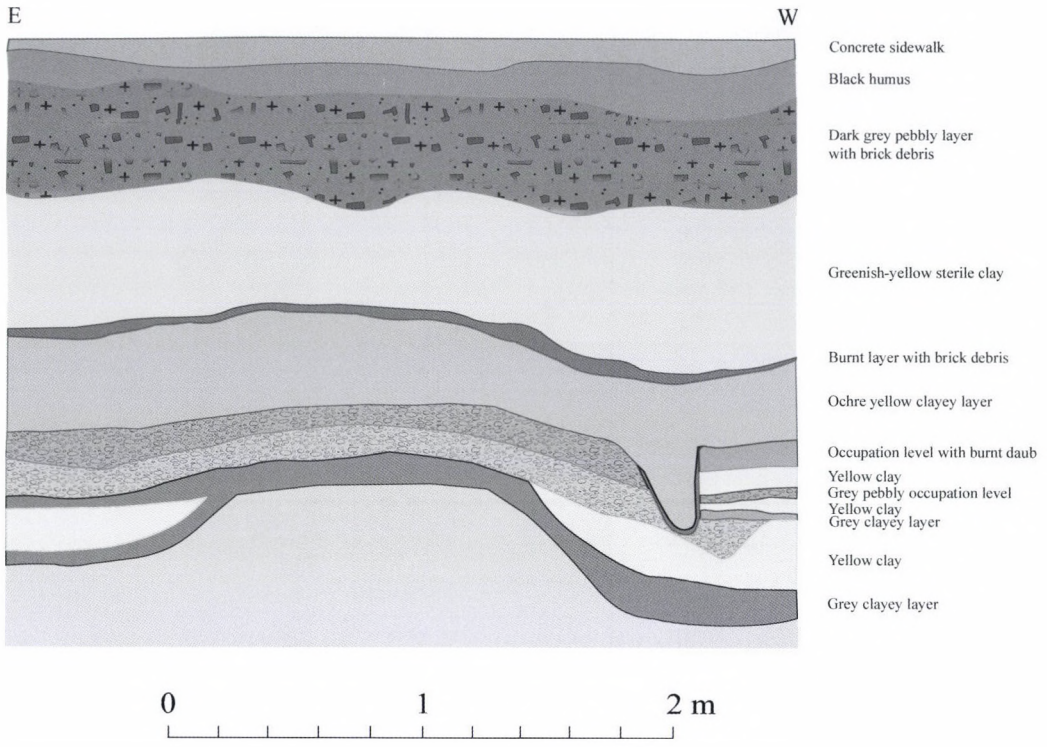

fig. 9. Zalabaksa-Iskola. Southern section of Trench A/4

trench was filled with gravel and the stone walls were raised on this foundation. A building of this type was uncovered at Zalalövő, in Areas F, K and AA.[14] Very little of this building fell into the excavated area. If the pit was indeed part of a foundation trench, it probably lay under the building's corner, and the building itself extended south-east of the excavation trench. Unfortunately, it was not possible to further investigate this area, and thus the interpretation remains tentative.

The second trench (A2) was opened between the new school buildings and the pavement, nearer to the road. The area was large enough for opening a 1.2 m by 16.5 m large trench in this area, but we could only clear a 4 m long section at its southern end and a 4 m long section at the northern end, for such a long trench running parallel to the school building's wall would have meant a static hazard. This trench too yielded many finds, and we also found settlement features. These included the remains of a timber building and traces indicative of a nearby pottery kiln, but no stone walls. Two post-holes were noted in the surviving section of a north to south oriented timber beam, beside which lay a 150 cm wide pit filled with burnt daub *(fig. 7)*. The corner of another, more or less regular rectangular pit was found to its south; its fill was made up loose soil mixed with debris, but no daub fragments. Almost all the fragments of two large storage jars were recovered west of this timber beam, from the trench's north-western corner, suggesting that the two vessels had been broken at the same time. One had a deformed rim, as it turned out after their restoration.

Trench A3 was opened in the old school yard in 1999. This lay north of Trench A1 and was east to west oriented. It was similarly rich in finds as Trench A1, with the settlement features concentrated in its eastern half. We found the remains of two parallel north to south oriented timbers and observed a post-hole in the trench's northern section. These settlement features lay in a rather narrow area and it was impossible to reconstruct a building or a building section from them, or to associate them with the features noted in Trench A2 a year earlier. They did indicate that the building or the occupation level, which could be associated with it, lay in the trench's eastern half *(fig. 8)*. The area sloped slightly towards the west. The timber remains in both trenches had a roughly similar alignment, diverging from the north by 15–16°

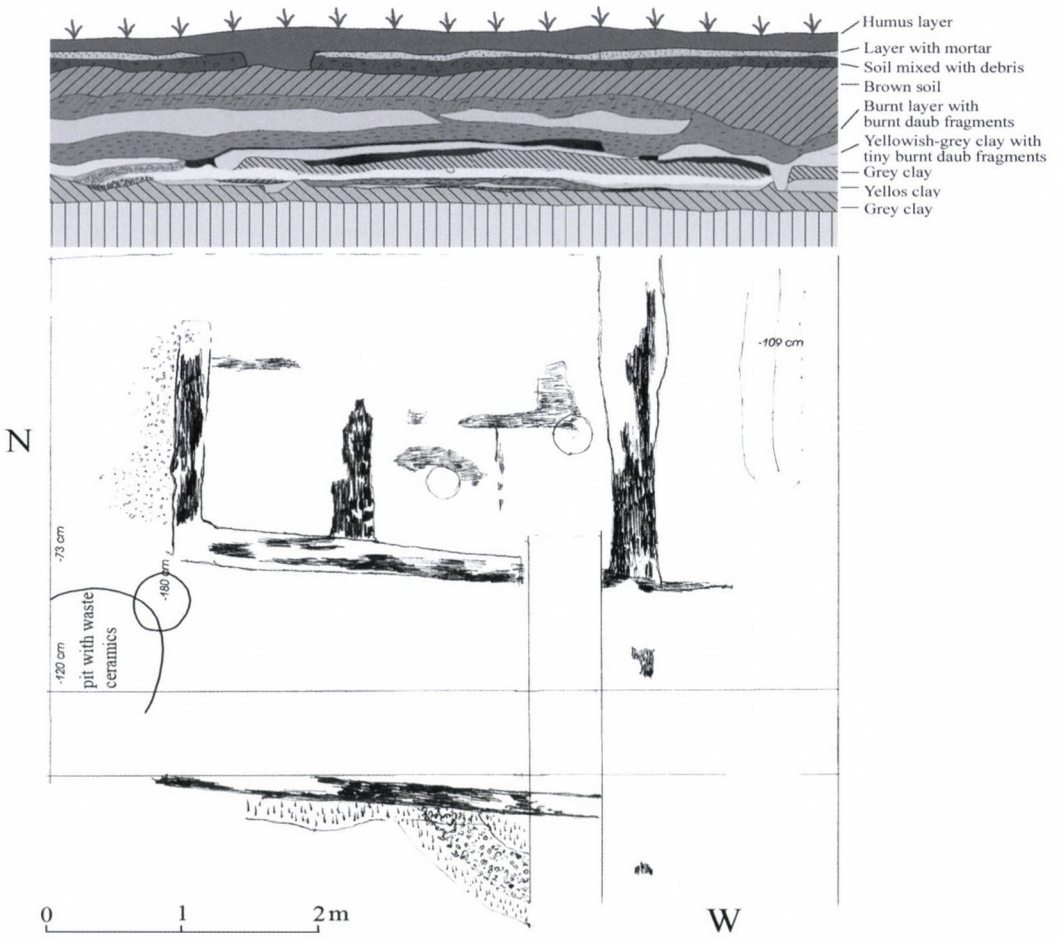

fig. 10. Zalabaksa-Iskola. Trench A/5

to the east. The highest point or section of the modern settlement is Road 86, with the area sloping slightly both to its east and west. We did not find the remains of any stone buildings in Trench A3; a relatively high amount of iron scraps lay on the black, sooty floor level in the trench's eastern half.

The next, L shaped trench (A4) was opened between the main road and the school building, 55 m north of Trench A2's southern end. In addition to a north–south section, an east–west section could also be made by the entrance to the gym hall. Unfortunately, the north–south part of Trench A4 could not be investigated owing to an electric cable. The east–west part could be cleared along a 3.8 m long section, which was perpendicular to the road *(fig. 9)*. This trench did not yield as many finds as the others, but proved informative as regards the topography of the area.

In 2000, we continued the investigation of the site with a 28 m by 2 m large, east–west oriented trench (A5). Our aim was to determine the extent of the settlement west of the road. We found that only an 8–10 m long section in the trench's eastern end contained settlement features and finds; the other, western part was characterised by a loamy, rather homogenous soil typical for former waterlogged or water-covered areas. We made a similar observation in Trench A3 the previous year. We concluded that the area west of the school buildings, where the sports field lay, was a filled-up area, which had been unoccupied during the Roman Age. It is possible that a small lake lay in this area. Its extent could hardly have exceeded the size of the current sports field since layers yielding Roman finds lay to its west, in the school garden.

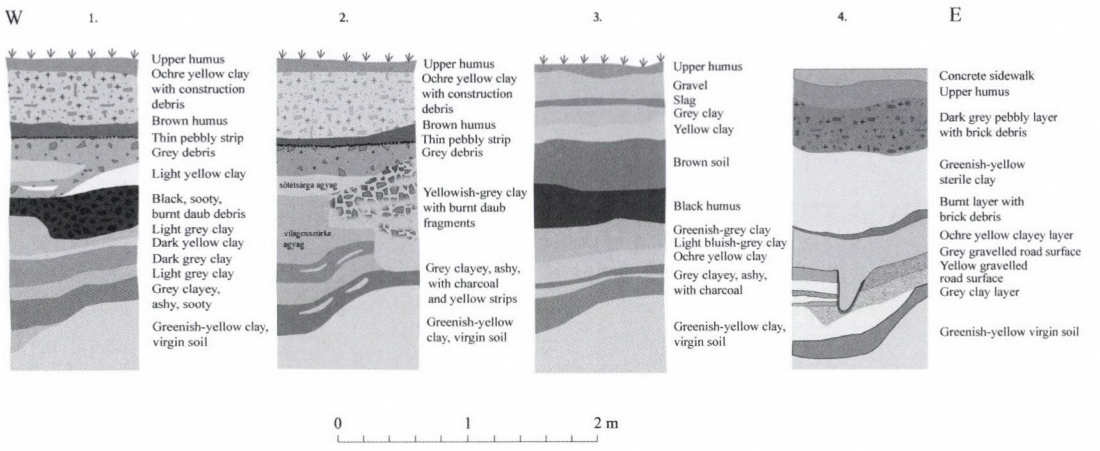

fig. 11. Zalabaksa-Iskola. Sections of Trenches A/2 and A/4 perpendicular to the road with the road's ditch

We enlarged the eastern end of Trench A5 with a 6 m by 6 m large area, in which we found the wall remains and rooms of a wooden building *(fig. 10)*. The north–south walls diverged from north by 15–16°, similarly to the other timber buildings found in the earlier trenches some 60–70 m to the south. The sections indicated three building periods.

A high number of large Roman vessel fragments came to light when a service tank was lifted south of the sports field. This location lay at roughly the same distance from the road as the section of Trench A5 north of the sports field, which did not contain any finds, again suggesting that the area of the sports field had been unoccupied for some reason; we did not find any settlement features in that area because it was probably unsuitable for construction.

Topography and stratigraphy

The Amber Road

Our most important observation concerning the area's topography was the exact location of the Zalabaksa section of the road. The fact that the Amber Road runs under Road 86 is well known and this is the reason that its exact line cannot be precisely documented since one cannot dig under the road. However, the sections of Trenches A2 and A4 yielded information enabling the precise determination of the road's location *(fig. 11)*.

We numbered these sections from 1 to 4, and mirrored two of them (the cardinal points are thus identical on them). Section 1 shows the S section of Trench A2's southern part, which we mirrored. Section 2 shows the N section, lying 4 m from the former. Section 3 shows the northern end of the trench's northern part, lying 16.5 m from No. 1. These sections suggested that we had found the eastern side of a north–south road ditch along a 16 m long section. However, it remains unclear whether the road itself lay east or west of this ditch. Section 4 showing the S section of Trench A4, which lay 55 m from No. 1, confirmed our reconstruction and was instructive in other respects too.

The similarities between the feature appearing in these sections and its depth made it quite obvious that this feature could indeed be associated with a road since there is no other feature, which would consistently maintain its form, position and depth. Section 4 was 3.8 m long in an east–west direction and the ditch only appeared in its western end. We noted a constructed gravel-surfaced road level to its east, indicating that the road proper ran east of the ditch and now lies under the modern Road 86 (in its western half).

The contour map of the site revealed that the cambered road rises above the surrounding area and that the terrain slopes to its east and west (see the *fig. 4*). This camber is an artificial, man-made construction and can be associated with the Romans' road construction activity. The Roman road level lies roughly 160 cm under the modern surface. A similar camber indicated

the line of the Amber Road south of the Csörnöc Stream on the outskirts of Körmend, at Nádasd (between Road 86 and the railway tracks) and on the southern outskirts of Kálócfa.

It is also noteworthy that the S section of Trench A4 shows one constructed, gravel-surfaced road level, whose 20–25 cm thickness corresponds to the Roman road construction standards noted in the region. The gravel layer was slightly thicker at Pankasz; at Zalalövő, we uncovered several road sections and found that the renewal layers had the same thickness on the average (we documented four successive renewal layers at this site). The Zalabaksa road section had a single construction period and we found that there were Roman occupation levels both pre- and post-dating this road, suggesting that the road had led through the settlement for a relatively short time only, and that it previously (and perhaps also later) had a different course. Still, this possibility must be treated with caution. If the road was renewed (or rebuilt) a few meters to the east, there is no way of detecting it, for the Roman road running under the modern one cannot be explored. The road sections investigated at Zalalövő clearly showed smaller shifts of this type in the road's course during different periods.

The information contained in the Roman itineraries indicate that the road bypassed the villa at Zalabaksa, as well as Salla lying some 9.5 miles to its north, during a certain period, probably after the devastation wreaked by the Marcomanns. The sections too confirm this. Sections 1 and 2 show a feature above the western edge of the earlier road and the other sections too indicate an occupation level above the one-time road with a distinctive find assemblage. This occupation level and the destruction layer above it can be dated to the Severan period; it would appear that even though the road bypassed the villa estate during this period, the villa was not abandoned, but continued its existence for several decades afterwards and that its occupants accessed the main road in some other manner.

Section 4, showing the southern wall of Trench A4, adds new hues to this reconstruction. The section shows the wall of a timber building and its periodically renewed floor right next to the road. This timber building lay extremely close to the road so as to preclude the road's normal use at the time. It was virtually built over the ditch, which under normal circumstances was part of the road, and being a public utility, it was forbidden to build anything over it. A similar phenomenon was observed at Zalalövő in the period following the Marcomannic raids: the ditches became infilled and in some places new, rather flimsy buildings were erected over the road's gravel foundation, which would have been inconceivable if the town had continued its earlier life and the magistrates had remained in office. The general pattern in the area in the late 2nd and early 3rd century indicates that Salla, the regional centre, had declined and that its role as a regional administrative centre ceased. Traffic on the road diminished, especially after another, alternative road was created, which offered a shorter transit between Poetovio and Savaria. A thick yellow renewal level overlies the remains of the timber building, above which extends the last Roman destruction layer.

It would appear that the occupants breathed new life into the villa's economy and later even renewed certain parts of the settlement after the Marcomannic incursion.

The S section of Trench A4 also revealed that the road overlay a grey level on a brownish-yellow occupation level, which yielded a small, well datable find assemblage. A shallow pit and the remains of two timbers were found in it, suggesting that the area had been occupied before the construction of the road.

It must again be emphasised that our conclusions concerning the road are highly tentative since only a small area was investigated.

What is certain is that the Amber Road passed though Zalabaksa and that its course coincided with that of modern Road 86. It is also quite certain that a section of the Amber Road and its ditch fell into the investigated area. Seeing that the road overlies an earlier occupation level from the Roman Age, it seems likely that the road's earlier course lay slightly to the east. The earlier road was not necessarily a constructed road, but perhaps simply an already existing route.

The settlement was plundered and destroyed by Marcomannic warriors, who apparently passed through the area. The villa's occupants returned after the barbarian troops departed and renovated the villa. Even though they did not restore the ditch beside the road, they continued

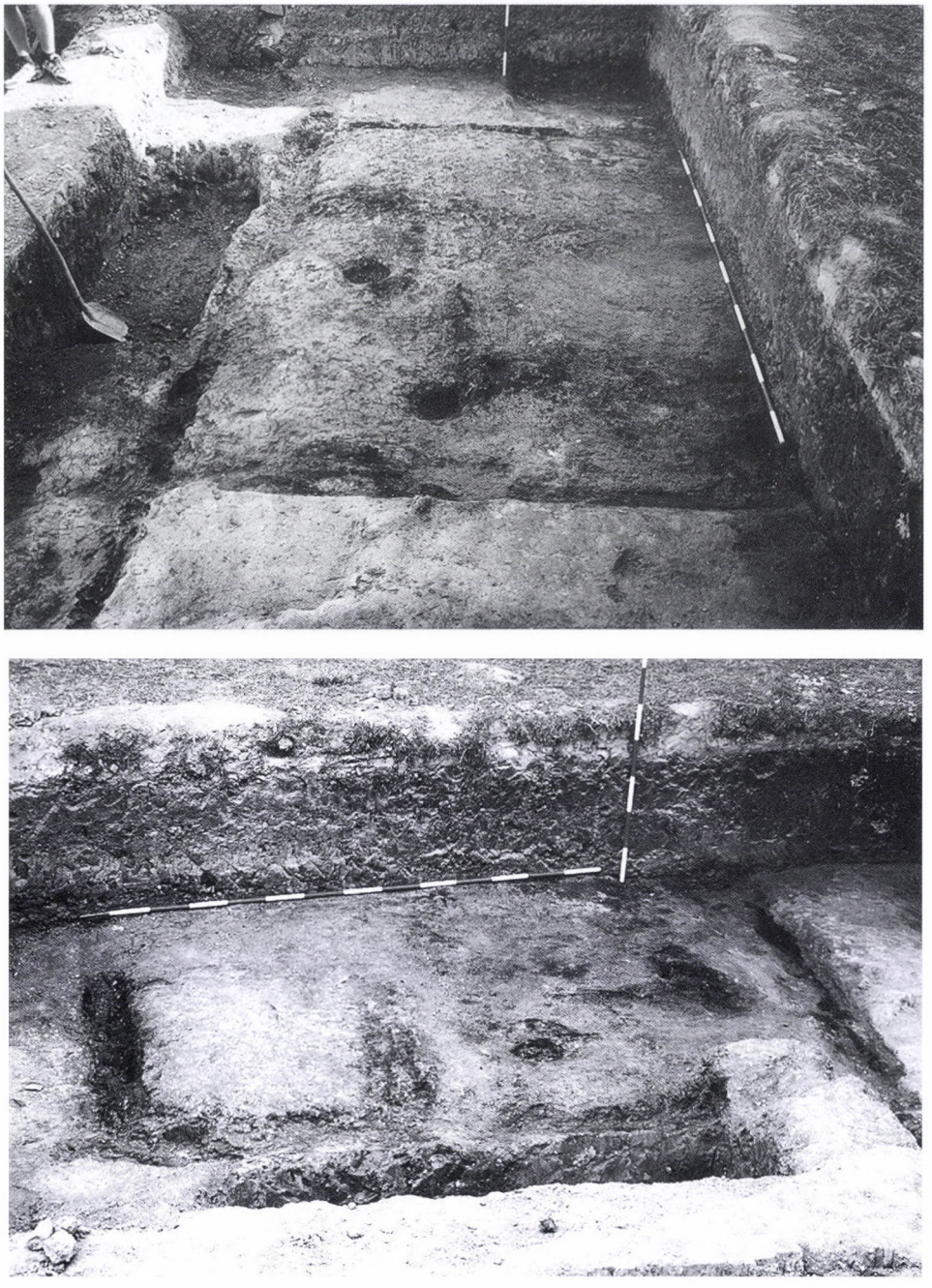

fig. 12. Zalabaksa-Iskola. The timber building
uncovered in Trench A/5 from the south and west

to use the road itself. The prosperity during the Severan period along the *limes* led to changes in the main routes of transport and communication, and the main artery of northern trade shifted to the new, shorter road between Poetovio and Savaria, which bypassed Halicanum and Salla (as well as the villa at Zalabaksa between them) and proceeded to the River Rába through Ad Vicesimum and Pankasz. We know that while Salla underwent a period of decline at this time, Zalabaksa experienced a new upswing and the only difference compared to the earlier period was that the new road lay at some distance from the settlement, meaning that it took longer for the products produced at the villa estate to be put on the road. A new occupation level with various features, perhaps including also a pottery kiln, overlay the former road. This level marked the last Roman Age period in the settlement's life – the villa did not live to benefit from the region's 4th century prosperity.

Buildings

The course of the Amber Road determined the location of the buildings erected along it to a large extent. The fact that the timber buildings lying at some distance from each other along the road all had a similar orientation indicates that they were built according to a uniform plan. Timber buildings were erected in a roughly 20–25 m wide zone by the road's western side in the investigated, roughly 100 m long area. Most of these were used for craft activities. Some had a sooty floor, and were apparently used for pottery manufacture and iron metallurgy. A small pond or a waterlogged, open area lay under the present-day sports field west of the buildings, beyond which we again found signs of occupation. The settlement section investigated more intensively lay between the road and the one-time pond in a rather narrow area, and it seems likely that it profited both from the proximity of the road (as an infrastructural element easing transport and communication) and of the pond providing water for various craft activities.

The timber building in the enlargement of Trench A5 (see the *fig. 10*)

The 6 m by 6 m large enlargement of Trench A5 enabled the investigation of a larger building. We could document two levels of a timber building. We uncovered the building's north-western corner after clearing the house's later level. A 450 cm and a 520 cm long section of the northern and western wall were excavated. A 170 cm wide corridor-like room ran along the western wall. The building's interior lay to its east, which we investigated to a depth of 280 cm. A gravelly level was observed north of the house and a yellow clay level to the west. The former can be interpreted as the road, the latter as an open area beside the house or its yard *(fig. 12)*.

The building had an east–west oriented partition wall, beyond which lay a room measuring 300–310 cm in a north–south direction. Its east–west dimension remains unknown because the eastern wall fell outside the investigated area. It would appear that there was an entrance in the north, about 180 cm from the building's north-western corner. The other timbers lay on the floor, and were not sunk into the floor, suggesting that they were the remains of the collapsed roof. We found two post-holes, which were not part of the building's structure. They were rather shallow (10–15 cm) and their position indicated that the posts set in them did not have a statical function.

Another corridor or room, whose dimensions could not be determined, lay south of the above rooms. It had a small ditch running parallel to the eastern and western walls, which continued beyond the trench's eastern wall, and had a length of 170–180 cm to its west. It was not filled with the remains of charred timbers, but with yellowish-grey clay. Although this feature could theoretically be interpreted as a wall remain, this seems unlikely because in this case the corridor to its north would be about 70 cm wide (i.e. rather narrow), and it did not extend to the western wall.

A corridor or a porch ran along the building's western wall. We wanted to determine whether the area west of the wall lay outside the building, but even though this seemed to be the case, the immediate area could not be investigated owing to a water pipe.

Lying to the north-west of the house was a pit filled with pottery fragments, most of which were flawed, overfired, vitrified, blistered or deformed pieces.

After clearing the floor under the above building, we found traces of an earlier occupation level. Even though we did not find any timber remains, which could be associated with this level, it seems likely that the area had been provided with a roofing of some sort. We found three post-holes at the western edge of the occupation area aligned in roughly the same direction as the north–south wall of the timber building described above, although they lay beyond the later building's western wall. We did not find any additional features to the west in the trench; a pear shaped pit filled with pottery fragments lay under the later building's western wall.

Yet another feature could be associated with this level. We found a post-hole in the north-western corner of the investigated area, which could also be noted in the overlying level. Even

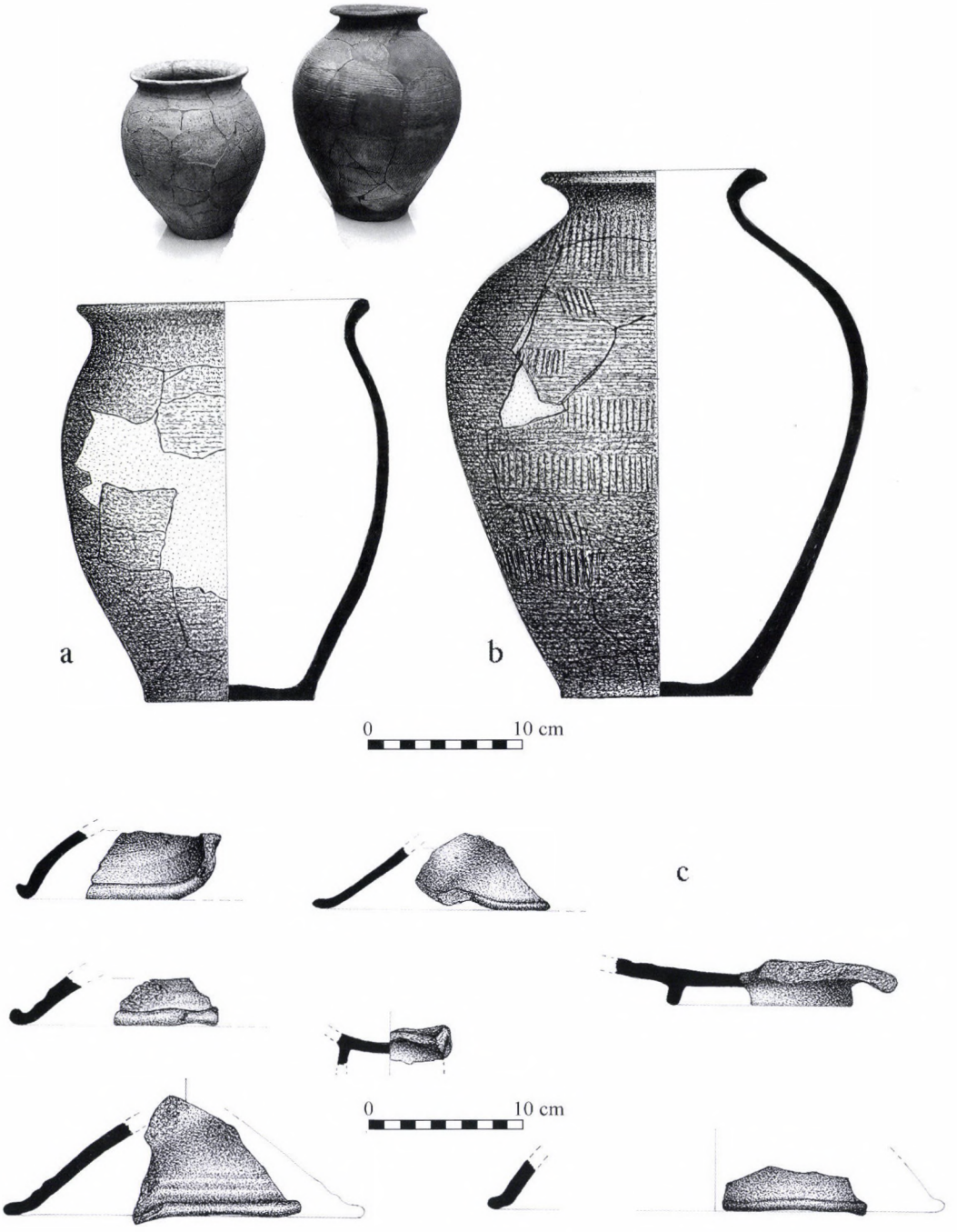

fig. 13. Zalabaksa-Iskola. Pottery from the southern section of Trench A/2 (a-b), and the wasters from the pit uncovered in Trench A/5 (c)

though this post-hole lay near the corner of the timber building, it seems unlikely that it played a role in the building's structure. It contained the charred remains of the post set into it.

These features suggest that some sort of structure had been erected over the area, where the timber building was later constructed; it seems likely that this meant a protective roofing of some sort and not a building proper with walls.

Dating

The sigillata wares and coin finds enable the precise dating of the buildings and settlement features described above. The sigillata wares, numbering over one hundred pieces, provide particularly reliable chronological anchors, for it seems unlikely that the Roman settlers would have arrived with pottery made much earlier.

The earliest sigillata wares date from the Flavian period (69–96) and originate from the Po region. The first larger number of sigillata fragments can be dated to Domitian's reign; these were manufactured in northern Italy and southern Gaul, and can be assigned to the Domitian–Trajan period (81–117). These wares were recovered from the lowermost occupation level and the overlying destruction level in Trench A4, which were overlain by the road's gravel surfacing, meaning that the first settlers had arrived and the villa estate was already active by this time, but the section of the Amber Road passing through the settlement had not been built. Trench A3 contained four sigillata fragments from this period; occupation levels corresponding to this period were also documented in the other trenches.

The next horizon is made up by sigillata wares from southern and central Gaul and Rheinzabern products. The date range of these pieces precedes the first wave of the Marcomannic raids (169–170). A well documented destruction level marks the upper boundary of this period. In Trench A4, the sigillata wares of this period came to light from the gravel-surfaced road level; in Trench A3, from the sooty floor and the overlying looser level, similarly as in Trench A5. The overwhelming majority of the sigillata finds dates from this period, which marks a prosperous time in the villa's life.

The villa recovered after the Marcomannic invasion. About one-quarter of the sigillata finds can be dated after 170 in view of the lower boundary of the date range; most of these date from the Severan period. The villa did not collapse after the invasion, but recovered and enjoyed the benefits of the Severan prosperity, even if under slightly more difficult conditions. In this respect, its history differs from that of nearby Salla. Most of the sigillata wares came from Rheinzabern workshops; products of other German workshops are virtually negligible.

A terra sigillata chiara was recovered from Trench A4, an unusual and important find. This North African ware is rare in Pannonia and its appearance can be attributed to a growing niche in the European sigillata market, making its transportation from Tunis profitable. The piece from Zalabaksa was made around 250 at the earliest and even though we know that its production continued until the early decades of the 4th century, it seems unlikely that the villa estate at Zalabaksa survived until that time. Another good indicator of the site's chronological position is the fact that the mass minted, poor quality *antoninianus* coins are absent from the coin finds, even though the high number of bronze coins post-dating the *folles* usually characterise Roman settlements surviving into the 4th century. It therefore seems likely that the settlement's occupation came to an end after the terra sigillata chiara from Tunis was imported, but before the mass circulation of the *antoninianus* coins characterising Gallienus' and Claudius Gothicus' reign. The abandonment of the settlement can be associated with the Roxolan incursion of 260, when the barbarian troops ravaged Pannonia.

It is uncertain whether the villa estate's destruction can be directly attributed to the Roxolan troops. The main road bypassed the settlement after the Marcomannic raids and thus the villa estate was not an obvious target; it also lay quite far from the province's eastern border. Still, it seems likely that if the markets were destroyed in the wake of the incursion, the servicing economies suffered even without experiencing direct damage.

The eleven coins from the excavation indicate a similar date for the beginning of the occupation as the sigillata finds. The earliest coin is a denarius of Titus (79–81). Coin circulation abruptly ceased after the Marcomannic incursion. The finds include two coins, a *dupondius* and an *as,* which cannot be securely dated, but could perhaps come from the 3rd century. Even accepting a late date for these coins, which would extend coin circulation to a later time, coin circulation during this period was far less intensive than the trade in sigillata wares, as if there had been a shift to trade on a goods-for-goods basis.

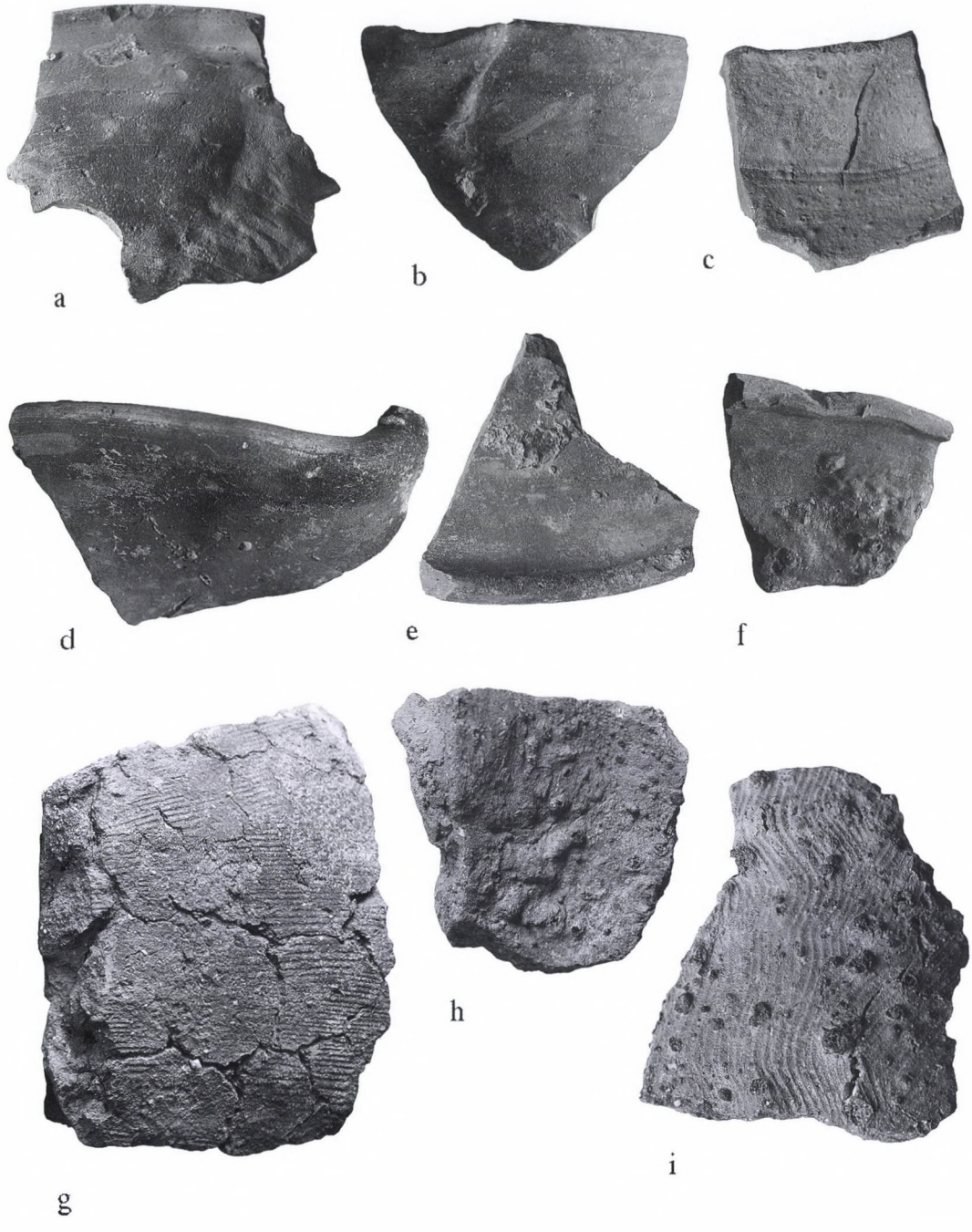

fig. 14. Zalabaksa-Iskola. Wasters from the pit uncovered in the northern section of Trench A/5

The nature of the villa settlement

The question of what was produced at this villa estate, what kind of economy its occupants had been engaged in has been briefly touched in the above. This section offers a more detailed discussion of these issues.

What must first be mentioned in this respect is the relative frequency of graffiti, incised texts on pottery among the ceramic finds and their frequency compared to their occurrence on other nearby sites. The sigillata wares included three vessels, which bore an incised inscription. These inscriptions usually contain their owner's mark or name, and their function was to distinguish one set of vessels from those owned by other members of the household. Inscriptions of this type make little sense in a family, whose members use kitchen utensils, vessels and storage jars jointly. However, it does make sense on a villa estate, whose occupants are not

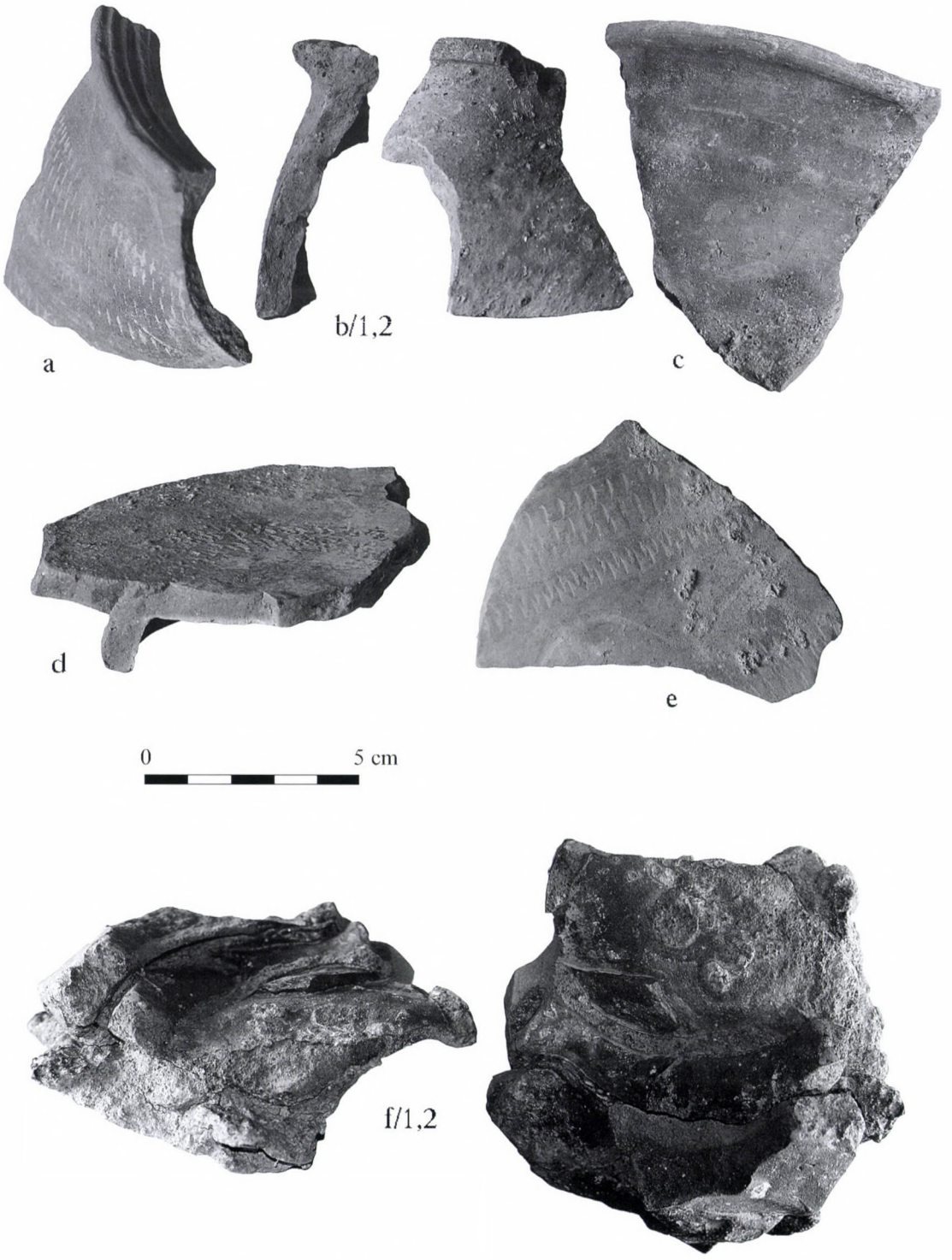

fig. 15. Zalabaksa-Iskola. Wasters from the pit uncovered in the northern section of Trench A/5

related or members of the same family, to distinguish personal dining sets from one another, if the kitchen was used jointly. Only a letter has survived from one of the inscriptions on the base of a central Gaulish bowl dating from the Antonine period; the other two inscriptions contain the name fragment SATVR and SATV, and their date range (150–200 and 175–233, resp.) has an overlap of twenty-five years. Both occur on Rheinzabern imports. They were recovered from Trench A1 and Trench A3, and lay about ten meters apart. The name SATVR appears on a Drag 33 cup, the name SATV on a Drag 32 plate. It seems likely that they had been part of the same set and had belonged to the same person, perhaps called SATVR*ininus,* a wealthier

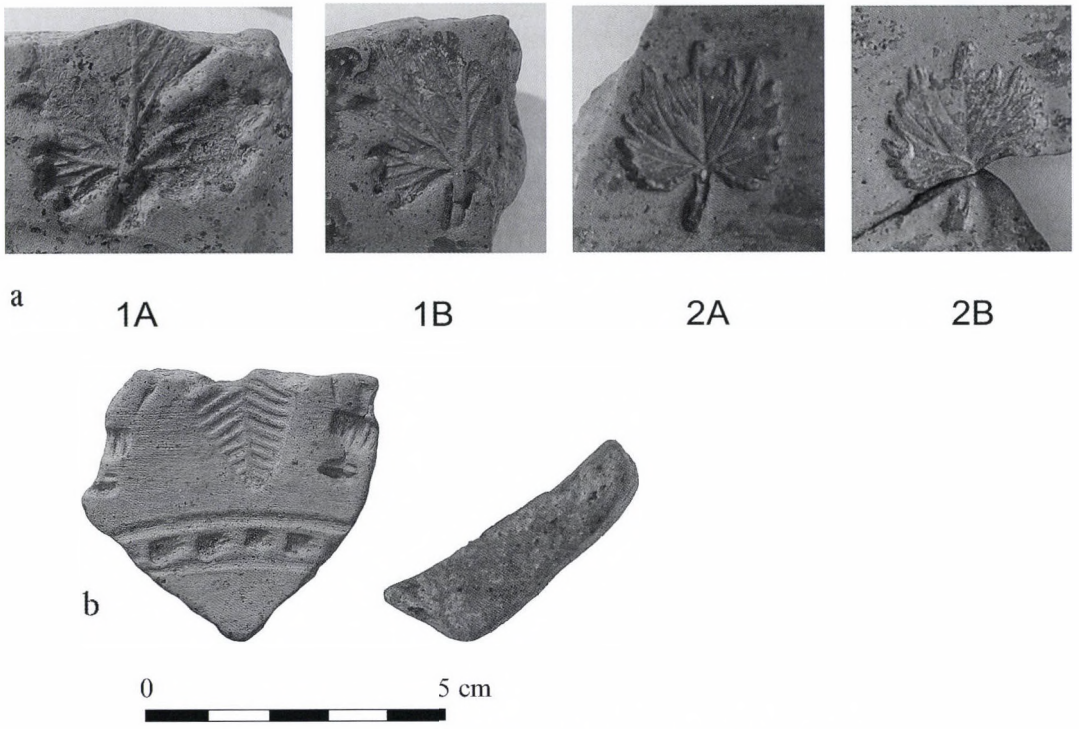

fig. 16. Pannonian stamped ware (a), vessel mould (b)

member of the villa's household, who could afford sigillata wares. The plate lay on the floor under the last Roman destruction layer.

The "industrial" finds were recovered from this layer. A 1.5 m wide pit with straight walls in the southern part of Trench A2 contained burnt daub; it had probably lain by a ruined kiln. We found a storage jar with deformed rim beside it *(fig. 13a, b)*. Another pit in the north-western corner of Trench A5 was filled with flawed pottery *(fig. 13c; figs 14–15)*.



fig. 17. Dressel 6B amphora

These wasters form an interesting group of finds. The presence of deformed or poorly burnt pottery fragments is not in itself an indication of a pottery workshop since the heat created by a conflagration can also lead to the deformation of a finished, otherwise unflawed vessel. In this case, however, the large quantity of deformed vessel fragments and their concentration in one area suggested that they were wasters from industrial pottery production. Wasters are not useless in pottery production because they can be used in the construction and insulation of the next kiln. The pit in the north-western corner of Trench A5 was probably used for storing wasters, which could be used for insulating the kiln when a batch of pots was fired.

The wasters showed the following flaws. The vessel became deformed during firing *(figs 14b, d, f; 15a, d)*, their surface is warped (fig. 14a, b), globules of clay adhere to the surface *(figs 14e, f; 15e)*. When some kind of gas is trapped under the vessel surface, it causes blistering *(fig. 14h, i)*, and the vessel surface becomes uneven *(fig. 15b)*. These flaws are caused by overfiring, the composition of the tempering agents, or both. Overheating during firing can cause the vessels to fuse together and eventually collapse; the vessel fragments become vitrified *(fig. 15f)*.

If the clay does not have an even consistency, if it is not homogenous, the vessel will be cracked during firing and smaller holes can appear on thin-walled vessels *(fig. 14c)*. These cracks do not extend along the entire vessel surface, but are restricted to a smaller area or can be noted on the fracture surface. In some cases, the clay layer covering the vessel surface is "too tight" compared to the vessel size, and some areas become cracked *(fig. 14g)*.

Some of these flawed vessel fragments came from so-called Pannonian lustrous grey ware (footed bowls, plates with indrawn rim) *(figs 14e; 15d)*. Others came from red painted jugs with horizontal, grooved rim *(fig. 15a–b, e)*, yet others from coarse storage jars with combed decoration *(fig. 14g)*. The finds would suggest that the pottery produced at Zalabaksa, at least during the last phase of the villa estate's occupation, surpassed the quality of the average pottery, and that a wide range of wares was manufactured.

Professional pottery production is indicated also by a few Pannonian stamped pottery fragments from different vessels, which were stamped with the same stamp *(fig. 16 1A–B, 2A–B)*. The most important observation in this respect was made by Éva Maróti, who identified the fragment of a vessel mould in the Zalabaksa ceramic inventory *(fig. 16b)*. The mould was used for making vessels with decoration on their exterior.

The above unequivocally suggest that the Zalabaksa villa estate was engaged in pottery production during the Severan period.

The amphorae provide clues for the economic activity of earlier periods. Even though a very small area was investigated, the finds included over fifty amphora fragments, among which the most frequent type was an Istrian oil amphora (Dressel 6B; *fig. 17*). Four other types could also be distinguished, all of which are typical for the "first period of the Pannonian amphora trade".[15] In general, this period spans the time from Tiberius' reign to the Marcomannic wars, but at Zalabaksa it began in the late Flavian period. It has been mentioned above that the date range of the coins does not coincide with that of the sigillata wares. It seems likely that the villa estate's economy was based on the trade in the commodities transported in amphorae until the Marcomannic incursion, and that the coin circulation was relatively brisk owing to the lively trade activity.

It has been mentioned in connection with Publius Naevius Apollonius' tombstone, discussed at the beginning of this study, that the Zalabaksa villa was a trade depot. The Naevius family did not play as important a role in Pannonian trade as the Caesernius or the Canius family, who were similarly represented by their *libertus* in the province, but they certainly carved out a niche for themselves and exploited the possibilities offered by the proximity of the Amber Road during the eighty years of their Pannonian sojourn.

[15] I would here like to thank Piroska Hárshegyi, who will publish the amphora finds, for determining their types. She is the source of the above quote.

The road system underwent certain changes following the Marcomannic incursion; the road bypassed the villa estate and approached Savaria along the Ad Vicesimum–Pankasz line. While this shift virtually precluded profitable trade activity as a source of income, it did not bring an end to the occupation of the Zalabaksa settlement, as shown by the impressive amount of sigillata wares and the imported terra sigillata chiara. Another interesting issue is the lack of Westerndorf and Pfaffenhofen products from the late sigillata assemblage (only one single fragment can be categorised as Westerndorf).

Summary

The ancient trade route known as the Amber Road functioned as a military road for about two generations while the Romans extended their rule over Pannonia. Only under Domitian's reign did civilian development begin along the road. Several Italian settlers moved to the freshly Romanised regions. The villa at Alsórajk-Kastélydomb and Zalabaksa can be associated with the arrival of these immigrants.

Unfortunately, we only have information on a few timber buildings of the Zalabaksa villa estate; the wealth of the villa's owners is reflected by a larger than average gravestone, whose inscription reveals that it commemorated a certain Publius Naevius Apollonius, a *libertus* of a northern Italian family. These merchants imported Italian commodities to Pannonia (which probably included Istrian olive oil) and made a fair living from their enterprise until the Marcomannic raids. They were probably badly hit by the raids of this Germanic tribe since the enemy troops stormed down the Amber Road to Aquileia.

The aftermath of the Marcomannic incursion was even graver. The inner Pannonian settlements, lying far from the borders, declined during the Severan prosperity of the *limes*. The route of the Amber Road became shorter and bypassed Salla and the trade depot at Zalabaksa to its south. The regional centre declined and was gradually abandoned, but the occupants of the villa at Zalabaksa resumed their life and tried to adapt to the new circumstances. They gave up trade or complemented their revenues from trading with a new activity. They established a pottery workshop, which produced both the most common wares and so-called Pannonian grey stamped (and unstamped) wares copying the elegant sigillata vessels and their ornamentation, catering to customers, who could not afford this luxury. It is also possible that in addition to bowls and plates, red painted jugs were also manufactured.

Their situation was far from enviable because potteries too need access to major routes, and the potters of the Zalabaksa settlement could only reach the main roads through various access roads. The settlement probably survived until the Roxolan raids. This incursion, which according to the contemporary sources devastated Pannonia, did not leave dramatic traces in the archaeological record as the Marcomannic incursion nine decades earlier. It is possible that the barbarian troops did not even advance as far as the settlement. It is nonetheless quite obvious that by destroying the potential markets of the villa estate's products, they brought life to an end on this settlement.

Zalabaksa did not live to see the region's 4th century revival. The villa estate's occupants showed a truly impressive resilience and initiative during the settlement's almost two centuries long existence. It is to be hoped that the buildings of the villa itself will also be uncovered in the future.

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Ferenc Redő

ANTAEUS 28 (2005) 307–311

ROMAN TUMULUS AT NEMESNÉP-TATÁRDOMB

The Nemesnép-Tatárdomb site was investigated between August 18–31 and November 3–14, 1997, as part of the Kerka Valley Micro-Region Project. The site lies in the south-western part of County Zala, near the Hungarian–Slovenian border. This area was culturally part of the southern Austrian and Slovenian regions forming the heartland of tumulus burials. The site lies on the eastern periphery of this heartland. The Amber Road, flanked by rather wide zones with tumulus burials, runs some 10–15 km east of this area. László Horváth's map, on which the size of the tumulus groups is also indicated, reveals that this burial mode was rather common in this area and that the settlements with which these burials can be associated were fairly small.[1] We could chose from among several sites in the Nemesnép area: Nemesnép-Tatárdomb (two fairly high mounds at the edge of an acacia wood), Nemesnép-Töltés (a site lying deeper in the wood) and Márokföld-Kerekerdő (five mounds at the forest edge, although these were smaller and lower than the ones at Tatárdomb).

We chose the first site because the two mounds lay at the forest edge, right by the ploughland. Roman Age sherds, grey household pottery and grey lustrous wares were collected some 100 m to the north in the ploughland during the preliminary field survey, suggesting that if we were lucky, we would be able to investigate both the settlement and the associated burials.

The conclusions that can be drawn from the number of tumuli in a particular tumulus group concerning the associated settlement have been discussed in the study on the Roman Age settlement history of the Kerka Valley. The eight tumuli in the Nemesnép area (including the ones at Márokföld, which lie within eyesight of the tumuli on the outskirts of Nemesnép) suggest a loose network of farmsteads with two or three households at the most. Settlement traces can usually only be identified in the ploughland near the tumuli. The attraction of the Nemesnép-Tatárdomb site was that we hoped to find traces of the associated settlement as well.

Mound 1, selected for excavation, was disturbed by three intrusions on its top, but its sides were undisturbed. Mound 2 was apparently unaffected by intrusions, but the dirt track passing by it had cut a little into the mound. The two tumuli had originally probably been the same height. Their current height is around 160 cm. We began the investigation of the disturbed mound *(fig. 1)*.

We first recorded the mound's shape, which was slightly elliptical, measuring 17.50 m by 13.40 m. Its top was not peaked, but rather flat, and it rose to a height of 168–170 cm from its base. The area around the mound was flat.

We did not dig down to the virgin soil in the trial trench we opened in the mound's eastern side; this proved unnecessary since there was a 3.55 m by 70 cm large oblong pit in the southern side of the trench, aligned in roughly the same direction as the trench, in which we found many animal carcasses. As it later turned out, these were not deer bones or the remains of other wild animals, but calves, buried here about a decade ago. We even found the plastic ear tag of one. A similar, north–south oriented pit, filled with animal bones, lay in the mound's western side *(fig. 2)*.

It would appear that the deceased animals were buried into the mound, into the rather marshy soil. The pit into which they were deposited was not dug on top the mound, which lay higher and was dotted with trees, but into its side, about 80–100 cm above the ground. The intrusions in this area, noted also by László Tábori, were not dug by grave robbers or treasure hunters.[2]

[1] *L. Horváth:* Római halomsírok Zalában (Römische tumuli im Komitat Zala), in: *Völker an der Mur 1998* 36.

[2] These tumuli were first surveyed and mapped by László Tábori. His survey report can be found in the archives of the Göcsej Museum. Cf. idem 31.

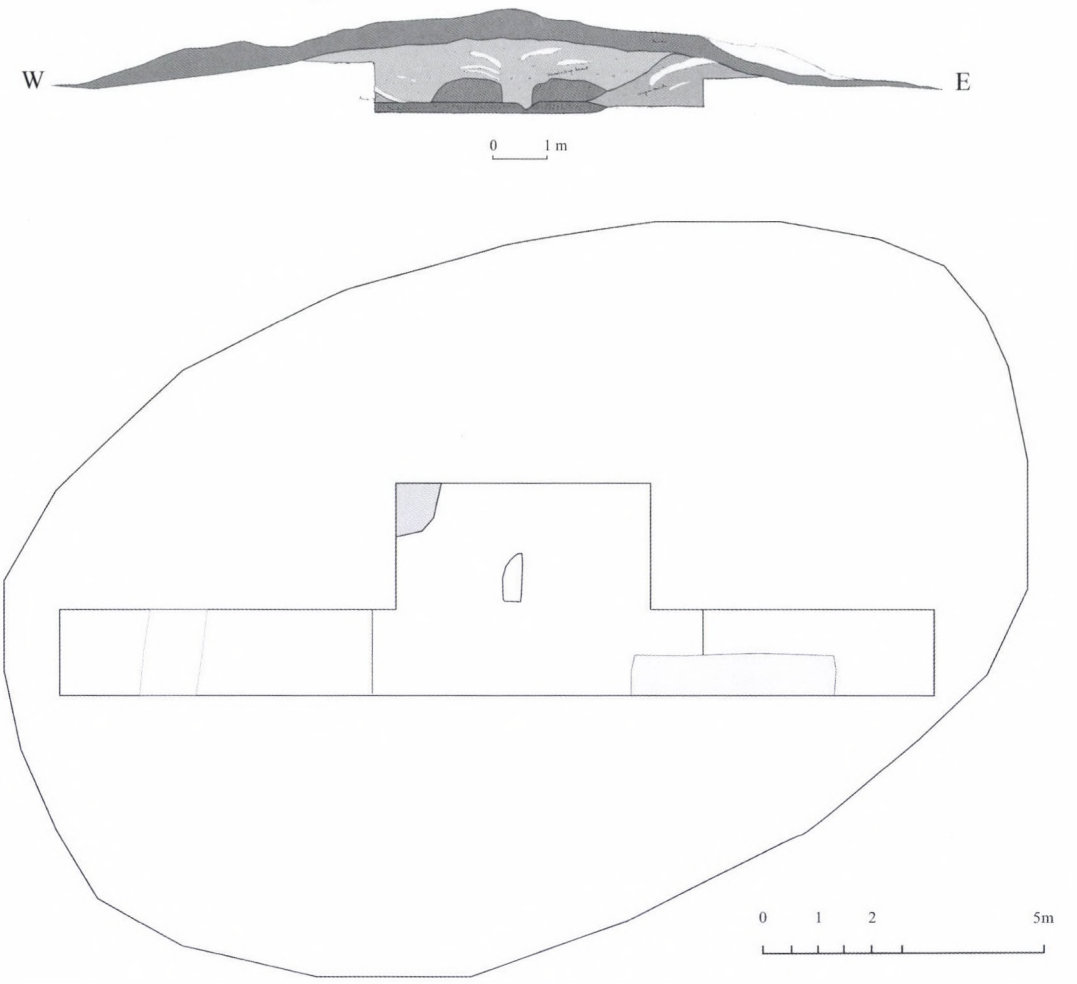

fig. 1. Nemesnép-Tatárdomb. Groundplan and section of the tumulus

We enlarged and deepened the trench towards the centre of the mound. Although we uncovered a few Roman Age sherds every day, proving that the site dated from that period, nothing of significance came to light.

The mixed yellow, clayey layer overlay a 35–40 cm thick dark yellow clay layer, extending over the middle 6–7 m of the mound. Underneath this clay layer we found a grey, clayey-sandy, very compact soil, speckled with soft pebble-like nuggets, the component of the meadow-ore known from Zalalövő; this soil is called "iron-crapped" soil by the locals. This "iron-crapped" grey soil was the virgin soil. We did not observe a grave pit, ashes or any finds above this level.

We drew the section of the trench's northern wall. The section revealed the following: the dark grey clay layer underlying the "iron-crapped" grey layer did not continue towards the middle of the mound and the mixed, yellow clay layer above it folded into it like a funnel, dividing it into two parts with a roughly 50 cm wide duct. The upper mixed layer in this funnel shaped intrusion contained other sloping levels, sliding into it from east and west, indicating that there was an intrusion which was then filled in with the mixed yellow clay; the traces of this infilling could be made out quite well *(fig. 3)*.

This would suggest that the pit had been opened after the erection of the tumulus. This grave robbing, however, was not modern, but carried out in antiquity.



fig. 2. Nemesnép-Tatárdomb. Excavation trench with the modern intrusions

The modern humus layer lies above the mixed yellow layer and there is another fresh, yellow clay layer. The latter was spread over the area when the calves were buried. The clay dug out at the time could not all be filled back owing to the animal carcasses; it was left there and deformed the mound's original form.

The dark yellow clay layer noted in the northern wall of the trench was less distinct and thick in the southern wall.



fig. 3. Nemesnép-Tatárdomb. Northern section of the trench, showing the robbers' pitch



fig. 4. Nemesnép-Tatárdomb. Ashes at the base of the tumulus

It would appear that a pit was dug into the mound in antiquity. Only a section, probably the corner of this pit fell into the investigated area (indicated by the funnel shaped intrusion) in the trench section, which fell closest to the mound's centre. We did not find the burial under the mound (stone kist, stone packing, ashes). The burial probably lay north of the trench. We enlarged the trench towards the centre of the mound.

The enlargement of the trench measured 450 cm (east–west) by 200 cm (north–south) and extended north of the original trench.

While clearing the trench, we encountered the same layer sequence. We noted that the mixed yellow clay layer, which was extremely compact and dry since it was not permeable, broke into lumps when pickaxed and it was practically impossible to scrape the surface after clearing. This soil was disturbed and it contained charcoal and burnt daub fragments.

Underneath this mixed yellow clay later we found the clean, yellow clay layer in the western half of the enlargement. The mixed layer extended much deeper in this section. We found the scattered cremation burial at a depth of 140 cm from the original mound's top, roughly in the middle of the enlargement, some 30 cm north of the trench opened in August.

The white ashes lay scattered over a semicircular area with a diameter of ca. 80 cm on the yellow clay layer *(fig. 4)*. East of this area, an intrusion destroyed the remainder of the ashes.

The ashy layer was about 6–7 mm thick in the centre, thinning towards the edges. The yellow clay layer onto which the ashes had been deposited was 4-5 cm thick on average, although it was thicker west of the ashy patch and covered it in some spots. The "iron-crapped" grey virgin soil lay underneath the yellow clay.

We cleared the trench down to the grey soil. Another ashy patch was found at a distance of about 2 m from the first one: this one contained charcoal in addition to the grey ashes. It would seem that the deceased was either cremated here or that the remains of the funeral pyre were deposited here, on a carefully spread yellow clay layer in the centre of the area over which the tumulus was later erected.

We did not find any grave goods. These had probably been placed east of the ashy patch and the Roman Age grave robbers apparently knew exactly where to look for them, They did not have to disturb the entire mound in order to find the grave goods.

The Tatárdomb tumuli were modest burials in a relatively poor region. This tumulus type represents the first, simplest one in Karl Kaus' typology, based on his study of the tumuli in Burgenland.[3] The tumulus, the grave memorial was erected over the ashes deposited on levelled ground, without a grave pit and without stones.

We examined the subsoil with a core-sampling hand-drill having a diameter of 20 cm in the area where the trench was the deepest, some 1 m south-west of the burial. The "iron-crapped" grey layer was about 50–60 cm thick; underneath it lay a yellowish, sandy layer without the iron-oxide containing pebbles. There was a 10–15 cm thick transitional layer between the two. These layers were sterile, without any traces of human interference. We also made a test boring in the soil beside the tumulus in order to determine whether the mound was raised from locally available earth. The borings revealed that the thin, grey humus overlay the "iron-crapped" layer, underneath which was the sandy layer, corresponding to the sequence under the mound.

It is therefore quite obvious that the yellow clay was not obtained from the immediate environment, which is flat and marshy, and is not characterized by clay. Neither can it have been brought here from very far away: this area is a well-known for its good quality clay deposits, used by pottery workshops throughout the area. These clay deposits are known locally: the nearest ones lie a few kilometres south of the Nemesnép site.

[3] Grafenschachen, Hügel 15/1974: *K. Kaus:* Grabformen und Einbauten in Grabhügeln des Burgenlandes. Balácai Közlemények 1997, 86.

László Vándor

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MEDIEVAL FORTIFICATION AT RESZNEK

The community of Resznek (County Zala) extends in a north to south direction along the road leading from Csesztreg to Belsősárd. The remains of a fortification can still be clearly made out in the middle of a meadow lying between the areas called Kertalja and Gábor-rét, extending between the Zsibi Stream and the Szentgyörgyvölgy Stream west of the village's southern end. The site is called Várhely by the locals; it can best be approached along Hajcsár Road, running westwards from the village's southern end.

The core of the castle is an irregular, circular elevation (168 m a.s.l.) with a diameter of 30 m by 25 m enclosed by a multiple ditch system, within which lies a smaller, oval, roughly 1 m high elevation (169 m a.s.l.) with a diameter of 17 m by 15 m. This inner elevation lies close to the southern end of the stronghold's nucleus, about 5 m from it, while some 15 m separate it from the ditch on the northern side. The hill is encircled by a roughly 15 m wide ditch (strongly silted by today) and an outer rampart. A D shaped bailey measuring 30 m by 30 m can be found north of the ditch, lying at the same altitude as the keep (168 m a.s.l.). The keep and the bailey were connected by an oval ditch and rampart; the ditch widens around the bailey; the ditch is interrupted in line with the bailey's east–west axis. The interruption of the rampart was pre-planned since the water from the third oval ditch enclosing the stronghold flowed through this point. This third ditch was similarly enclosed within a rampart, which was interrupted at one point towards the west, where another ditch ensured the water supply of the ditch system. The outermost rampart is presently a flat elevation differing little from the inner ramparts, except for a roughly 50 m long section on the north-western side, where it is higher (reaching 169 m a.s.l.). It is exactly as high as the plateau of the inner castle, suggesting that the rampart had been constructed to this height along its entire length.

History of the estate and its owners

The Csabi kindred was descended from castle warriors *(iobagiones castri)* living in the Balaton Uplands.[1] Their original estate was the settlement of Csab (now part of Csabrendek), lying by the area called Csab-puszta east of the village.[2] It seems likely that the so-called Banyavár [Banya castle] on the elevation by the one-time village was built by this kindred.[3]

The Csabi kindred acquired sizeable estates in the Kerka region during the 13th century, in the area lying north of the Alsólendva estate. They are first mentioned in 1263 in connection with the purchase of an estate.[4] The centre of these estates, Reznek, first appears in 1282, in the names of *comes* Olivér and Herbold of the Csabi kindred,[5] who were the landowners at the time. Herbold, son of this Herbold of Reznek shared the estate with Lukács, son of Jakab, son of Herbold, and Reznek passed into the ownership of Lukács.[6] The Csabis apparently constructed a fort at Reznek in the later 13th century since its destruction in the summer of 1326 is mentioned in a document in which Herbold, son of Herbold of Reznek lodged a complaint to King Charles Robert at Visegrád that Salamon Vörös had destroyed his fort and his church, had killed his parents and had stolen the charter of donation for the Bakó and Szentgyörgy estates.[7] The king instructed the chapter of Vasvár to examine the matter. Following the investigation, the convention found the complaint to be well founded and on the strength of their report, the sovereign confirmed

[1] *E. Reiszig:* A Csabi nemzetség [The Csabi kindred]. Turul 17 (1899) 29–34, 57–71.
[2] *Holub 1933* 128–129; *MRT 3* 49.
[3] *MRT 3* 45.
[4] *CD* VIII, 74.
[5] *G. Wenzel (ed.):* Árpád-kori Új Okmánytár IX. [Codex diplomaticus Arpadianus continuatusi]. Pest 1871, 345.
[6] *ZO* I, 237.
[7] *ZO* I, 194–195.

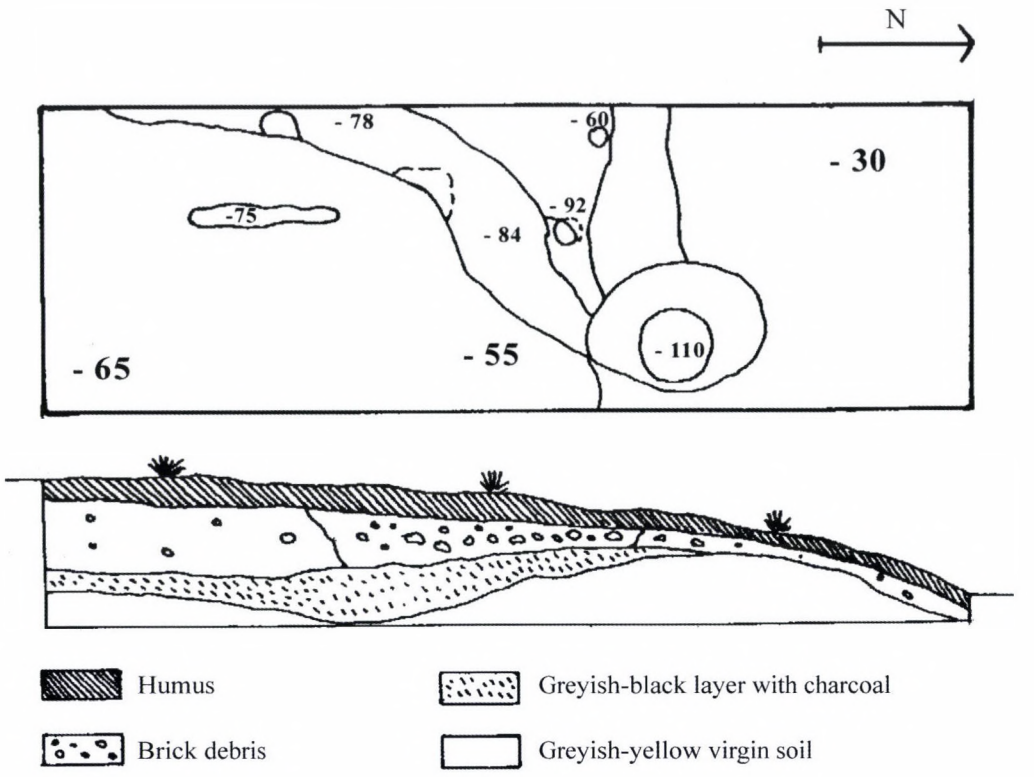

fig. 1. The archaeological investigation of the castle

Herbold's ownership of the Bakó and Szentgyörgy estates. The quoted charter describes the Reznek fort as a *castrum.*[8]

When Herbold died, his estates were requested by Pál of Nagymarton, the judge royal; he was granted ownership of these holdings in 1337.[9] However, he was apparently unable to take possession since the surviving charters indicate that the estates remained in possession of the Reznekis. On the testimony of several documents, a year after the grave injuries committed against them, the Reznekis made their peace with the Harkály or Salamonvári family, of which Salamon Vörös was a member.[10] Not much later, the Salamonváris even paid compensation for the damage done to the Reznekis.[11]

The charters from after 1326 make no mention of the fort's later fate; nothing is known about it until the 15th century. In 1403, Páris, Herbold, György and Domonkos of the Csabi kindred joined the party of Ladislaus of Naples – in a charter of donation dated November 5, King Sigismund donated the estates of his treasonous adversaries to Mihály Egervári.[12] Egervári received seisin, but – rather unusually for the age – he shared a part of the estates he had been granted in 1404 with Domonkos Rezneki since he had no intention of making his relatives paupers. In 1406, he returned the estates to Páris Rezneki and his sons. The negotiations continued for several years and they were finally confirmed by the sovereign in 1409 and 1415. Following these negotiations, Mihály Egervári was formally installed into the possession of the Reznek estate in 1415.[13]

The fort is mentioned again at this time. József Holub suggested that it was built by the Egerváris, i.e. after 1403. In 1426, the sons of Balázs Egervári lodged a complaint to the judge royal that István and Pál Bánfi had captured the castellan of Reznek in the times of turmoil and after demolishing the houses there, they had taken the castellan to the Nemti castle, had completely razed the castle and had even taken the serfs away. In 1426, they again demolished

[8] MOL DL 2365.
[9] *CD* VIII 4, 229.
[10] *ZO* I, 198–201.
[11] *ZO* I, 207–209.
[12] MOL DL 8894; CD X 4, 211, 808.
[13] *Holub 1933* 676–677; MOL DL 10347.

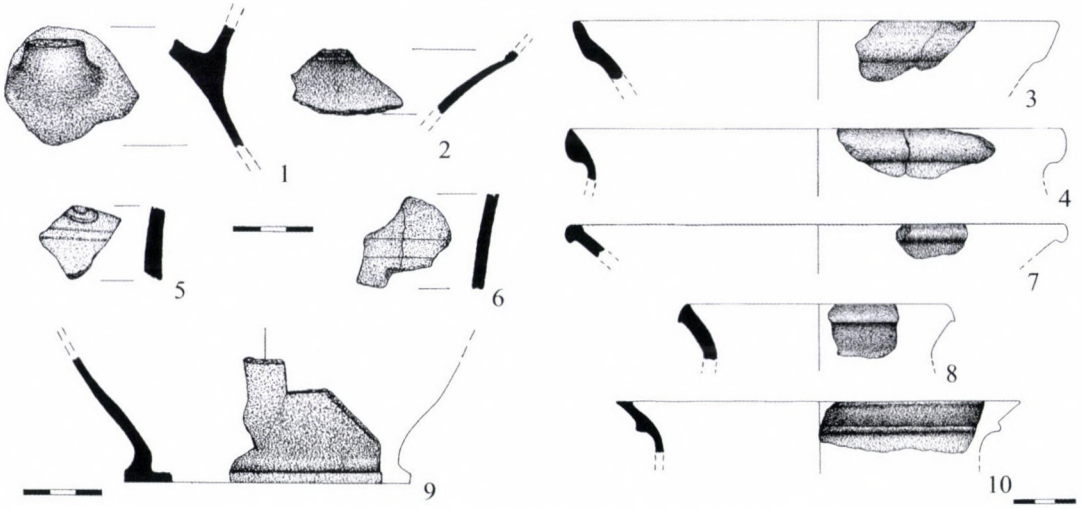

fig. 2. Pottery finds from the castle

many serfs' houses and took their inhabitants to Alsólendva; they then occupied the site of the former castle (implying that it had not been rebuilt).[14] It was later rebuilt since its castellan, György Tilaji is mentioned by name; the castle itself is described as a *castrum.*[15] These events can be linked to the turmoils of the period, when Vladislas I pardoned the treasonous noblemen of County Zala, who had joined the Elizabeth party. Even though those pardoned included Balázs Egervári and his castellan, the sovereign later confiscated the estates of the treasonous Egerváris and donated them, together with the Reznek *castellum,* to the Pethős.[16] It is unknown whether the Pethős took possession of the estate; Reznek remained the possession of the Egerváris and members of the Csabi kindred too had holdings.

The documentary evidence indicates that there was a castle, designated as *castrum,* at Reznek at the turn of the 13th–14th centuries. There is no evidence that this castle was rebuilt and the charter of donation of King Sigismund from November, 1403, makes no mention of a castle at Reznek. József Holub was probably correct in noting that the new castle of Reznek was built by the Egerváris, and that it was destroyed completely by the Bánfis sometime before 1426. This castle is called *castellum* in the sources. Rebuilt between 1426 and 1441, the fortification was variously called *castellum* and *castrum.* There is no data on the later fate of the castle: in the 16th century, when the documentary evidence on the strongholds and fortifications of County Zala increased owing to the wars with the Turks, there is no mention of the Reznek castle.

The archaeological investigation of the castle

The sounding excavation of the castle was conducted between August 12–28, 1996 (for a total of eleven days). The excavation itself lasted eight days, while the preparation of the documentation and the reburial of the excavated features took three days. The main objective was to clarify the stratigraphy and the layout of the castle, with the aim of obtaining a complete section, but this was not realised.

The archaeological investigation was thus restricted to a single 6 m by 2 m trench (Trench 96/1), opened in the northern part of the castle's central area *(fig. 1).*

The 10-20 cm thick humus layer overlay a fill mixed with brick and burnt daub rubble. This represented the top of a culture layer, whose thickness was over 40 cm in the southern end of the trench, thinning to 10 cm in the northern end, where it overlay the virgin soil.

There was another culture layer underneath this layer in the southern and middle part of the trench: a greyish-black layer mixed with charcoal, whose thickness varied, ranging from 15 cm at the northern end to 40 cm in the centre of the trench. This layer overlay the greyish-yellow virgin soil. This layer disappeared towards the middle of the trench's southern third

[14] MOL DL 11798.
[15] *ZO* II, 507.
[16] *ZO* II, 509.

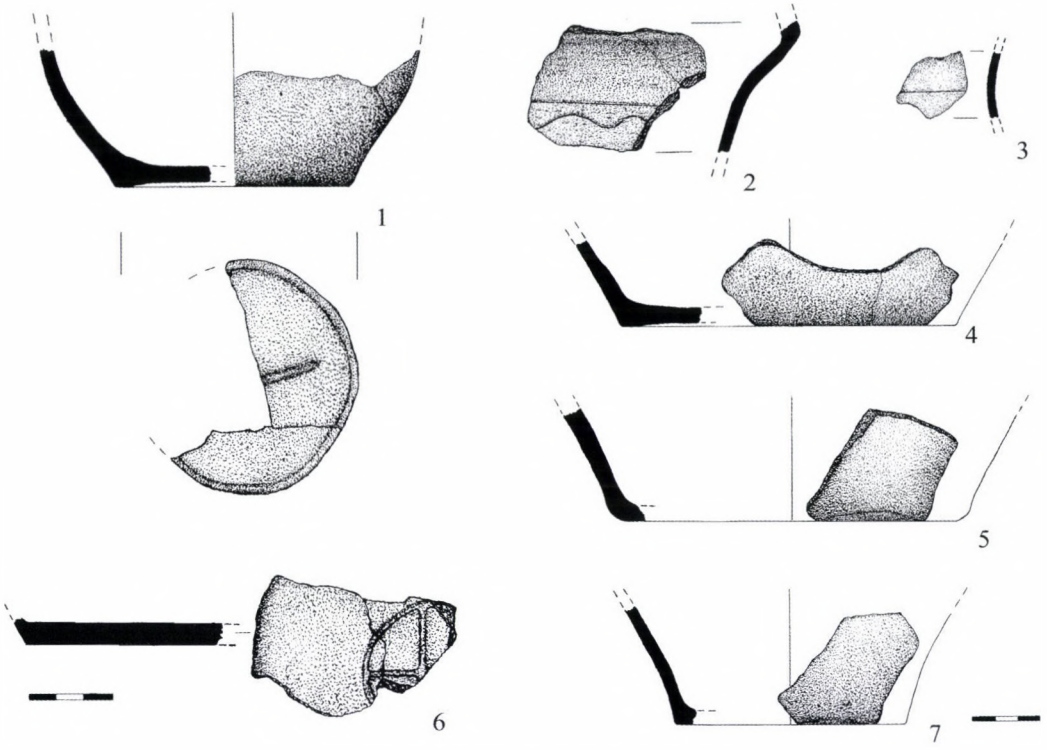

fig. 3. Vessel bases from the castle

over the rampart-like elevation, which was created from the earth removed during the digging of the ditch in the interior of the stronghold.

We found a large, 110 cm deep post-hole at the edge of this rampart-like feature near the eastern wall of the trench (posthole 1). Its diameter was about 50 cm. Two additional, smaller postholes (nos 2–3) were found west of posthole 1. Postole 2 was 84 cm deep, the third had a depth of 60 cm.

The finds

The finds were recovered from two well-distinguishable layers. There was very little mixing between the finds from these two layers.

The lower layer yielded pottery fragments only. The date of this layer is indicated by the Árpádian Age pottery sherds. Most of these sherds were coarse-grained and came from vessels tempered with sand. They were turned on a slow wheel and were predominantly brownish-red, undecorated wares. Most vessels had a ribbon rim *(fig. 2. 3, 7–8, 10)*. The few ornamented pieces were decorated with bundles of wavy and straight lines *(fig. 2. 5–6; fig. 3. 2–5, 7)*. Most vessel bases were stamped *(fig. 3. 1, 6)*.

The pottery finds include a specific group, whose fabric corresponds to those of the Árpádian Age wares, but are thin-walled and their rim is more strongly profiled. These pieces can probably be assigned to the early 14th century *(fig. 2. 4)*. A few strongly worn Roman sherds from grey vessels made from finely levigated clay were also recovered from this layer *(fig. 1. 1–3);* it is unclear how these pottery fragments came to be mixed up in this layer.

The finds from the upper layer show a greater variety. A few glass and metal finds were also brought to light in addition to the pottery.

Not one single vessel could be assembled from the pottery fragments, most of which came from pots and stove tiles. They were made from clay tempered with sand; coarse-grained pieces were also quite frequent. Most of the pottery sherds came from brown and reddish-brown vessels. The decorated pieces were ornamented with grooving and with patterns made using a comb or a cogwheel *(fig. 4. 2–3, 5–6, 8–9, 12–13; fig. 5. 6–10)*. The rims are varied, ranging from simple ribbon rims to more strongly profiled types *(fig. 4. 1, 4, 7, 10–11)*.

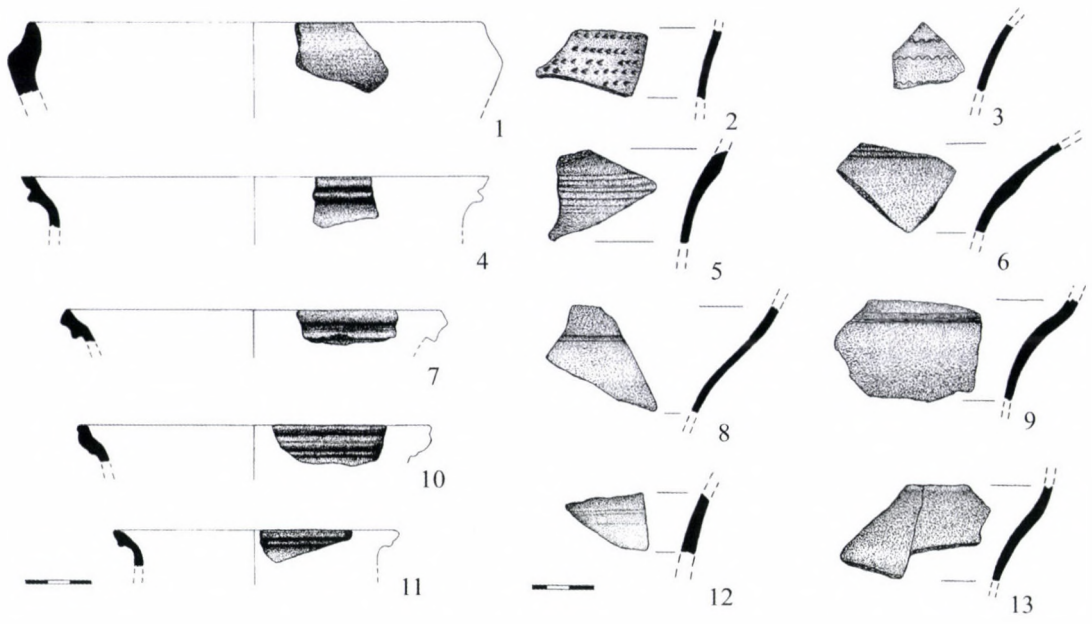

fig. 4. Pottery finds from the castle

The glass finds recovered from this layer represent the so-called dripped glasses. These thin-walled pieces can be compared to similar pieces made in Venice. Most glasses of this type are assigned to the 14th century *(fig. 5. 1–5).*[17]

Two metal finds came to light from this layer. One is a D shaped iron buckle with square section, the other is a horseshoe *(fig. 5. 11–12).*

The finds from the lower, 13th–14th century layer account for 44.4 per cent of the finds, while the finds from the late medieval period make up 53.7 per cent of the assemblage. The Roman finds from the lower layer represent the remaining 1.9 per cent.

Results of the archaeological investigation

Even though the area of this castle was strongly eroded owing to agricultural cultivation and destruction by floodwaters, the small-scale excavation yielded a number of important findings.

One of these was proof that the 13th–14th century castle and the later, 15th century one had been erected on the same spot. This site was earlier identified with the 13th–14th century castle only on the basis of its groundplan and the late Árpádian Age pottery from the bailey; the site of the later castle was sought elsewhere.[18] Although the small sounding yielded little information concerning the one-time building(s), it became clear that the central building of the first castle, dated by the late Árpádian Age pottery, was constructed of timber since the layer associated with this period did not yield any debris indicating a more durable construction material. The pottery finds were dominated by wares made from clay tempered with sand and pebbles, decorated with incised straight and wavy lines. It would appear that this phase was characterised by a keep enclosed within a palisade.

The second period of the castle can be well distinguished stratigraphically. The new building was similarly a keep enclosed within a palisade. This building was apparently similarly constructed from timber. Even though this layer yielded brick fragments in addition to burnt daub fragments, the lack of foundations and bedding trenches suggest that the building was constructed from plastered timber and that the bricks came from the interior furnishings

[17] *K. H. Gyürky:* Az üveg. Katalógus [Glass. A catalogue]. Monumenta Historica Budapestiensia 5. Budapest n.d. [1986] 56–61.

[18] *L. Vándor:* A várépítészet kezdetei Zala megyében [The beginnings of castle architecture in County Zala], in: L. Horváth (ed.): Várak a 13. században. Castrum Bene 1. Gyöngyös 1989, 59.

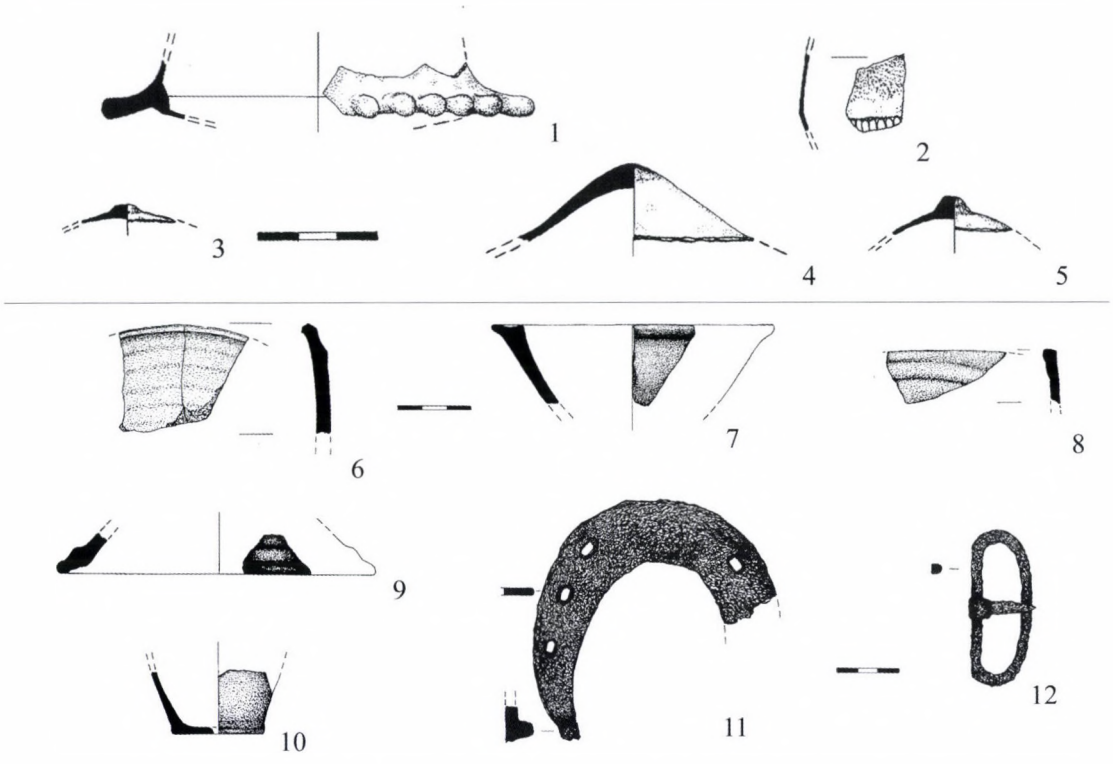

fig. 5. Glass (1–5), metal (11–12) and pottery (6–10) finds from the castle

(oven, stove, floor etc.). The find assemblage of pottery fragments, glass fragments and metal finds date from the 15th century.

The Resznek castle represents the second site in County Zala, where a new castle was built in the 15th century, exploiting the ramparts of an earlier stronghold destroyed around the turn of the 13th–14th centuries. The main feature of the new castle corresponded to the earlier one in that it had a nucleus sufficient for constructing a keep.[19]

The historical background was more-or-less the same: the estate centre with the stronghold was acquired by a new landowner, who built a new castle. It would appear that the main goal was not the construction of a new, modern stronghold, but rather the visual expression of the site's role as the centre of the estate by rebuilding the castle and expressing the new landowner's power through this act.

In spite of the important results, a few questions have remained unresolved.

(1) It is unclear how Roman period finds made their way into the Árpádian Age layer.

(2) Although the finds and the observations made during the excavation suggest that the castle made up of two sections was built already during the 13th century, it is unclear whether or not the defence system was constructed at the same time, and neither could the exact date of its construction be determined. (The pollen samples indicated that the moats had been cleaned during the mid-15th century rebuilding.)

(3) The groundplans of the buildings could not be clarified owing to the smallness of the investigated area.

(4) Neither did the excavations yield any information concerning the date of the castle's destruction, a point that could not be established from the written sources either.

In spite of these unresolved issues, the sounding yielded important new information for the research of the castles of this period. It is to be hoped that the site will be investigated over a larger area in order to find an answer to the above questions.

[19] *L. Vándor:* Archäologische Forschungen in den mittelalterlichen weltlichen und kirchlichen Zentren des Hahót-Buzád Geschlechts, in: *Hahót Basin* 1996 183–217.

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Judit Kvassay

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THE MEDIEVAL SETTLEMENT AT CSESZTREG-MIHOMI ERDŐ

The site

In 1993, I conducted a sounding excavation at the edge of the Mihom Woods, a recently planted pine forest by the floodplain of the Cupi Stream on the north-eastern outskirts of Csesztreg (County Zala, one-time Lenti district) *(fig. 1).*[1] The local council of Csesztreg planned the construction of a water reservoir and a recreation centre, which would have extended over the site's western edge, this being the reason that the Directorate of the County Zala Museums allocated funds for the excavation. According to local lore, the settlement of Csesztreg had lain in this area before it relocated to its current location. We conducted a field survey in April, 1993, before beginning the excavation; the locals showed us a small mound by the Cupi Stream, under which the ruins of the one-time church were believed to lie. The small mound was investigated during the excavation conducted between June 14–25, 1993; it turned out that the mound concealed the remains of a medieval house. The documentary evidence and the toponyms indicate that the site can be identified with the medieval village of Mihon,[2] primarily on the basis of the geographical names, which have preserved the medieval name in the form Mihom (Mihomi erdő [Mihom Woods], Mihom, Mihoni-ér [Mihon Creek]).[3] The description contained in a charter recording the perambulation of the Csesztreg, Szenterzsébet and Hétkutas holdings, part of the Bánffy family's Alsólendva estate, corresponds to the eastern outskirts of present-day Csesztreg. It would appear that the territory of the deserted medieval village merged with the territory of Csesztreg. It has often been noted that locals identify an earlier destroyed or deserted village with the former location of their own settlement.

Historical data

The village of *Mihon* was in the possession of the Bánffys of Alsólendva, one of the most important landowning families of south-western Transdanubia.[4] Its name first appears as *Mihou* in the records: in a charter dated August 26, 1334,[5] King Charles Robert confirmed the possession of Csesztreg, Szenterzsébet and Hétkutas belonging to Lendva Castle (Alsólendva, present-day Lendava in Slovenia) by Master Miklós son of István [Bánffy], *ispán* of Zala, on the evidence of a perambulation conducted by the Veszprém chapter. Mihon was listed among the group of the villages known as Hétkutas. The settlements on the estate were not distinguished from each other; however, the eastern boundary of Mihon corresponds to the present-day eastern boundary of Csesztreg on the basis of the description *(fig. 1):* "[the boundary] extends southward from the said Hydegwelg[6] to the Kutus[7] Valley and proceeding

[1] The map of the site and the maps tracing the medieval perambulations were drawn by Tibor Frankovich on the basis of the information provided by the present author.

[2] The name of the settlement appears variously as *Myhou* (1334: *ZO* I, 284), *Myhun* (1389: *ZsO* I, 940), *Myhon* (1524: *Csánki 1897* 75) and *Mihon* or *Myhom* in the tax registers from 1548–1552 (cf. note 19). Historical studies usually use the form *Mihon* or *Mihó* (*Csánki 1897* 75, 83; *Holub 1933,* 447, 506). Since the form *Mihon* was used at the turn of the 16th–17th centuries, the period discussed in this study, this form is used here.

[3] Mihomi-erdő [Mihom Woods] and Mihomi-rét [Mihom Meadow] on the outskirts of Csesztreg (*ZMF* 134/50, 71); Mihom (erdő) [Mihom Woods] on the outskirts of Kálócfa (*ZMF* 127/52); Mihomi-erdő [Mihom Woods] and Mihoni-ér [Mihon Creek] (sheet 31–211 of the M=1:10,000 scale topographical map in the National Projection Grid [EOV], Budapest 1990).

[4] For the history of the family and their estates, cf. I. *Bilkei:* Adatok Csesztreg történetéhez a 13–16. században [Notes on the 13th–16th century history of Csesztreg], in: *Csesztreg 1996* 56–68.

[5] *ZO* I, 276–285.

[6] *Hydegwelg* can be identified with Hidegvölgy, a still extant geographical name in the form Hidegvölgyi-dűlő on the boundary between Kozmadombja and Zalalövő (*ZMF* 124/15).

[7] *Kutus* can be identified with Kutas völgy [Kutas Valley], a still extant geographical name, appearing

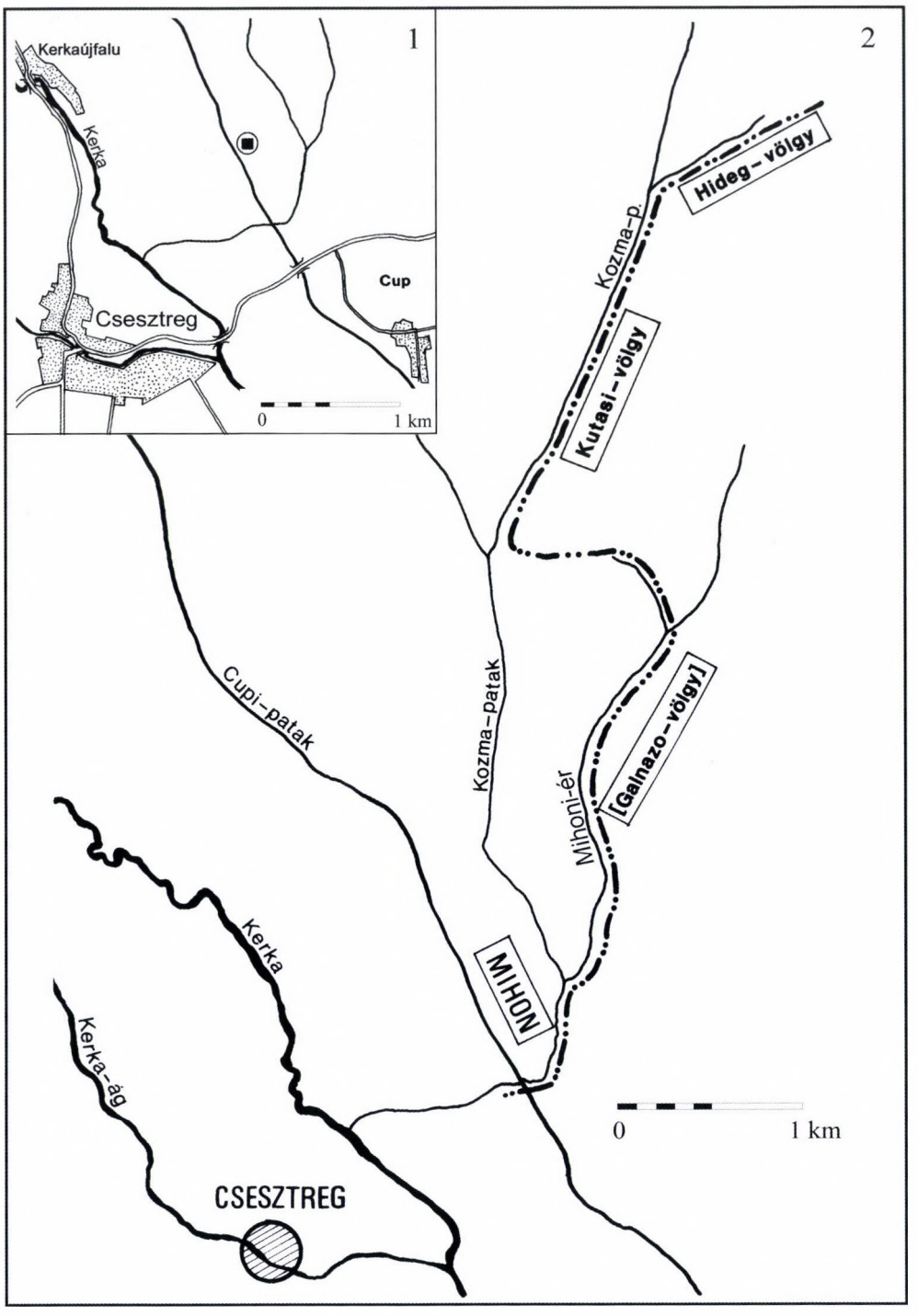

fig. 1. Csesztreg-Mihomi erdő. 1. Map of the site, 2. The eastern boundary of the medieval village of Mihon as described in a charter from 1334

southward through this valley reaches the willow grove, where there is an earthen boundary mark, marking the bounds of Master Miklós to the south and of the said Kopoz to the north;[8] proceeding farther south, it reaches a newly erected boundary mark, which marks the bounds

in the form Kutas-völgy as the name of the area on the eastern side of the north–south watercourse currently called Kozma Stream on the outskirts of Kozmadombja: *E. Földi (ed.):* Magyarország földrajzinév-tára II. Zala megye [Geographical names of Hungary II. County Zala]. Budapest 1978, 26.

[8] It can be identified with the point where the boundaries of Kerkakutas, Kozmadombja and Kálócfa converged: to the south (Kerkakutas) lay Miklós Bánffy's estate, to the north lay the estates of Master Kopasz, son of Salamon Vörös (Salomvári family).

in the above manner; proceeding eastwards, it runs into a valley called Galnazowelgh,[9] beside which runs another boundary,[10] marking the bounds of one of Master Miklós' Hetkutus, a village by the name of Myhou; from here, it descends southward through the valley, reaching two earthen boundary marks, which mark the bounds of the said village of Myhou to north, the village of Ilwagh[11] to the north, and the nobles of Chupi[12] to the east; from here, it proceeds southward, running into the above mentioned River Chup,[13] and crossing the river arrives at the former boundary [the eastern edge of Csesztreg boundary, from where the perambulation began], where a new boundary mark was raised[14] beside the first and second one."[15] Later mentions of the village are, unfortunately, very laconic. This can be attributed to the fact that there were no major settlements on the estates of the Bánffy family in this region. Members of the family carved up the estates belonging to Lendva and Lenti Castles among themselves in 1381. There were ten plots in the village of Mihon at this time.[16] At the time of the next division in 1389, János Bánffy, the *ban,* received the plots in the village's northern part, specifically the plot occupied by Tamás Tizes, the half-plot occupied by Mihály son of Márton and plot occupied by Pál Majoros, while Miklós and László received the plots in the village's middle and eastern part, namely the plot occupied by János Kokas, the half-plot occupied by Mihály son of Márton and the plot occupied by János son of Jakab.[17] Mihon is next mentioned in 1524, when the village is described as having three undivided plots, two half-plots and one quarter-plot.[18] Between 1548 and 1552, it is listed together with Csesztreg (István Bánffy's estate) and Újfalu (present-day Kerkaújfalu; László Bánffy's estate) in the tax registers.[19] Its last known mention dates from 1561, when the peasant tenants from the village participated in the installation of the scribe Miklós Nagy of Szentandrás in the possession of the manor house he had purchased in the neighbouring village of Cup.[20] The village does not appear in later tax registers. It seems likely that the settlement was destroyed in July, 1576, when Turkish troops ravaged Csesztreg and the neighbouring settlements.[21] In 1661, the village is described as a deserted area *(puszta),* for which the inhabitants of Csesztreg paid three forints of rent.[22] The 1665 tax register mentions that "Mihony puszta" had once had twenty-eight quarter-plots, and that its territory is used as ploughland and meadow by the peasant tenants from neighbouring

[9] The boundary between Kozmadombja and Csesztreg still lies in this area, east of the Kozma Stream extending to the valley of the Mihoni Creek. The geographic names have not preserved the memory of *Galnazowelgh* (perhaps Galnaszó or Málnászó Valley). Its description suggests that it can be identified with the waterlogged, north to south valley of the Mihoni Creek.

[10] This expression was used for the meeting point of the boundaries of several villages or for the point where the straight line of the boundary ended, as in this case. Cf. *L. Takács:* Határjelek, határjárás a feudális kor végén Magyarországon (Boundary Marks and 'Beating the Bounds' in the Late Feudal Period in Hungary). Budapest 1987, 17.

[11] *Ilwagh* can be identified with Ilvágy, a deserted medieval village, whose territory merged with Kálócfa. Its memory is preserved by the areas called Ivák (Ilvágy) and the Ivák Ditch (*ZMF* 127/13, 15).

[12] *Chup* can be identified with Cup, today part of Zalabaksa's northern area.

[13] Identical with present-day Cupi Stream.

[14] A number of mounds can still be seen at the confluence of the Cupi Stream and Mihoni Creek in the Mihomi Woods.

[15] Hungarian translation from the Latin by István Tringli.

[16] *Holub 1933* 447: MOL DL 6802.

[17] *ZsO* I, 940.

[18] *Helytörténeti lexikon* Mihom 8: MOL DL 37006.

[19] 1548: MOL Dic. conscr. vol. 52 (County Zala) f. 286: Csesztreg, Újfalu and Mihon, possessions of István Bánffy, with fifteen tenant holdings *(porta),* one plot for the judge, four empty plots; Újfalu and Mihom, possessions of László Bánffy, with eight tenant holdings, one half-plot, one plot for the judge, one cotter, seven poormen 1549: MOL Dic. coscr. f. 394/a: Csesztreg, Újfalu and Mihon, possessions of István Bánffy, with twenty-one tenant holdings, eight cotters, three servants, two newly established plots, one deserted plot, one plot for the judge; Mihon and Újfalu, possessions of László Bánffy, with ten tenants holdings, four cotters, two newly established plots, one plot for the artisan, one plot for the judge; 1552: MOL Dic. conscr. vol. 52 (County Zala) f. 556: Csesztreg, Újfalu and Mihom, possessions of István Bánffy, with thirty-six tenant holdings, six burnt plots, one servant, two poormen, two abandoned plots, four leaseholders; Újfalu and Mihom, possessions of László Bánffy, with seventeen tenant holdings, two servants, one poorman, one newly established plot, five leaseholders.

[20] *Helytörténeti lexikon* Mihom 14: Zalavári hiteleshelyi levéltár [Charters of the *locus credibilis* at Zalavár] I/831.

[21] *Helytörténeti lexikon* Csesztreg 233: MOL P497 Mednyánszky Archive.

[22] *Helytörténeti lexikon* Csesztreg 44: U. et C. 33/9.

villages.[23] During the 18th century, until 1801, it was described as a *puszta,* with the rent paid by Csesztreg for its use carefully recorded.[24] The memory of Mihon as a separate village has completely faded – the medieval settlement has only been preserved in geographical names.

In spite of the scanty documentary evidence, it is quite clear that number of the village's inhabitants declined continuously, to the extent that by the mid-16th century it was entered into the tax registers together with the other settlements in the area. The settlement was probably one of the small villages established in an area gained by forest clearance from the later 13th century, which owing to their unfavourable location (among woods, far from the major roads) and the poor soils (the thin layer of arable land in areas of cleared forests is soon exhausted) were gradually depopulated. At the turn of the 16th–17th centuries, the ravages of war in the area gave the final impetus for its desertion: there was no point in rebuilding the village, whose occupants had moved to neighbouring settlements. The village itself was gradually covered with forest again. A similar phenomenon was noted by Imre Holl during his investigation of Szentmihály, a village lying some 25 km south-east of Mihon, which was similarly part of the Bánffy family's estates and perished in the last third of the 16th century (it is last mentioned in 1559).[25] The two settlements resemble each other in that they both lay in a similar environment (both areas are covered with woodland and both settlements were established on a hill ridge between two stream valleys) and the documentary evidence about them is of a similar nature.

The site of the medieval village of Mihon probably lay in the Mihom Woods, on a hill rising above the confluence of the Cupi Stream and the Mihon Creek north-east of Csesztreg. The area is currently covered by a young pine forest, and it is thus impossible to determine the size of the one-time village.

The late medieval house

The excavation

Between 14–25 June, 1993, I conducted a small excavation in the floodplain of the Cupi Stream, at the edge of the Mihomi Woods. In the course of the field survey, we found fragments of burnt daub in a mole-hill on the small mound rising slightly above the floodplain.

Following the removal of the turf, we noted an irregular patch with burnt daub fragments measuring 13.5 m by 8 m. The foundation trenches of the building were outlined after the removal of the 20–30 cm thick burnt debris layer, which thinned towards the edges. The excavated house contained one single rectangular room with a north-east to south-west oriented longitudinal axis *(fig. 3).*[26] The post-holes of the posts supporting the roof had a diameter of 50–60 cm and were 50–130 cm deep (measured from the one-time occupation surface noted beside the building's eastern edge, lying 50 cm under the current surface); they lay in the north-eastern and south-western corner, slightly east of the central axis along the long sides and slightly south of the central axis along the short sides. The post-holes at the two ends of the building's longitudinal axis were the deepest (the eastern one had a depth of 130 cm, the western one nearer the stream could only be cleared to a depth of 105 cm owing to the rising groundwater). The burnt daub layer overlying these two post-holes and the one in the north-eastern corner suggest that the area around the posts had been packed with clay. The place of the wall on the eastern side was marked by a 25–30 cm wide, 15–20 cm deep foundation trench sloping towards the north-eastern corner. We found the remains of charred planks on its floor and along its sides. We uncovered a similar foundation trench on the southern side, which contained wood remains in its eastern section. We did not find a foundation trench on the western side; a roughly 1 m long, 30 cm wide and 6 cm thick charred plank lay near the north-western post-hole and charcoal fragments also lay by the south-western corner. We found neither charcoal, nor a foundation on the northern side, but while clearing the debris of burnt daub, we noted that the daub fragments lay in row between the post-holes between the north-western corner and

[23] *Helytörténeti lexikon* Mihom 41: U. et C. 33/9.

[24] *Helytörténeti lexikon* Mihom 16, 24, 28, 29, 30, 32, 34: OL Prince Eszterházy Archive, P 108.

[25] *Holl 1990* 193–195.

[26] The author's excavation drawings were re-drawn for publication by Tibor Frankovics.

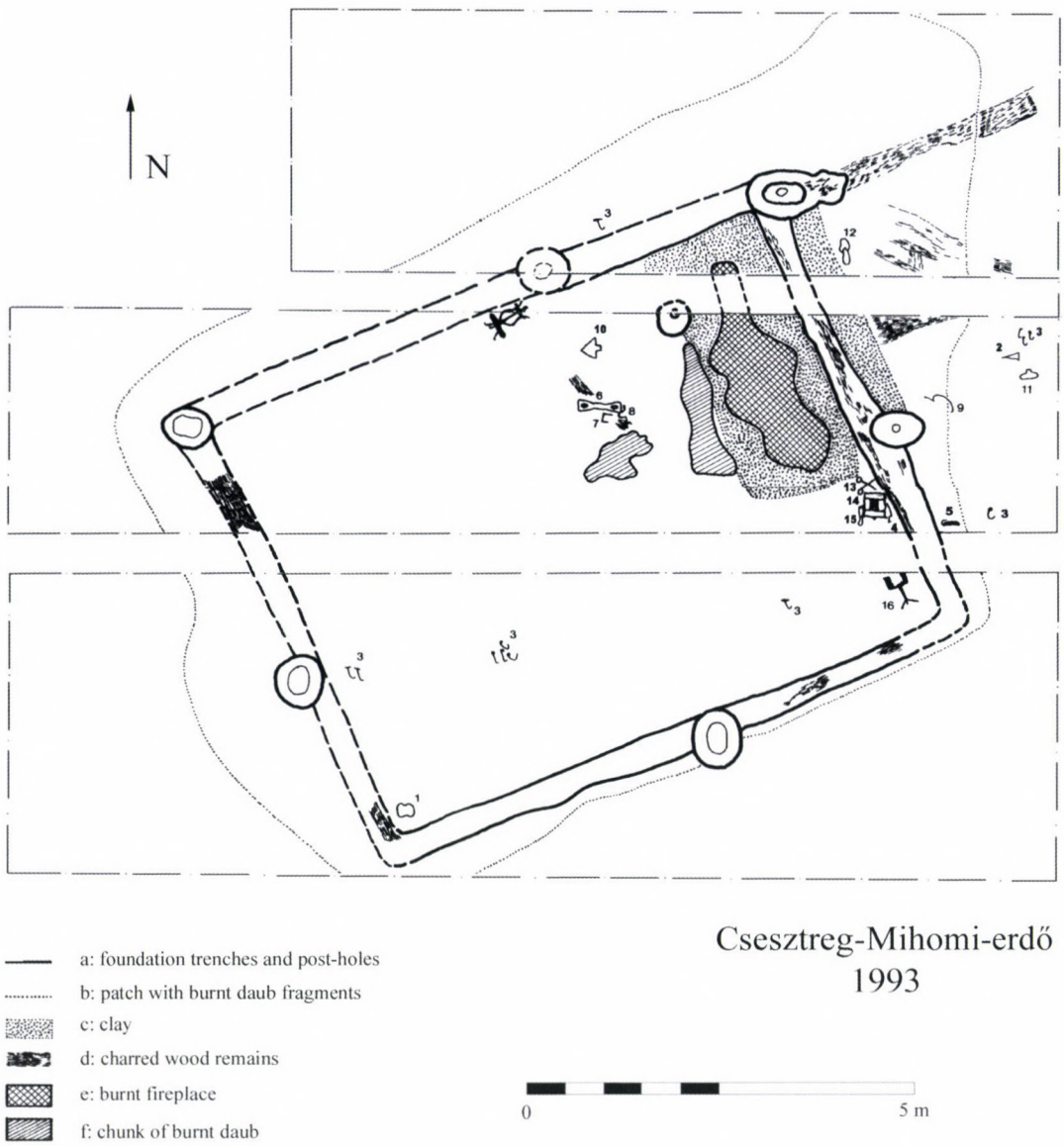

fig. 2. Groundplan of the house with the metal finds

the ones along the northern side (on the inner side of the one-time wall). After recording the distances between the post-holes and the foundation trenches, the internal dimensions of the building could be estimated as 7.5 m by 6 m.

We uncovered the remains of a 2.7 m long, 30 cm wide and 6 cm thick charred plank extending from the post-hole in the north-eastern corner to beyond the house's northern wall and a strongly burnt, 2 m by 3 m large patch with charcoal beside the eastern wall. Underneath the charcoal remains, at a depth of 50 cm from the modern surface, lay the grey, clayey virgin soil, the one-time occupation surface.

The undisturbed virgin soil lay underneath the burnt daub debris inside the house. Only in the middle part, near the western side did we find a 10 cm thick grey, ashy layer, under which there survived small patches of the yellow clay plastering of the floor, in part strongly burnt and in part covered with charcoal fragments. The floor lay some 2–3 cm deeper than the one-time habitation level.

The fireplace lay in the building's north-eastern corner. It had been made by heaping a 40 cm thick layer of yellow clay over a 3.5 m by 2.3 m large rectangular area. This clay mass extended beyond the building's eastern wall, the foundation trench on this side cut through it. In the middle of the 1.7 m wide part falling inside the house lay an irregular, 6–8 cm thick

area, slightly burnt, with small, worn pottery sherds crushed into it. A 30 cm deep post-hole with a diameter of 50 cm lay by its western edge, about 70 cm from the northern wall. A large chunk of burnt daub and a brick lay by the inner edge of the fireplace.

Evaluation of the excavated remains

The excavated remains and the depth and the arrangement of the post-holes indicate that the building had walls built around a timber framework and a purlin roof.[27] The foundation trenches were deeper on the eastern and southern side owing to the terrain, which slopes slightly westward towards the stream. The post-holes were not very deep, except for the ones holding the massive timbers supporting the purlins and it is possible that the posts in the south-eastern and south-western corner did not have separate post-holes, but were set into the foundation trench, this being the reason that we did not find them. Judging from the loose debris of small, burnt daub fragments, the wall between the timber framework was made up of wattling daubed with clay.[28] The charred wood remains in the foundation trenches on the eastern and southern side were planks judging from their thickness. Since we did not find any stake-holes between the post-holes, it seems likely that these were set horizontally between the posts and the wattling was vertical, or that that the stakes were set into these wooden planks and the wattling of the wall was horizontal.

The roughly 3.5 m by 1.7 m large open fireplace in the north-eastern corner was set on a roughly knee-high platform; it had an irregular, slightly burnt surface. The chunk of burnt daub found beside it perhaps came from a spark guard above it, which was probably supported by the post set into the post-hole in the fireplace's corner.

The entrance lay in the middle of the north-western wall. The charred plank fragments lying about 1.2 m from the post-hole of the north-western wall were probably the remains of the wooden door, onto which the iron latch and catch had fallen.

The one-time occupation surface was indicated by the patches of clay plastering inside the house.

The charred plank in the continuation of the northern wall and the charcoal layer by the eastern wall were probably the remains of a small wooden shed or pantry about 2.7 m by 2 m large added to the building's north-eastern corner, in which various implements were kept.

The only slightly burnt fireplace and the thin, single plastering of the floor suggest that the house had been occupied for a brief time only. The building itself was destroyed in a strong conflagration, indicated not only by the large amount of burnt daub and the charred wood remains, but also the condition of the finds: some of the pottery finds were vitrified and deformed to such an extent that not one single vessel could be assembled from the fragments. The metal finds were in a very poor state of preservation owing to their secondary burning. The iron core of smaller implements had been totally destroyed and crumbled away when we tried to lift them.

The dimensions of the building's room conform to the usual size of other rooms from this period.

The building uncovered at the Csesztreg-Mihomi erdő site differs from the usual late medieval houses in several respects. Houses with two, three or more rooms had become the norm throughout Hungary by the 15th–16th centuries. Buildings with a single room and a pantry are rare; none have yet been uncovered in southern Transdanubia. The excavations at Szentmihály, a village occupied by peasant tenants, brought to light buildings with two or more rooms.[29] The fireplace set on a knee-high platform is also rare. Its interpretation as an open fireplace was based on two "negative" observations: there was not one single stove tile among the abundant ceramic finds and there was no indication of a domed upper part around the slightly burnt surface suggesting the presence of a closed heating apparatus such as a stove or an oven. Depictions of open fireplaces on a knee-high platform with a spark guard above them from the late Middle Ages are known from Germany.[30] The large mass of burnt daub beside the fireplace can perhaps be interpreted as the fragments of a spark guard of this type.

[27] *Barabás – Gillyén 1987* 64.
[28] *Barabás – Gillyén 1987* 67.
[29] *Holl 1990* 193.
[30] *Benker 1987* 7, 84.

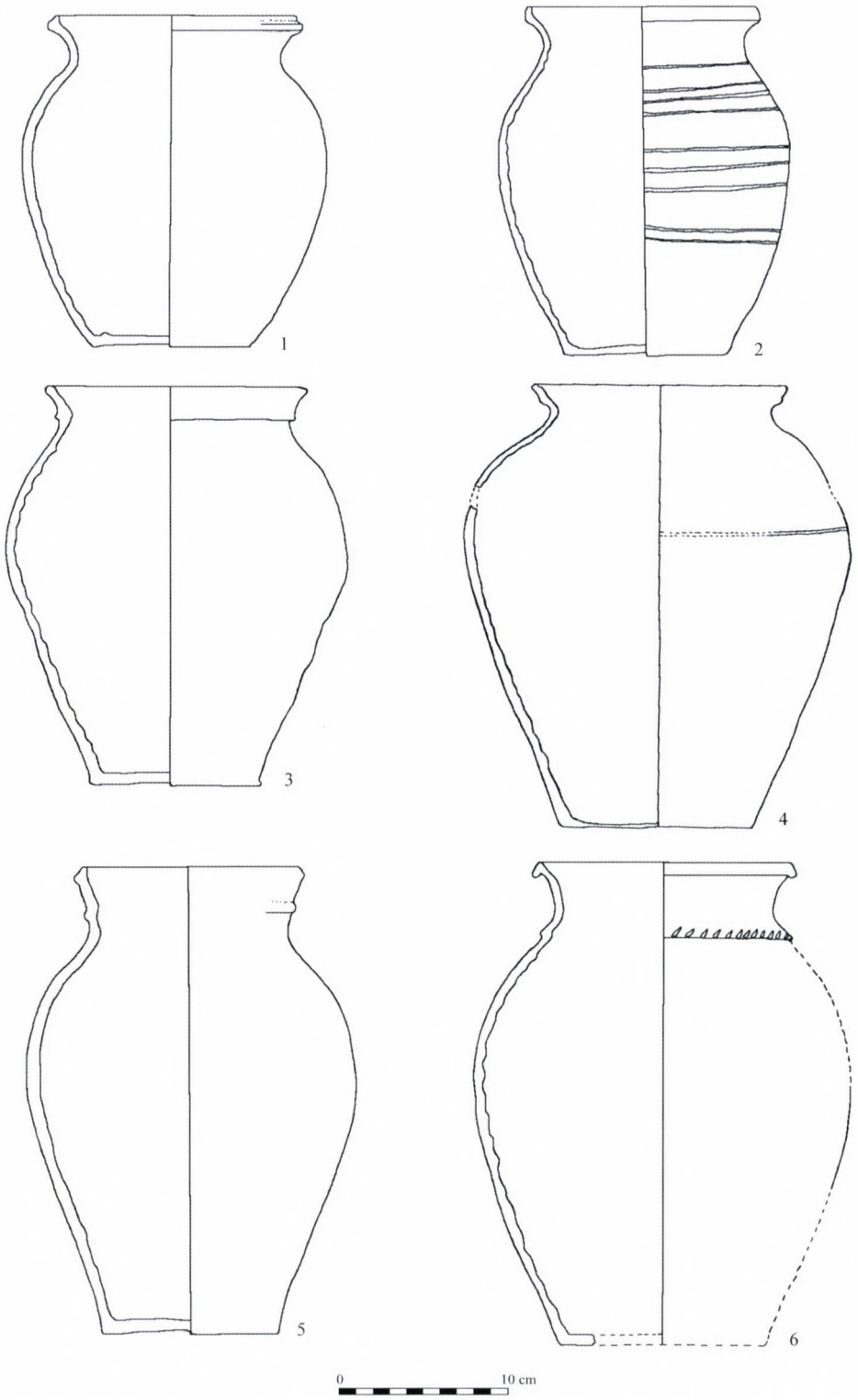

fig. 3. Pottery finds. Pots. 1. Catalogue no. 1, 2. Catalogue no. 2, 3. Catalogue no. 4, 4. Catalogue no. 5, 5. Catalogue no. 6, 6. Catalogue no. 7.

The post in the fireplace's side perhaps supported the corner of the spark guard towards the room, but it may equally well have held the post onto which the cauldron had been hung during cooking.[31] The gridiron found in the house too supports the reconstruction of an open fireplace since it was a typical accessory of fireplaces of this type.

[31] *Barabás – Gillyén 1987* 98–99.

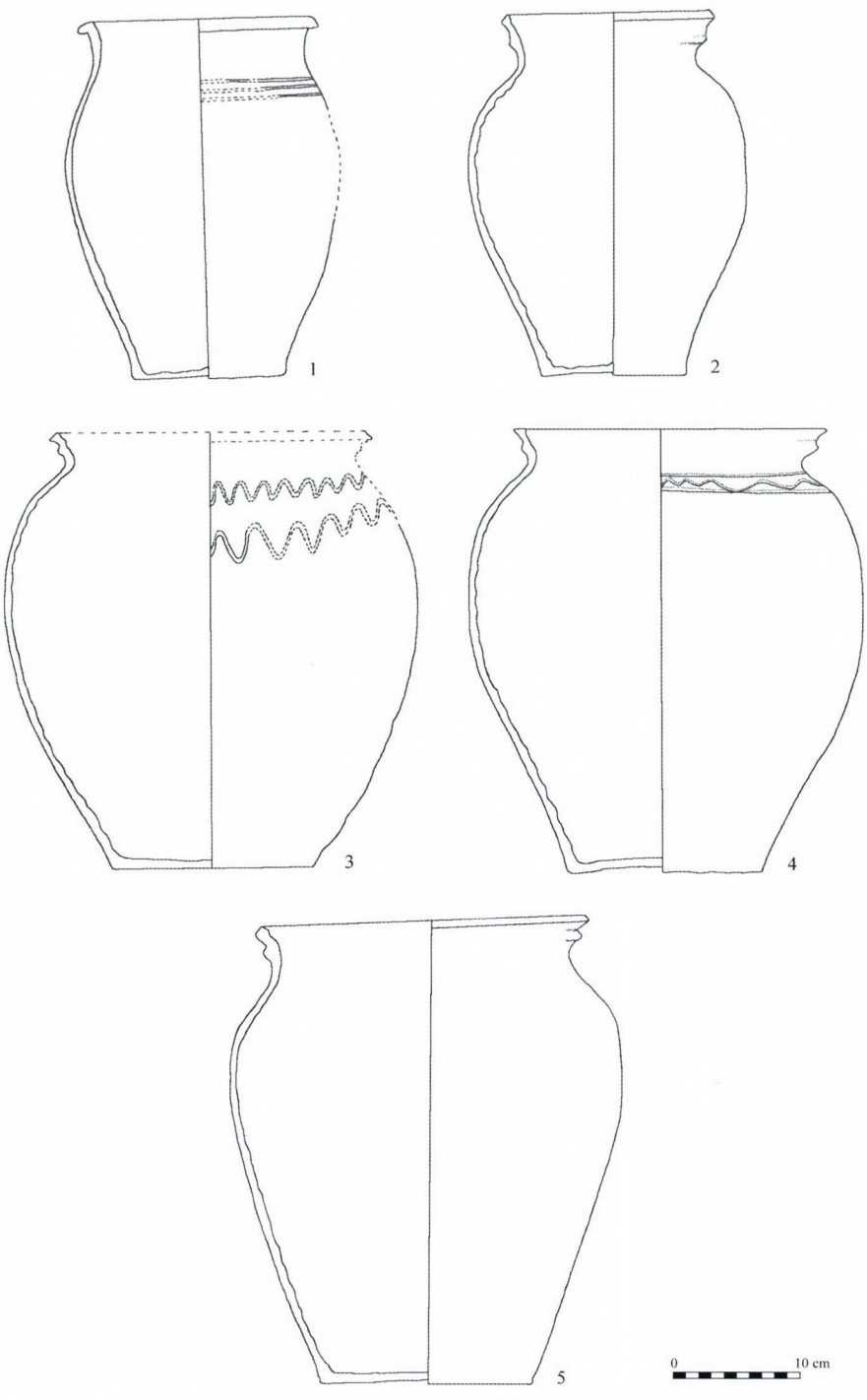

fig. 4. Pottery finds. Pots. 1. Catalogue no. 8, 2. Catalogue no. 9, 3. Catalogue no. 12, 4. Catalogue no. 13, 5. Catalogue no. 14.

The finds[32]

An abundant and varied ceramic material was recovered in the course of the excavation. The number and types of the metal finds corresponds to the average, although they do include a few remarkable types. Only one single glass fragment came to light. The charred food remains in one of the pots was submitted to analysis, but the daub fragments and the animal bones could not be examined in the lack of funds.

[32] The finds from the excavation were restored in the Göcsej Museum by Éva Szendrő (pottery) and András Varjú (metal finds). The finds are housed in the museum's Archaeological Collection (inv. nos 94.30.1.1–94.30.13.19 and 96.1.1.1–96.1.8.3).

Pottery

The vessels were made from clay tempered with coarse-grained sand and mica. Finely levigated clay was used exclusively for manufacturing cups, bottles, flasks, and a part of the lids. All vessels were wheel-turned; the turn marks could be noted in their interior and traces of cutting from the wheel on their base. Vessels were fired to a greyish-white, light grey, light greyish-brown and brown colour, and their surface was smoothed with a thin layer of clay. This layer peeled off on the secondarily burnt specimens, and wore off on the fragments found among the burnt daub fragments owing to humidity and the temperature fluctuations. The decoration of the vessels is rather simple and not particularly varied. Large pots, jugs and pitchers were smoothed with a scraper, which left lightly incised grooves on the surface. Some pieces were decorated with incised lines or bundles of straight and wavy lines or their combination. One pot shoulder was decorated with a pinched ornament, while a handful of sherds bore the remains of a red painted linear pattern (these came from one or two small pitchers). Glazed vessels were represented by three small pitchers.

The ceramic assemblage included storage vessels, cooking pots and tableware, the latter represented by cups, flasks, small pitchers and a bowl. The 20–30 cm large pots probably served for preparing food. One contained charred food remains, and burnt food patches were noted on the side of another. Storage vessels were made up of 30–40 cm large pots, pitchers, jugs and spouted vessels. Few lids were found; these fitted both cooking pots and storage vessels.

The greatest variety in form and decoration could be noted among pots, liquid containers and lids.

Pots

The pottery finds are dominated by pots: in addition to fourteen pots assembled from their fragments, sherds from another forty-five or so pots came to light. There were no two similar pieces among the fragments, all of which came from vessels made from clay tempered with coarse-grained sand, fired to a light brown colour, often with grey mottling.

1. Short-necked, globular, undecorated pot with strongly rounded shoulder and body, the carination slightly above one-half of the height. The outer edge of the funnel-like otturned rim is grooved. Inv. no. 94.30.10.7. H. 20 cm, dM. 15 cm, dB. 9.5 cm *(fig. 3. 1)*.[33]
2. Short-necked, globular pot with strongly rounded shoulder and body, the carination slightly above one-half of the height, with light grooving on the body. The funnel-like outturned rim is slightly profiled inside and thickened outside, its edge is cut obliquely. Inv. no. 96.1.1.14. H. 21 cm, dM. 13 cm, dB. 9.5 cm *(fig. 3. 2)*.
3. Short-necked, globular, undecorated pot with strongly rounded shoulder and body, the carination slightly above one-half of the height. The outer edge of the funnel-like otturned rim is grooved. Inv. no. 96.1.1.10. H. 22.5 cm, dM. 15 cm, dB 10.5 cm.
4. Short-necked, globular pot with strongly rounded shoulder and belly, the carination slightly above one-half of the height, with light grooving on its side. The outer side of the wide, funnel-like rim is obliquely cut. Inv. no. 96.1.1.9. H. 24 cm, dM. 15 cm, dB. 10 cm *(fig. 3. 3)*.
5. Slender, short-necked pot decorated with lightly incised lines. The shoulder and the carination in the upper third are strongly rounded, the base is constricted. The funnel-like, rounded, outturned rim is decorated with a rib. Inv. no. 96.1.1.8. H. 26 cm, dM. 15 cm, dB. 11.5 cm *(fig. 3. 4)*.
6. Slender, short-necked pot with light grooving on its side. The shoulder and the carination upper third are strongly rounded, the base is constricted. The funnel-like outturned, obliquely cut rim is decorated with a rib. Inv. no. 96.1.4.4. H. 28 cm, dM. 13 cm, dB. 10.5 cm *(fig. 3. 5)*.
7. Slender pot with curved neck and light grooving on the body. The shoulder and the carination in the upper third are strongly rounded, the base is constricted. A rib with oblique grooving encircles the shoulder. The edge of the funnel-like rim curves outward. Inv. no. 96.1.1.15. H. 29 cm, dM. 14.5 cm, dB. 12 cm *(fig. 3. 6)*.
8. Slender pot with curved neck, decorated with a lightly incised linear pattern on the shoulder. The shoulder and the carination at about one-half of the height are slightly rounded. The edge of the funnel-like rim curves outward. Inv. no. 96.1.1.12. H. 29 cm, dM. 16.5 cm, dB. 12 cm *(fig. 4. 1)*.
9. Slender, short-necked pot with light grooving on its body. The shoulder and the carination slightly above one-half of the height are strongly rounded, the base is constricted. The funnel-like, obliquely cut rim is accentuated with a rib. Inv. no. 94.30.8.6. H. 29 cm, dM. 17 cm, dB. 11.5 cm *(fig. 4. 2)*.

[33] The author's drawings were re-drawn by Gábor Soós.

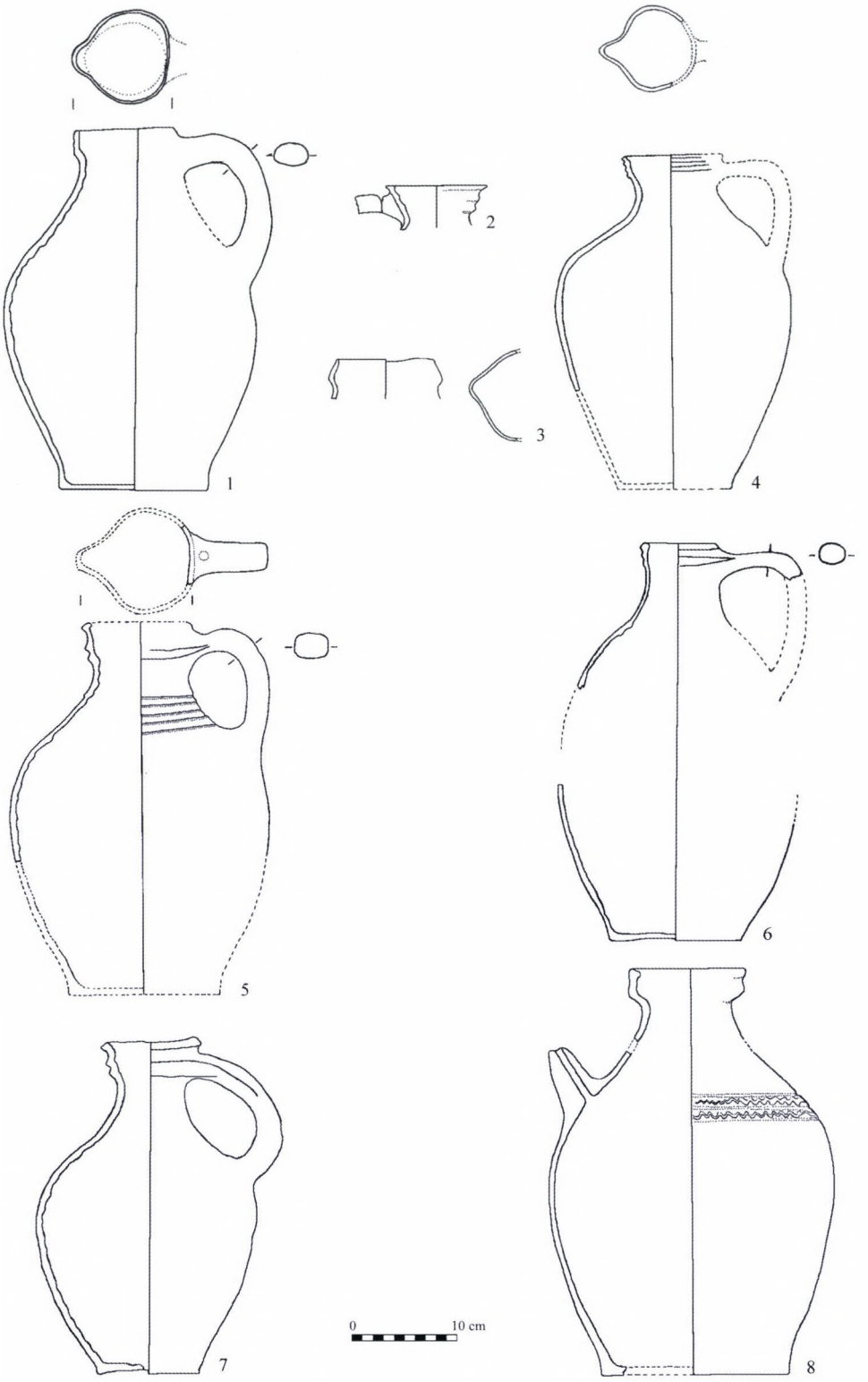

fig. 5. Pottery finds. Jugs and pitchers. 1. Jugs catalogue no. 1, 2. Pitchers catalogue no. 3, 3. Jugs catalogue no. 4, 4. Jugs catalogue no. 5, 5. Jugs catalogue no. 6, 6. Pitchers catalogue no. 4, 7. Pitchers catalogue no. 1, 8. Pitchers catalogue no. 9.

10. Slender, short-necked pot with light grooving on its body. The shoulder and the carination slightly above one-half of the height are strongly rounded. The base is constricted. The funnel-like, slightly profiled, horizontally cut rim is accentuated with a rib. Inv. no. 96.1.1.16. H. 30 cm, dM. 20 cm, dB. 13.5 cm.

11. Slender, short-necked, undecorated pot. The shoulders and carination in the upper third are strongly rounded, the base is constricted. The funnel-like, slightly profiled, horizontally cut rim is accentuated with a rib. Inv. no. 96.1.2.1. H. 33 cm, dM. 18 cm, dB. 11 cm.
12. Globular, short-necked pot with light grooving on the body. The shoulders and carination in the upper third are strongly rounded. The shoulder is decorated with two lightly incised bundles of wavy lines. The funnel-like rim accentuated with a prominent rib is obliquely cut. Inv. no. 96.1.1.11. H. 34.5 cm, dM. 24 cm, dB. 16 cm *(fig. 4. 3)*.
13. Slender, short-necked pot with light grooving on the body. The shoulders and the carination slightly above one-half of the height are strongly rounded, the base is constricted. The shoulder is decorated with a wavy line set between two straight lines. The funnel-like, horizontally cut mouth is accentuated with a rib. Inv. no. 96.1.1.13. H. 35 cm, dM. 23.5 cm, dB. 15.5 cm *(fig. 4. 4)*.
14. Slender, short-necked pot with light grooving on the body. The shoulders and the carination slightly above one-half of the height are strongly rounded, the base is constricted. The funnel-like, strongly profiled, obliquely cut rim is accentuated with a rib. Inv. no. 94.30.11.7. H. 36, dM. 25.5, dB. 16.5 cm *(fig. 4. 5)*.

It is difficult to draw a sharp boundary between the cooking and the storage pots on the basis of size alone among the reconstructed vessels in this category. By a stroke of luck, a series growing by one centimetre has survived. The three smallest pieces standing 20–22 cm high (nos 1–3) are similar in having a globular body: their shoulders and sides are rounded, and their carination is at roughly one-half of the height. The other, larger pots are of the more slender variety, with the carination falling in the upper third, their shoulder strongly rounded and the vessel body constricted towards the base. The most frequent rim type is funnel shaped, outturned, obliquely cut and usually accentuated with a rib (nine pieces). Two are collared and two are finely grooved, while one is thickened. Most of these pots are undecorated, except for a light grooving. Two were decorated with incised lines, one with a wavy line and one with a combination of the two. A rib with oblique grooving was set on the shoulder in one case.

The pot fragments came from similar vessels as the ones assembled from their fragments as regards their size and rim form.

The pots from the medieval house at Mihom have their closest analogies among the pottery from 15th–17th century villages and castles in County Zala.[34]

Lids

Few lids were found compared to the number of pots: a total of five pieces which could be assembled from their fragments and six fragmentary ones.

1. Conical lid with knob handle. The strongly profiled rim is obliquely cut, the body is slightly rounded. Assembled from its fragments and restored. Inv. no. 94.30.9.5. H. 8.7 cm, dR. 26 cm, diam. of knob 4.2 cm *(fig. 7. 8)*.
2. Conical lid with a perforation through the top. The edge of the profiled rim is horizontally cut, the sides are straight. The perforated top widens slightly. Assembled from its fragments and restored. Inv. no. 94.30.1.9. H. 11 cm, dR. 25.5 cm, diam. of handle 6.5 cm, diam. of perforation 2.1 cm × 2.4 cm *(fig. 7. 7)*.
3. Conical lid with knob handle. The profiled rim is obliquely cut, the side is slightly incurving. Assembled from its fragments and restored. Inv. no. 94.30.8.7. H. 7.2 cm, dR. 18 cm, diam. of knob 3 cm *(fig. 7. 5)*.
4. Conical lid with knob handle. The slightly profiled rim is rounded, the sides are strongly rounded. Fragmentary. Inv. no. 94.30.7.10. H. 8,5 cm, dR. 18 cm, diam. of knob 3.5 cm *(fig. 7. 6)*.
5. Conical lid with perforated top. The profiled rim is obliquely cut, the sides are strongly incurving. The perforated top widens slightly. Assembled from its fragments and restored. Inv. no. 94.30.5.8. H. 6 cm, dR. 16 cm, diam. of handle 3.4 cm, diam. of perforation 1.8 cm *(fig. 9. 4)*.
6. Rim and body fragments of a conical lid with knob handle. The slightly profiled rim is obliquely cut, the sides are straight. Inv. no. 96.1.3.5. Approx. H. 8 cm, approx. dR. 18 cm, diam. of knob 2.6 cm.
7. Profiled, obliquely cut rim fragment of a conical lid. Inv. no. 94.30.7.9. Approx. dR. 18 cm.
8. Slightly profiled, obliquely cut rim fragments of a conical lid. Inv. nos 94.30.7.8 and 94.30.11.11. Approx. dR. 22 cm.
9. Fragment of a conical lid with slightly profiled, obliquely cut rim, decorated with wide, incised lines. Inv. no. 94.30.12.8. H. 4.6 cm, approx. dR. 22 cm.

[34] E.g. at Bánokszentgyörgy-Szentmihály: *I. Holl:* A középkori Szentmihály falu ásatása I. Az 1. ház és kályhája (Ausgrabungen des mittelalterlichen Dorfes Szentmihály. I. Das 1. Haus and sein Ofen). ZalaiMúz 1 (1987) 170; Gellénháza-Városrét: *H. Simon 1996* 199–200; Bajcsa: *Kovács 2001* 200–201.

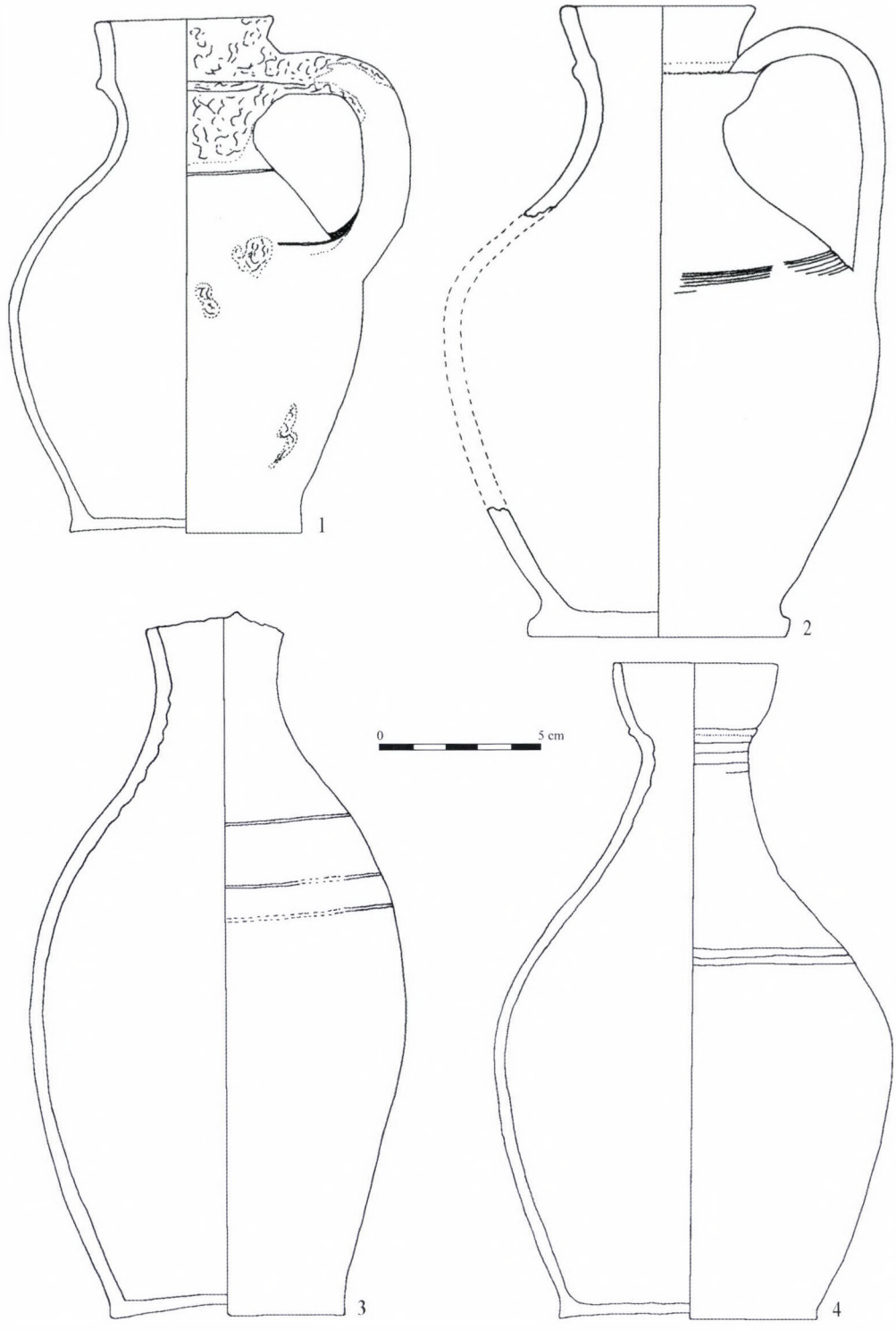

fig. 6. Pottery finds. Pitchers and flasks. 1. Pitchers catalogue no. 5, 2. Pitchers catalogue no. 6, 3. Flasks catalogue no. 2, 4. Flasks catalogue no. 1.

10. Fragment of the upper part of a conical lid with knob handle. Inv. no. 94.30.1.1. H. 5.7 cm, diam. of knob 2.6 cm.
11. Knob fragment of a conical lid. Inv. no. 94.30.3.11. H. 5 cm, diam. of knob 2.6 cm x 2.6 cm.

The form and dimensions of the lids are quite varied. All are conical, but there are differences as regards their body, their rim and their handle. Of the pieces which could be assembled from their fragments, two were rounded, two were incurving and one had straight

sides. Most of the rims were obliquely cut, although one lid has a straight rim and another one a rounded rim. Six lids have a knob handle, while two have a perforation through the top. Judging from their size (ranging between 16 cm and 26 cm), most fitted storage jars. One fragmentary piece is decorated with a simple linear pattern.

Lids were simple, practical items of medieval households. Their use can be documented from the 13th century. Conical lids with knob handles were the most widely used type in the late Midde Ages. The best parallels to the lids from Mihom are known from the village excavated at Sümeg-Sarvaly,[35] where pieces with a perforated top were also found. Ethnographic analogies suggest that these had been used for covering pots containing butter.

Liquid containers

This is the most varied category of pottery as regards manufacturing techniques, forms, sizes and rim types. A part of the flasks and pitchers were made from finely levigated clay. Most have a carefully smoothed surface, with three of the latter representing glazed ware in the ceramic material. Jugs are the largest, while pitchers show a greater variation in size, most likely owing to their use as tableware and simple containers. Liquid containers were often decorated, not only the pieces set on the table, but also the ones used as containers.

Jugs

A total of seven jugs, standing 34–38 cm high, with a rim pinched in the form of a spout were brought to light (three could be assembled from their fragments, two were represented by the upper part, while only the rim of two other pieces survived). All of these have a gritty fabric, are thin-walled, carefully smoothed and were fired to a greyish-white or greyish-brown colour. They have a rather short, cylindrical neck and strongly rounded shoulders, although one piece represents a more slender variant with a longer neck and an angular shoulders. A thick rod handle springs from the rim to the shoulder. Rims are either thickened (four pieces) or accentuated with a rib (three pieces).

1. Globular jug with angular shoulder and constricted base. The carination is slightly below one-half of the height. The thickened rim is rounded. There is light grooving from the neck to halfway down the body. Assembled from its fragments and restored. Inv. no. 94.30.5.7. H. 37 cm, dM. 9.5 cm × 9.7 cm, dB. 15 cm, diam. of handle 2.7 cm × 3.2 cm, Th. 0.5 cm *(fig. 5. 1)*.
2. Globular jug with angular shoulder and slightly constricted base. The carination is lightly below one-half of the height. The thickened rim is rounded. There is light grooving from the neck to halfway down the body. Assembled from its fragments and restored. Inv. no. 96.1.1.18. H. 38 cm, dM. 9.5 cm × 9.7 cm, dB. 15 cm, Th. 0.5 cm.
3. Rim, neck and shoulder fragment of a jug with angular shoulder decorated with light grooving. The thickened rim is rounded. There was a spout on one side and the stub of the handle can be seen on the other. Inv. no. 94.30.13.12. Surviving H. 13.8 cm, dM. 9.2 cm, Th. 0.5 cm.
4. Fragment of the spout of a jug with thickened, rounded rim. Inv. no. 94.30.12.9. Surviving H. 4 cm, approx. dM 9.3 cm × 10 cm, Th. 0.5 cm *(fig. 5. 3)*.
5. Short-necked jug with strongly rounded shoulder assembled from its fragments. The carination is slightly above one-half of the height. The rim is obliquely cut and it is accentuated by three ribs. Inv. no. 96.1.1.19. H. 33.7 cm, dM. 9 × 10 cm, dB. 11.8 cm, Th. 0.5 cm *(fig. 5. 4)*.
6. Rim and body fragment of a short-necked jug with strongly rounded shoulder. The carination is at one-half of the height. The rim is obliquely cut and it is accentuated with three ribs. Light grooving on the shoulders in a 4 cm wide band. There is a finger impression at the point where the handle joins the rim. Inv. no. 94.30.8.10. Approx. H. 38 cm, approx. dM. 11.8 × 10.6 cm, approx. dB. 15 cm, diam. of handle 3 cm × 2.5 cm, Th. 0.5 cm.
7. Rim fragment of a jug with the stub of the handle. The slightly widening rim is rounded and it is accentuated with a slightly rounded rib. Inv. no. 94.30.6.9. Surviving H. 6 cm, approx. dM. 11 cm, Th. 0.4 cm.

This vessel type was very common in the 15th–17th centuries, occurring among the finds from castles, monastic sites and settlements throughout Hungary. The jugs from Mihom differ only in that their handles are undecorated.

[35] *Holl – Parádi 1982* 98–99.

Pitchers

There were no two identical pieces among the nine pitchers recovered during the excavation (one was intact, four could be assembled from their fragments and four were fragmentary). One of the four large pitchers with cylindrical neck and rim accentuated with wide ribs had angular shoulders and an ovoid, more slender body, while the other three had strongly rounded shoulders and bellies, but their handles differed. The only difference between these vessels and the jugs described above is that their mouth was not pinched into a spout. The three small, green glazed pitchers differ from each other as regards their fabric, the area of the glazing and their decoration. Only the handle and a few body sherds survived from a small yellowish-white pitcher decorated with red painted lines. One large pitcher was fitted with a spout instead of a handle.

1. Large, wide mouthed pitcher made from finely levigated clay tempered with mica fired to a grey colour with light brown and greyish mottling (assembled from its fragments). The funnel-like mouth has an obliquely cut rim accentuated by two ribs. The neck is narrow, the shoulders and the belly are strongly rounded. The thick rod handle spans the ribs and the upper part of the belly. It has light grooving on the body. Inv. no. 94.30.7.7. H. 32 cm, dM. 8.7 cm, dB. 9.3 cm, diam. of handle 2.5 × 2.4 cm *(fig. 5. 7)*.
2. Rim, neck and shoulder fragments of a thin-walled, carefully polished, wide-mouthed pitcher made from finely levigated clay fired to a light brownish-grey colour with mottling. The funnel-like mouth has an obliquely cut rim accentuated by two ribs. The rod handle spans the ribs and the shoulder. The shoulder is decorated with two lightly incised lines. Inv. no. 96.1.2.4. Surviving H. 13 cm, dM. 8 cm, diam. of handle 2 cm × 2.4 cm.
3. Rim and rod handle fragment of a thin-walled, wide-mouthed pitcher made from clay tempered with grit and mica fired to a brownish colour (with a grey core). The funnel-like mouth has a straight cut rim accentuated by two ribs. The rod handle springs from the ribbing under the rim. Inv. no. 94.30.6.10. Surviving H. 4.5 cm, dM. 10 cm, diam. of handle 2.6 cm × 2.2 cm *(fig. 5. 2)*.
4. Large, wide-mouthed, carefully smoothed pitcher made from clay tempered with grit fired to a grey colour with a reddish-brown interior (partially assembled from its fragments). The thickened, rounded rim is accentuated by two ribs. The shoulders and the belly are slightly rounded. The rod handle spans the ribs and the upper part of the belly. The body is decorated with a lightly incised bundle of lines. Inv. no. 96.1.1.17. H. 34 cm, dM. 7.5 cm, dB. 13.5 cm, diam. of handle 2.1 cm × 2.4 cm *(fig. 5. 6)*.
5. Carefully polished small pitcher made from clay tempered with coarse sand, fired to a greyish-brown colour with mottling. The funnel-like mouth has a rounded rim accentuated by a prominent rib. The loop handle spans the rib and the shoulder. The rim, the neck and the handle are covered with a green-greenish-brown glaze, which ran down and splashed on the body. Inv. no. 94.30.8.11. H. 16.2 cm, dM. 5.5 cm, dB. 7.2 cm, diam. of handle 2 cm ×1.5 cm, Th. 0.3 cm, volume 0.62 l *(fig. 6. 1)*.
6. Small pitcher made from finely levigated clay tempered with mica fired to a light grey colour (assembled from its fragments). The funnel-like mouth has a rounded rim accentuated with a rib. The shoulders are angular, the belly is strongly rounded. The base has a foot-ring. The ribbon handle spans the rib and the belly. The vessel body, and both the exterior and the interior of the neck are covered with a secondarily burnt green glaze. The shoulder is decorated with a lightly incised bundle of lines. Inv. no. 94.30.3.23. H. 19.8 cm, dM. 5.8 cm, dB. 8 cm, W. of handle 2.3 cm, Th. 0.4 cm, volume 1 l. *(fig. 6. 2)*
7. Body, handle and base fragment of a small, thin-walled pitcher made from finely levigated clay fired to a light brown colour. Its upper part is covered with a green glaze which ran down its interior. The body is decorated with incised lines. Inv. no. 94.30.3.21. Surviving H. 7.9 cm, approx. dB 10–11 cm, diam. of handle 2.2 cm ×1.8 cm.
8. Body and rod handle fragment from a small pitcher made from finely levigated clay fired to a yellowish-white colour. It is decorated with red painted lines. Inv. no. 94.30.3.17.
9. Wide-mouthed, thick-walled, spouted pitcher with coarse fabric fired to a brownish-grey colour with mottling (assembled from its fragments). The vessel body is carefully smoothed. The profiled rim is thickened and obliquely cut. The shoulders are angular, the vessel body is globular, the base is wide. The short, pointed spout was fitted to the junction of the shoulder and the belly. It is decorated with irregular wavy lines set between three deeply incised lines. Inv. no. 94.30.13.19. H. 40 cm, dM. 11.5 cm, dB. 18 cm, Th. 05–0.8 cm, L. of spout 4.5 cm, diam. of spout 4–1.5 cm *(fig. 5. 8)*.

Wide-mouth pitchers with ribbed rim were widely used during the 15th–16th centuries throughout Hungary. The pitchers from Mihom have their best parallel in the small, funnel-mouthed pitcher covered with green glaze on its upper part from Bajcsa Castle, which is virtually identical to them except for its spout. The Bajcsa vessel was probably imported from Styria.[36] Large, spouted pitchers are similarly rare finds. The closest analogy, dated to the turn of the 15th–16th centuries, comes from Kőszeg Castle.[37]

[36] *Kovács 2002* 65, fig. 289.

[37] *Holl 1992* 31, fig. 133. 1–2.

Flasks

The one intact and three fragmentary thin-walled flasks with carefully smoothed surface, all made from finely levigated clay, are the most carefully made pieces in the ceramic inventory. They can be assigned to the wide-mouthed, ovoid variety with cylindrical neck. The widening rim has a thinning, horizontally cut edge, accentuated with a delicate rib at the neck. Their typical decoration is a lightly incised spiral line on the neck directly under the rim, and similar lines on the shoulder, which in part served a practical purpose, namely to ease handling the smooth surface. The eight other fragments found during the excavation suggest that the pottery in the house included two or three other flasks, one of which had a polished surface.

1. Wide-mouthed ovoid flask made from clay tempered with mica fired to a brown colour with grey mottling and a reddish-brown colour along the rim. The body was carefully smoothed with a thin layer of clay. The thinned rim is accentuated by a rib. A lightly incised spiral line runs along the upper part of the neck and on the shoulder along a 0.7 cm wide band. Inv. no. 94.30.10.6. H. 20.5 cm, dM. 5.3 cm, dB. 8 cm, Th. 0.4 cm *(fig. 6. 4)*.
2. Fragment of a slender flask made from finely levigated clay tempered with mica, with carefully smoothed neck and shoulder. The rim is missing. Three lightly incised lines encircle the shoulders. Inv. no. 94.30.3.22. Surviving H. 22 cm, dB. 7.2 cm, Th. 0.4 cm *(fig. 6. 3)*.
3. Rim and neck fragment of a wide-mouthed flask made from finely levigated clay tempered with mica fired to a light brown colour. The rim is accentuated with a rib; a lightly incised spiral line runs around the neck. The vessel was carefully smoothed. Inv. no. 94.30.3.20. Surviving H. 5.7 cm, dM. 5,4 cm, Th. 0.4 cm.
4. Neck fragment of a carefully smoothed flask fired to a yellowish-white colour. The rim is accentuated with a rib; the neck is decorated with incised lines. Inv. no. 94.30.10.3. Surviving H. 2.5 cm, dM. 6 cm, Th. 0.4 cm.
5. Eight body fragments from several thin-walled flasks made from finely levigated clay fired to a light brown colour. All are carefully smoothed; some show traces of polishing. A few fragments are decorated with incised lines. Inv. nos 94.30.3.19, 94.30.9.7, 96.1.6.1.

A flask resembling the one described under no. 1 was recovered from the fill of a well used at the turn of the 15th–16th centuries at Hahót-Telek-szeg: its fine fabric, proportions and rim form were similar, but it was fired to a grey colour in a reducing atmosphere and was polished with a black burnt clay layer.[38] The flasks brought to light during the excavations in Lenti Castle have a similar form and rim, but are larger. One was fired to a grey colour in a reducing atmosphere and decorated with bundles of straight and wavy lines on the shoulders. They came from layers dating to the 16th and the 16th–17th centuries respectively.[39]

Bowl

Only one single deep bowl was found, a rare type in medieval ceramic assemblages.

1. Thick-walled, conical bowl burnt to a brick red colour. The slightly incurving side widens towards the rim. The rim is decorated with finger impressions. Inv. no. 94.30.1.8. H. 9.5 cm, dM. 17.5 cm, dB. 11.5 cm, Th. 0.6 cm *(fig. 7. 3)*.

Comparable bowls have been reported from several late medieval Transdanubian sites. With the exception of the bowl fragments from Gellénháza and Kustánszeg, most pieces come from castle excavations: Zalaszentgrót, Lenti,[40] Páka, Bajcsa and Ugod. The finds from Zalaszentgrót date to the 15th–17th centuries,[41] while the assemblage from Lenti to the 15th–18th centuries.[42] The closer date of the unpublished bowls from these sites is not known. Even though the bowl fragment from Páka-Várhely was published together with the finds from a 12th–13th century house,[43] it seems more likely that it should be associated with

[38] *J. Kvassay:* Das mittelalterliche Dorf Buzád (Sárkány)-sziget von Hahót-Telekszeg, in: *Hahót Basin 1996* 240, fig. 99. 2.

[39] László Vándor's excavation in 1976–1977. ZGM inv. no. 79.2.4, 79.35.40.

[40] László Vándor's kind personal communication.

[41] *L. Vándor:* Szentgrót vára. Kutatások a zalaszentgróti volt Batthyány-kastély területén (Die Burg von Szentgrót. Forschungen im Gebiet des ehemaligen Batthyány Schlosses in Zalaszentgrót). ZGy 8 (1978) 73.

[42] *L. Vándor:* A lenti vár 1976–78. évi kutatásának eredményei (Ergebnisse von Ausgrabungen der Burg von Lenti in den Jahren 1976–78). ZGy 12 (1979) 85.

[43] *L. Molnár – L. Vándor:* A pákai „Várhelyi domb" területén végzett kutatásokról (Über die in Gebiet des "Burghort Hügels" in Páka vorgenomme Forschung). ZGy 18 (1983) 104, fig. 2; ZGM inv. no. 79.1.147.

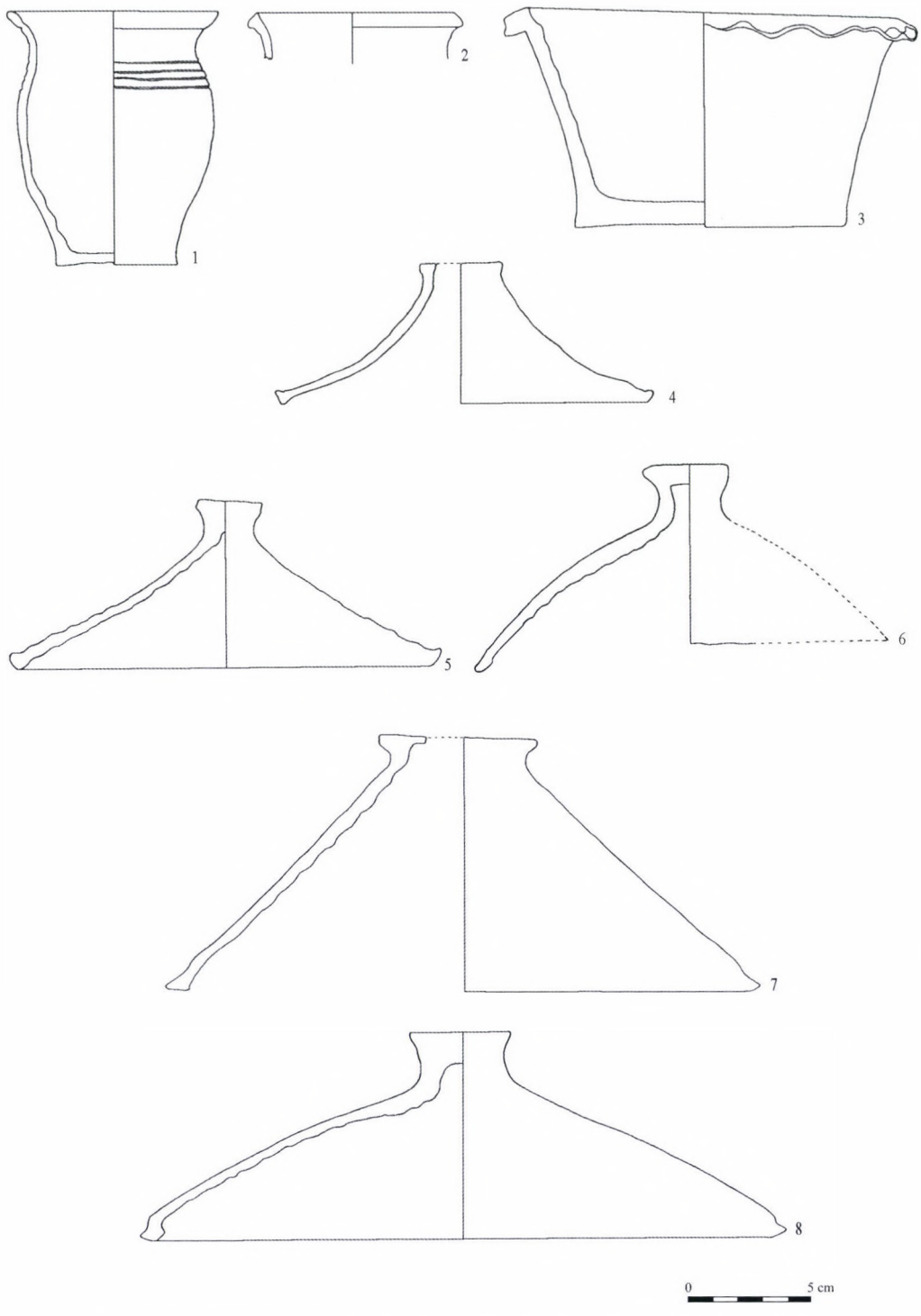

fig. 7. Pottery finds. Cup, bowl and lids. 1. Cup catalogue no. 1, 2. Cup catalogue no. 3, 3. Bowl catalogue no. 1, 4. Lids catalogue no. 5, 5. Lids catalogue no. 3, 6. Lids catalogue no. 4, 7. Lids catalogue no. 2, 8. Lids catalogue no. 1.

the 15th–16th century fortified manor house at the same site. The fragmentary piece from Ugod was dated to the 15th–16th centuries by the excavator.[44] The bowl fragment found in a refuse pit of the medieval settlement of Kisbuda near Gellénháza was dated to the later 15th century–earlier 16th century.[45] The rim of this bowl was decorated with oblique notching,

[44] *S. Mithay:* Az ugodi vár feltárásának eredményei (Die Burg von Ugod). Acta Musei Papensis 1 (1988) 75, fig. 21. 3.

[45] *H. Simon 1996* 203, fig. 3. 18.

creating the same effect as the ones decorated with finger impressions. The form and size of the bowl recovered from a refuse pit of the 16th century section of the medieval settlement of Gyertyánág on the outskirts of Kustánszeg compares well with the Mihom bowl, but its rim is undecorated.[46] The bowl found in Bajcsa Castle, occupied between 1578 and 1600, was identified as a Hungarian product modelled on Austrian (Styrian) wares.[47] Three similar bowls are also known from Zalaegerszeg;[48] they are larger than the ones from Mihom, and have a smoothed surface fired to a dark grey colour both on the outside and the inside. These bowls came to light during earth-moving operations on the territory of the one-time market town of Egerszeg. Unfortunately, their exact find context remains unknown since they were not recovered under professional circumstances and neither can they be precisely dated.

Cups

Most medieval excavations yield a great many varieties of cups and goblets, even if their number is not always particularly high. At Mihom, however, drinking vessels were represented by three cups resembling the form of pots. They can be distinguished from the pots on the basis of their size (being no more than 11-13 cm high), their fabric, their carefully smoothed body and their plain, rounded rim.

1. Reddish-brown cup with a funnel-like, outturned mouth and thickened rim. The shoulder is decorated with a lightly incised spiral line. Inv. no. 94.30.10.4. H. 10.8 cm, dM. 9 cm, dB. 5 cm *(fig. 7. 1)*.
2. Fragments of a worn, brick red coloured cup with a funnel-like outturned mouth and a thickened rim. A lightly incised linear pattern decorates the shoulder. Inv. no. 94.30.6.6. Approx. H. 13 cm, approx. dM. 11 cm, approx. dB. 6 cm.
3. Fragment of a brown cup with slightly outturned rim. Inv. no. 94.30.11.10. Approx. dM. 9 cm *(fig. 7. 2)*.

The rich inventory 15th–16th century cups from Kőszeg Castle includes a simple type resembling the ones from Mihom,[49] and a pot shaped cup can also be found among the 15th century finds from Sümeg Castle.[50] Comparable cups have been recovered during the investigation of medieval villages from this period, for example from Nagykeszi,[51] and from the destruction layer of the church at Csácsi, dated to the earlier 16th century,[52] suggesting that this cup type was popular over a long period of time.

Evaluation of the pottery finds

The pottery from Csesztreg-Mihomi erdő is quite varied and rich, especially in view of the small size and simpleness of the excavated house. The composition of the ceramic inventory corresponds to that observed at other medieval sites, with pots being the most numerous type, followed by liquid containers, while lids and cups are less frequent, and bowls quite rare pieces (only one single specimen was found at Mihom). The pottery wares are generally good quality pieces in terms of their fabric, their finish and firing. The red painted small pitcher can be regarded as the single luxury item in the simple village household. (The glazing of three small pitchers apparently had a practical, rather than a decorative function.) The pottery is dominated by the pot, lid, pitcher, jug, flask and cup types of the 15th–16th centuries.[53] The large, grey jugs with pinched spout and rim accentuated with ribs have their best analogies among the

[46] *R. Müller:* Régészeti terepbejárások a göcseji „szegek" vidékén és településtörténeti tanulságaik (Archäologische Bodenforschungen im Göcsejer "Szegek"-Gegend und ihre siedlungsgeschichtliche Lehren). A Göcseji Múzeum Kiadványai 38. Zalaegerszeg 1971, 28–29, Pl. XII. 1.

[47] *Kovács 2001* 218.

[48] Zalaegerszeg, construction of the cinema: ZGM inv. nos 56.38.5, 59.120.1; Kis utca: ZGM inv. no. 75.25.3.

[49] *Holl 1992* fig. 134. 7.

[50] *K. Kozák:* Kerámiatörténeti tanulmányok (Dunántúl) (Studien über die Geschichte der Keramik. [Transdanubien]). VMMK 18 (1986) 328, fig. 4.

[51] *Holl – Parádi 1982a* 192.

[52] *L. Vándor:* A csácsbozsoki r.k. templom kutatása (Erforschung der rom. kath. Kirche in Csácsbozsok). ZGy 6 (1976) 207, fig. II.

[53] My first erroneous dating of the building to the 15th–16th centuries in the publication describing the site was based on these pottery types. *J. Kvassay:* 15–16. századi ház a középkori Mihon falu területén [A 15th–16th century house from the medieval village Mihon], in: *Csesztreg 1996* 69–95.

late 16th century finds from Nagykanizsa[54] and Bajcsa Castle,[55] although comparable pieces are also known from the Ottoman period assemblages from Ozora Castle.[56] The closest parallel to the bowl too comes from Bajcsa Castle.[57] The presence of glazed pottery in a rural environment generally falls into the 16th century.[58] Similarly to the metal finds, the pottery from Mihom is made up of wares, whose continuous manufacture and use can be noted from the late Middle Ages, from the later 15th century. A few remarkable finds, however, can be dated to the close of the 16th century.

Metal finds[59]

Catalogue of metal finds

1. Tin (?) sheet measuring 10 cm x 15 cm. A strongly burnt, thin sheet perhaps hammered from tin with the edge folded back along one side. It crumbled after lifting.
2. Iron artefact. Strongly burnt, slightly curved, wedge shaped iron artefact or its fragment with rectangular section. Its state of preservation was so bad that it was not inventoried. L. 8 cm, diam. 2,5 cm x 1.2 cm–1.5 cm x 0.8 cm.
3. Nails. Two different types of wrought iron nails.
   a. T-headed pieces hammered from an iron bar with a diameter of 0.3–0,5 cm x 0.5–0.6 cm. Their length varied between 6.5–9 cm. Seven pieces were found, but only two were in sufficiently good condition to be kept. Inv. nos 96.1.5.3 and 96.1.2.7.
   b. Nails with a large round head hammered from an iron bar with a diameter of 0.3–0.7 cm x 0.5–0.8 cm. Their length varied between 5–8 cm, the diameter of the head between 2–3.3 cm. Seven pieces were found, but only one was in sufficiently good condition to be kept. Inv. no. 96.1.5.3.
4. Strongly burnt fragment of an iron knife. Its type could not be determined owing to fragment's small size. It was not inventoried owing to its bad state of preservation. L. 5 cm, W. of blade 1.9 cm, Th. of butt 0.5 cm.
5. Hook hammered from an iron bar, resembling a nail. One end is pointed, the other is hammered flat and bent back into a hook. Inv. no. 94.30.10.9. L. 6.2 cm, diam. 0.6 x 0.8 cm *(fig. 8. 3)*.[60]
   Alajos Bálint has published an artefact resembling the hook from his excavations at Nyársapáti, but did not determine its function.[61] Similarly to a few comparable finds from Sarvaly, it may have been part of a horse bit.[62]
6. Iron door band. Iron band with flaring, perforated terminals and the cotter pin for attachment. Inv. no. 94.30.10.14. L. 16.7 cm, W. 1.6 cm (3.1 cm and 2.8 cm at the two ends), Th. 0.4 cm *(fig. 8. 6)*.
7. Catch. U shaped hook with pointed terminal, the catch of a door bolt. Inv. no. 94.30.10.15. L. 7.5 cm, W. 6 cm, Th. 1.4 cm x 0.4 cm *(fig. 8. 5)*.
8. Chest handle (?). U shaped artefact hammered from an iron bar, resembling a chest handle. The pointed ends are bent outward at right-angles. Inv. no. 94.30.10.16. W. 8.4, L. of stems 4.6 cm and 5.6 cm, Th. 1.3 cm x 0.5 cm *(fig. 8. 4)*.
9. Sickle. Slightly curved iron sickle with short neck. It is badly preserved, secondarily burnt and it is therefore impossible to determine whether its cutting edge was plain or toothed. Inv. no. 94.30.10.12. L. 37 cm, L. of handle 13 cm, W. of blade approx. 1.7 cm, Th. of butt approx. 0.5 cm *(fig. 8. 8)*.
10. Hoe. The shaft hole widens towards the blade, the socket thickens slightly at the butt and is slightly bent back. The shoulders are angular, the curved blade is pointed. It was found in a bad state of preservation owing to strong secondary burning. Inv. no. 94.30.10.13. H. 28.3 cm, W. 23 cm, Th. of blade 0.4 cm *(fig. 8. 9)*.
11. Girth buckles hammered from iron bars with one straight and one curved side. Both pieces were secondarily burnt to the extent that they broke into tiny pieces after lifting and none remained in sufficiently good condition to be kept. Their approximate sizes were 9 cm x 5.5 cm, Th. 0.5 cm *(fig. 8. 2)*.
12. Iron cart fitting. Iron single-tree mount of a cart. It is bent in a pear shape, one end is hammered wider into a closed band and the pear shaped chain link strung through it. Inv. no. 96.1.3.6. L. 25.6 cm, L. of band 14.5 cm, W. 5.5–1.5 cm, Th. 0.8 cm, diam. of chain link, 14 cm x 10.3 cm, Th. of chain link 1.4 cm *(fig. 8. 7)*.
13. Iron scissors with a closed ring handle, wide angular blade and a maker's mark. Inv. no. 94.30.10.10. L. 15 cm, W. of blade 1.5 cm, diam. of handle 2.5 cm *(fig. 8. 1)*.

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[54] *I. Méri:* A kanizsai várásatás. Vázlat a kanizsai vár és város történetének kutatásához (Ausgrabungen auf dem befestigten Schloss Kanizsa). Budapest 1988, 28–29, Pl. XXV.

[55] *Kovács 2001* 201.

[56] *I. Gerelyes – I. Feld:* Hódoltság kori leletegyüttesek az ozorai várkastélyból (Fundkomplexe des Burgschlosses von Ozora aus der Zeit der Türkenherrschaft). CommArchHung 1986, fig. 10. 1.

[57] *Kovács 2002* 202.

[58] *N. Parádi:* Az etei XVI. századi kincslelet (The Ete hoard from the XVIth century). BÁMÉ 1 (1970) 228.

[59] For the first publication of the metal finds, cf. *J. Kvassay:* 16. századi vastárgyak a középkori Mihon faluból (Eisengegenstände des 16. Jahhunderts aus dem mittelalterlichen Dorf Mihon). ZalaiMúz 10 (2001) 161–173.

[60] The iron finds were drawn by Zoltán Tóth.

[61] *A. Bálint:* A középkori Nyársapát lakóházai. (Előzetes beszámoló.) (Kirche und Wohngebäude im mittelalterlichen Nyársapát. Vorläufige Mitteilung). MFMÉ 1960–1962, Pl. XXXVI. 8.

[62] *Holl – Parádi 1982* Abb. 100. 3.

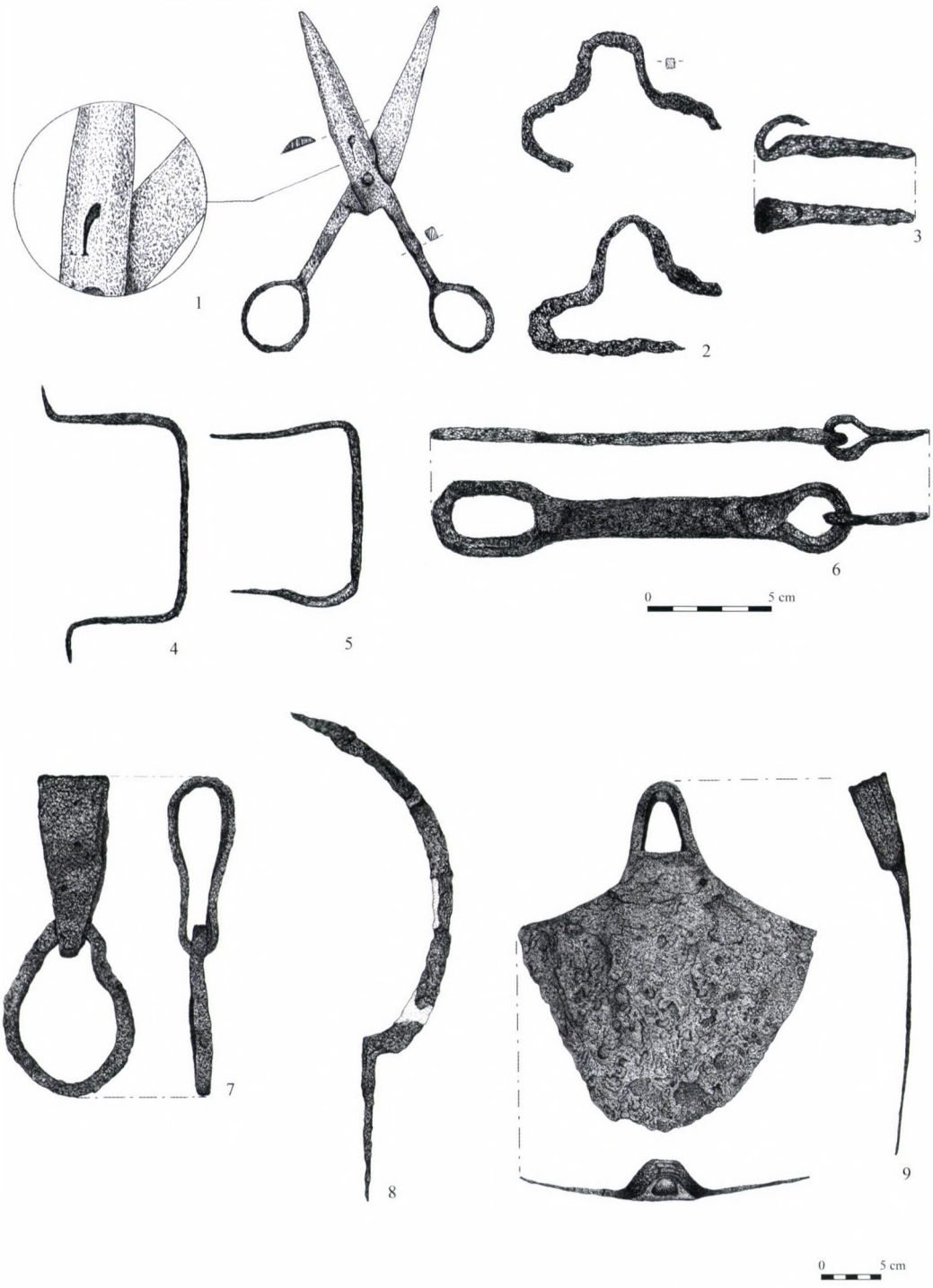

fig. 8. Metal finds. 1. Scissor with marker's mark, 2. Girth buckles, 3. Hook, 4. Chest handle, 5. Catch, 6. Door band, 7. Cart fitting, 8. Sickle, 9. Hoe

14. Oblong gridiron hammered from iron bars made up of iron rectangles, whose size decreases towards the centre, with the stub of a handle on one side, set on bent, pointed feet. Badly preserved, one leg fragmentary and restored. Inv. no. 94.30.10.11. L. 31.5 cm, W. 25 cm, H. 6.2 cm, Th. of bars 1 cm x 0.5 cm *(fig. 9. 3)*.
15. Iron band. Fragment of a secondarily burnt, deformed iron band. One end widens and has a rivet, the other, broken end tapers. Its form recalls door fittings, but it lacks the ring for a band and nail-holes for riveting. It was perhaps the handle of the gridiron described above since it was found beside it. Inv. no. 94.30.10.8. L. 29.5 cm, W. 2.8 cm (W. of widening end 5.6 cm, W. of tapering end 1.8 cm), Th. 0.3 cm (fig. 9. 4).
16. Two-branched candlestick hammered from iron. The tripod base was cut from sheet iron and bent into shape. The stem was hammered from an iron bar with a rectangular section and twisted. The two branches and the cylindrical sockets were cut from sheet iron and bent into shape. The different parts were joined with rivets.

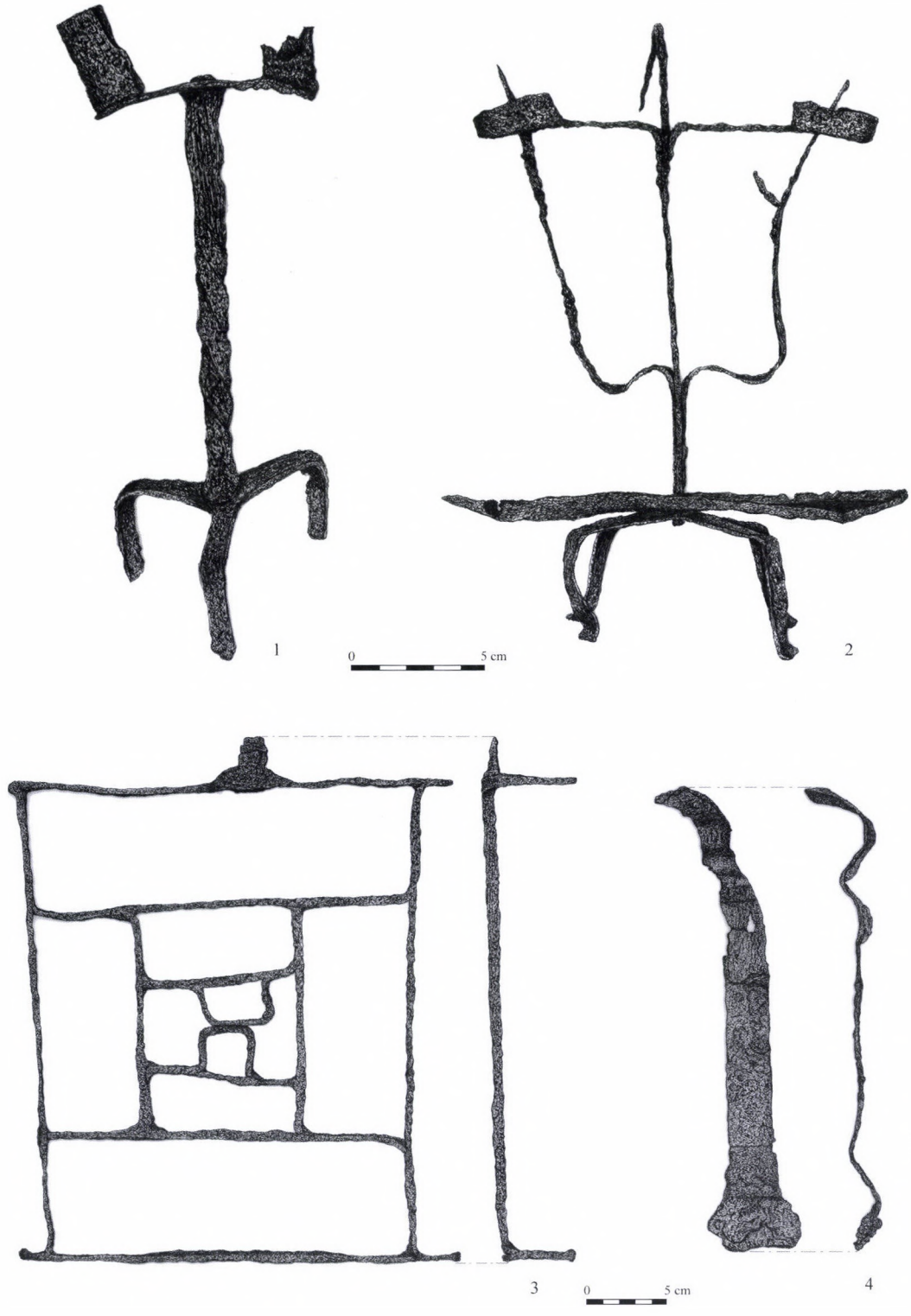

fig. 9. Metal finds. 1. Two-branched candlestick, 2. Two-branched candlestick with drip pan, 3. Gridiron, 4. Handle

It is secondarily burnt, one two feet and one of the sockets are broken. Inv. no. 94.30.7.11. H. 26 cm, W. of branch 8.5 cm, the feet enclose a circle with a diameter of ca. 11 cm, diam, of stem 1 cm, Th. of plate 0.3 cm (fig. 9. 1).

17. Two-branched candlestick with braces, fitted with a drip pan, standing on four feet. The feet were cut from 0.2 cm thick sheet iron; they were bent into an S shape perforated in the middle and the ends were hammered into a point. The drip pan was cut from a 0.1 cm thick sheet into a propeller shape, also perforated in the middle, and the edges were bent upwards along 0.4–0.5 cm. The stem is a 1.3 cm wide, 0.3 cm thick iron

sheet, whose lower half is cut step-wise on both sides at the base. The looped pins fitted into the slits on the drip pan and the feet held them together, but also enabled its disassembly (resembling a bayonet joint to use a modern expression). The branches were also made from a 1.3 cm wide, 0.3 cm thick sheet bent into a L shape. The shorter end was riveted to the stem, while a ring with a diameter of 3 cm made from 1 cm wide, 0.3 cm thick iron sheet was soldered to the wider end as a mount. The braces were made from 1.3 cm wide, 0.3 cm thick iron sheet. One end was riveted to the stem. The branches were bent into an S shape above the riveting. They pass through the sockets for holding the candles, extending beyond them for about 2 cm. There were two small handles under the sockets to move the braces (the stub of one has survived, but only the place of the other can be made out). The upper end of the stem terminates in a U shaped hook for carrying; however, it is impossible to determine whether this hook was soldered to the stem separately or whether the upper part was hammered into a hook since this section of the candlestick was strongly burnt. Inv. no. 94.30.11.13. H. 24 cm, W. of branches 15 cm, W. of drip pan 18 cm (fig. 9. 2).

Evaluation of the metal finds

With the exception of the tin (?) plate, the metal finds were all made from iron. Their find spot inside the house is also very instructive *(fig. 2)*. The economic implements (sickle, cart mount, girth buckles and the wedge shaped artefact described under no. 2) lay in the shed, where the hoe was probably kept too, even though it lay embedded in the burnt daub debris near the fireplace. Perhaps the occupants tried to use it for pulling down the burning roof or for salvaging some valuable article from the house. The latch, the catch and the artefact resembling a chest handle were found beside each other, suggesting that they were door fittings which had fallen on the ground during the conflagration. The gridiron and its handle, the scissors, the knife fragments and the hook described under no. 5 were found by the southern end of the fire-place, beside the eastern wall, among the burnt daub debris. The gridiron lay with its face down, its handle a few centimetres higher, suggesting that it had originally been hung on the wall. The two-branched candlestick came to light in the south-eastern corner, the other piece with the braces lay where the entrance is assumed to have been – they had probably been used to light the entrance and the corner farthest from it. Most of nails were found in the southern part of the house (ten out of fourteen); three lay in the shed and one outside the north-western wall. The tin (?) plate was recovered from the south-western corner, where it lay among the burnt daub fragments.

The nails, the door fittings, the knife fragment and the sickle do not have any distinctive features which would allow a more precise dating. All are late medieval types, which were quite widespread from the 15th century on and occur frequently among the finds from settlements and castles. Good parallels for the pieces from Mihom can be found among the assemblages published from these sites.

The socket type and the curved blade of the hoe are best paralleled by the piece from the Pauline monastery at Pogányszentpéter, which has been dated to before the mid-16th century.[63]

The perhaps best preserved iron find from Mihom is the scissors with the maker's mark. It can be assigned to Sarvaly Type 2 on the basis of its form and size, falling into the late 15th–earlier 16th century. This type was manufactured in specialised workshops by master artisans. The maker's mark is identical with the one on a fragmentary piece recovered from House 26 of the Sarvaly settlement.[64]

Cart fittings are similarly common finds among late medieval assemblages. However, iron fittings made up of a wide band with a wide terminal and the chain link strung through it are less frequent finds: similar pieces have been found in one of the Csepely houses,[65] at Kisnána[66] and Ozora Castle,[67] and they also occur among the iron artefacts from Csongrád-

[63] *R. Müller:* A pogányszentpéteri ásatás (Die Ausgrabungen in Pogányszentpéter), in: E. H. Kerecsényi (ed.): A nagykanizsai Thúry György Múzeum jubileumi emlékkönyve 1919–1969. Nagykanizsa 1972, 269–270, Pl. I. 1.

[64] *Holl – Parádi 1982* 62, Abb. 17. 5.

[65] *J. Kovalovszki:* Ásatások Csepelyen (Ausgrabungen in Csepely). VMMK 8 (1969) fig. 36.

[66] *R. Müller:* A mezőgazdasági vaseszközök fejlődése Magyarországon a késővaskortól a törökkor végéig (Die Entwicklung der eisernen Agrargeräte in Ungarn von der Späteisenzeit bis zum Ende der Türkenherrschaft). ZGy 19 (1982) I. 129, II. 868, no. 494.

[67] *Feld – Gerelyes – Gere – Gyürky – Tamási 1989* 202, fig. 21. 4.

Bokros[68] and Törökszentmiklós,[69] as well as from the excavations of the medieval village of Gyója at Csongrád-Bokros-Jováki-part.[70] All of these fittings are similar in that one end of the bent iron band is 5–6 cm wide, the other is 1–2 cm wide and has a length of about 10 cm. The form can be oval (Ozora, Csongrád-Bokros, Törökszentmiklós) or pear shaped (Csepely, Kisnána, Csongrád–Bokros-Jováki-part, Mihom). The chain link is usually round and its diameter is roughly two-thirds of the length of the band. The iron mount from Mihom differs in that band is longer and the chain-link was bent into a pear shape. The description of these articles differs in various publications. The piece from Csepely was described as a cart fitting, without a closer specification of its function. The one from Kisnána (without the chain-link) was described as a fitting by which the whipple-tree was attached to the cart. The pieces from Csongrád-Bokros and Ozora were identified as single-tree mounts. The specimen in the assemblage from Törökszentmiklós was described a single-tree fitting and ring. The different names all denote iron fittings with which the collar of the draught animal was attached to the vehicle. The find from Mihom can best be described as a single-tree iron fitting[71] in view of the girth buckles found beside it, indicating the hitching of horses. The double-tree or whipple-tree is used for hitching several horses or oxen to a cart and would thus need several such iron fittings. The dating of these iron artefacts ranges from the turn of the 15th–16th centuries (Csepely) to the turn of the 17th–18th centuries (Ozora, Törökszentmiklós), indicating that fittings of this type were made in an unchanged form during the late Middle Ages.

A gridiron is mentioned among the finds excavated at Fehérkő Castle near Kerek.[72] However, the find described as the fragment of a gridiron for roasting meat can no longer be found in the Keszthely museum. The 16th–17th century inventories occasionally list a gridiron, usually together with the spits, among kitchen utensils.[73] In Transylvania, where the use of open fire-places was more widespread, gridirons appear more frequently in 17th century inventories.[74] The persons drawing up the inventories rarely described the form of this simple article, which they probably regarded as an obvious kitchen utensil. German and Italian medieval depictions often show a simple grid shaped grill on which fish and sausages are roasted above the embers drawn to one side of an open fire-place. The author of a book discussing medieval kitchens and their equipment, utensils and recipes claims that not one single authentic piece of this widely used kitchen utensil has survived.[75] The handle of the Mihom gridiron was fitted to the middle of the short side which, on the testimony of the depictions, was a less common practice. The other difference is that simple grid was replaced by a more sophisticated geometric pattern. The gridiron is the typical utensil used with open fire-places.

The two candlesticks are perhaps the most noteworthy articles among the iron finds from Mihom. Research on the history of lamps and lighting has revealed that the use of candles spread rather slowly owing to the high cost of their production and that during the Middle Ages, they were a luxury item affordable to the wealthiest only.[76] It is therefore not mere chance that the 15th–16th century cast and pressed bronze candlesticks all come from

[68] *K. Simon:* A csongrád-bokrosi vaseszközlelet (Der Eisengerätfund von Csongrád-Bokros). MFMÉ 1980–81/1, 85, 89, fig. 11, Pl. V. 1–3.

[69] *Gy. Kovács:* A törökszentmiklós–Rózsa téri késő középkori vaseszközlelet (Die spätmittelalterlichen Eisengerätfunde von Törökszentmiklós). ArchÉrt 117 (1990) 242, fig. 4. 4, fig. 5. 3.

[70] *L. A. Horváth – K. H. Simon:* Történeti és régészeti adatok egy közép-alföldi falu feudáliskori történetéhez (Historische und archäologische Angaben zur feudalzeitlichen Geschichte eines Dorfes in der Großen Ungarischen Tiefebene). MFMÉ–StudArch II (1996) 456, fig. 75. 13–14.

[71] The single-tree is used for hitching the horse to the vehicle. Cf. *Gy. Ortutay (ed.):* Magyar Néprajzi Lexikon [Hungarian Ethnographic Lexicon], Vol. III. Budapest 1980, 229.

[72] *T. Koppány – K. Sági:* A kereki Fehérkő vár története (A history of Fehérkő castle in Kereki). Somogyi Múzeum Füzetei 9. Kaposvár 1967, 25.

[73] *Radvánszky 1879* II, 51, 61, 115, 136.

[74] *M. B. Nagy:* Várak, kastélyok, udvarházak, ahogy a régiek látták. XVII–XVIII. századi erdélyi összeírások és leltárak [Strongholds, castles, manor-houses. 17th–18th century registers and inventories from Transylvania]. Bukarest 1973, 57, 65, 80 etc.

[75] *Benker 1987,* 42, Abb. 97, 110, 115.

[76] *G. Hempel:* Lampen. Leuchter. Licht (II) aus der Metallsammlung des Österreichischen Museums für Volkskunde. Katalog. Wien 1991, 41; Holl 1992 61.

material brought to light in castles, royal residences and monasteries.[77] The 16th–17th century inventories usually list the silver and silver gilt candlesticks,[78] although copper and tin pieces were recorded too.[79] An iron candlestick is only mentioned in the inventory of Bazin Castle, drawn up in 1568.[80] The number of clay candlesticks from medieval sites is rather low.[81] Iron candlesticks first appeared in Western Europe in the 14th century, but only with the perfection of iron forging did they become widespread in the 17th century. The candlesticks used in rural and urban households were most often made from brass, followed by iron.[82] The appearance of two-branched candlesticks with a fixed socket can be dated to the 15th century.[83] The prototype of these candlesticks was type with the two branches set above each other, placed in front of votive pictures in churches for the votive candles of the congregation,[84] such as the one from the Romanesque church at Felsőbük[85] and the fragmentary piece in the collection of the Hungarian National Museum.[86] The simple form and execution of the iron candlesticks from Mihom suggest that they had been made by a village blacksmith. The two-branched candlestick described under no. 16 can be assigned to the fixed socket type. It differs from the usual medieval type in that it lacks a drip pan. The twisted stem, easing handling, the three feet ensuring stability and the closed, cylindrical socket are all practical features which recur on candlesticks for long centuries. The wrought iron two-branched candlestick recovered from the 14th century destruction layer of the castle at Oberursel-Bommersheim (Hessen, Hochtaunuskereis) in Germany[87] has these features. The conical form of the sockets recalls the Gothic candlesticks made from bronze. Its upper part is broken and it is therefore uncertain whether it ended in a hook or was of the double two-branched votive type. The candlestick described under no. 17 can be assigned to the type with brace and drip pan type in terms of how it held the candle. Two fragmentary bronze candlesticks of this type were recovered from later 15th century and early 16th century layers in Buda Castle.[88] An Austrian panel from 1513 depicts a candlestick virtually identical to the one from Mihom,[89] the only difference being the form of the drip pan. This type was very popular in Austria, where its manufacture can be traced until the late 18th century; it had many variants, including one and two-branched types, often decorated with spiral patterns, and they were made with a wide range of pan forms. A small funnel was fitted to the upper end of the stem, in which the candle remains were collected (this feature is lacking on the piece from Mihom) and a small hook was added for carrying.[90] The collection of the Hungarian National Museum has two single-branched pieces of this variant.[91] Both were acquired through purchases, and thus their find spot and find contexts remain unknown. One was dated to the 15th century, the other to the 16th century. A single-armed candlestick has also been found at Bajcsa Castle, a fortification built and used during the last two decades of the 16th century, whose furnishings were brought from Styria.[92]

[77] *Holl 1992* 61 and 88, note 127; *Feld – Gerelyes – Gere – Gyürky – Tamási 1989* 202.

[78] *Radvánszky 1879* II, 93, 121, 138, 140, 142, 172–173, 244–245, 264.

[79] *Radvánszky 1879* II, 25, 51, 59, 69, 113, 137, 185, 205.

[80] *Radvánszky 1879* II, 60.

[81] *Holl – Parádi 1982a* 192–193, fig. 14; *Gy. Siklósi:* A középkori Székesfehérvár. A legutóbbi tíz év ásatási eredményei. Kiállítási katalógus (Medieval Székesfehérvár. Accomplishments of last ten years' excavations. Exhibition catalogue). Budapest 1987, inside cover.

[82] *Baur 1977* 12.

[83] *Baur 1977* 32, Abb. 55.

[84] *Baur 1977* 21.

[85] *R. Bünker:* Soproni emlékek [Historical relics from Sopron]. ArchÉrt 29 (1909) 394, 393, fig. 2.

[86] HNM inv. no. 1879.81.3.

[87] *R. Friedrich – H. Junk – A. Kreuz – J. Petrasch – K-F. Rittershofer – P. Titzmann – A. von Waldstein:* Die hochmittelalterliche Motte und Ringmauerburg von Oberursel-Bommersheim, Hochtaunuskreis. Vorbericht der Ausgrabungen 1988–1991. Germania 71 (1993) 2. Halbband, 491, Abb. 29.

[88] *I. Holl:* A budai várpalota egy középkori rétegsorának elemzése (Analyse einer mittelalterlichen Schichtenreihe). ArchÉrt 114–115 (1987–1988) 189, fig. 4. 4–5.

[89] *H. Kühnel (hrsg.):* Alltag im Spätmittelalter. 3. Auflage. Graz – Wien – Köln 1986, 163, Abb. 202.

[90] *L. E. von Benesch:* Das Beleuchtungswesen vom Mittelalter bis zur Mitte des XIX. Jahrhunderts, aus Österrech-Ungarn, insbesondere aus den Alpenländern und den angrenzenden Gebieten der Nachbarstaaten. Wien 1905, Taf. 4–5, 9.

[91] HNM inv. no. 1901.1.15–16.

[92] *L. Vándor:* A bajcsai vár feltárásáról (Die Freilegung der Festung Bajcsa), in: *Völker an der Mur 1998* 104.

The occurrence of a candlestick of this type at Mihom can be explained by the proximity of Austria and Bajcsa. It cannot be regarded as a usual trade commodity since in this case many more pieces would be known, at least from western Transdanubia. It seems likely that the lightning equipment, which had by this time already become widespread in rural households in Western Europe, were still curios in Hungary.

Glass

1. Fragments of a glass vessel decorated with ribs. Inv. no. 96.1.2.6. Size 2.9 cm ×1.2 cm.

The small glass fragment found in the fill of the house's southern section probably comes from a chalice or a footed goblet, which cannot be dated earlier than the second half of the 16th century.[93] This fits nicely with the evidence offered by the written sources that the medieval village of Mihom was deserted around the turn of the 16th–17th centuries owing to the military devastations in the area.

Food remains

Charred food remains were found on the body and basal fragment of a pot[94] lying among the burnt daub debris in the house's northern half. The food remains were examined by Ferenc Gyulay. Unfortunately, the sample was greatly damaged by the secondary burning and it proved impossible to identify all components during the analyses. "The relatively high asparagine acid and low lysine contents indicate a plant origin. The sample contains few aminoacids, which were either washed out or had decomposed. The composition of the oleic acid is more promising. The relatively high stearic acid contents suggest some sort of beef fat, i.e. the remains probably come from a vegetal dish made with beef fat or some other fat with a high stearic acid content. The oleic acid contents are not decisive because even if a vegetal fat with high oleic acid content had been used, it would have long ago oxidised into other elements."[95]

Summary

The building and the finds brought to light at Csesztreg-Mihomi erdő are exceptional in several respects.

The groundplan of the house built around a timber framework with daub walls, made up of one room and a shed built against the house, and the use of an open fire-place differs from the usual late medieval buildings. Above-ground houses with two or more rooms became the norm even in rural settlements throughout Hungary from the 15th century. Houses with a single room and a pantry are rare – not one single similar building has been uncovered in south-western Transdanubia. The fire-place set on a knee-high platform is also unparalleled. Its interpretation as an open fire-place is based on its form and size, and on the observation that no remains of a superstructure from wattling daubed with clay or of one constructed from tiles or stove tiles were found. The reconstruction of an open fire-place is also supported by the gridiron found in the house, a typical kitchen utensil in households with a fire-place of this type. Depictions of similar open fire-places are known from medieval Germany.

Two interesting aspects of the finds must be noted. One is that in addition to archaic, 15th–16th century types, the finds include a few artefacts which can be dated to the 16th–17th centuries. One group of the iron articles is made up of simple utilitarian pieces (such as the sickle, the door fitting, the single-tree mount), which were manufactured in an unchanged form during the late Middle Ages, from the later 15th century to the turn of the 17th–18th centuries. The exceptions are the gridiron with its intricate geometric pattern and the two candlesticks,

[93] I would here like to thank Katalin H. Gyürky for her help in identifying and dating this find.

[94] ZGM Inv. no. 94.30.11.6.

[95] Sample 115/472 (1998) analysed in the Kaposvár Chemistry Institute of the Faculty of Animal Husbandry of the Pannon University of Agricultural Sciences. I would here like to thank Eszter Bánffy for her help in submitting the sample for analysis.

which were more likely made in the 17th century. The same holds true for the greater part of the pottery (pots, lids, pitchers). The exceptions are the large jugs, the small, green-glazed pitchers and the conical bowl, whose manufacture began in the later 16th century. The other interesting aspect of the finds is that the less common ceramic and metal finds were probably imports from Styria or copies of imported wares, rather than local products. These articles were most likely curios, which hardly had an impact on local crafts or trade. One cannot speak of the wider distribution of fashionable western articles since the typical 16th–17th century knife types and handled pots glazed both on their exterior and interior are wholly lacking. It is regrettable that the other sections of the settlement could not be investigated, since it is thus uncertain whether we had found a building with a special function or whether the duality of archaic and new features was typical for the entire settlement.

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NEW RADIOCARBON DATES FOR THE EARLY NEOLITHIC IN NORTHERN SERBIA AND SOUTH-EAST HUNGARY: SOME OMISSIONS AND CORRECTIONS

In our paper[1] presenting new radiocarbon dates for the early Neolithic in northern Serbia and southern Hungary, the printer inadvertently omitted – after the proof stage – the captions for *Tables 2–3,* and left out *Tables 1* and *4–5* altogether. There has not been space in succeeding volumes of *Antaeus* till now to rectify that error.

Another 30 or so radiocarbon dates will shortly be published for Ecsegfalva 23, with further discussion,[2] but they basically confirm and refine the picture already given in *Whittle et al. 2002.* Because of changes in pre-treatment procedures at the Oxford laboratory,[3] three of the previously published dates for Ecsegfalva 23 have been replaced by fresh determinations (OxA-X-2040-07 for OxA-9327; OxA-X-2040-09 for OxA-9329; and OxA-X-2040-08 for OxA-9526). Details will be given in *Bronk Ramsey et al. forthcoming.* The sample from Maroslele-Pana previously dated by OxA-9403 has also been dated again, confirming its antiquity (OxA-X-922-30: 7680±70 BP, calibrated at two standard deviations to 6650–6410 cal BC).[4]

Table 2 (Whittle et al. 2002 113*)* should have been captioned: *Table 2:* results. For details of calibration, see the text in *Whittle et al. 2002.*

Table 3 (Whittle et al. 2002 116*)* should have been captioned: *Table 3.* $\delta^{13}C$ and $\delta^{15}N$ values of human and faunal bone collagen from various Serbian and Hungarian sites. The collagen was extracted from the samples and the isotopes measured as part of the radiocarbon dating process at the Oxford Radiocarbon Accelerator Unit following procedures outlined in *Bronk-Ramsey et al. 1999.* The errors on the $\delta^{13}C$ values are ± 0.3 and are ±0.4 on the $\delta^{15}N$ values. Abbreviations for the species are C, cervid, H, humans, O, ovicaprid, E, Equus, B, bos, U, unknown. Abbreviations for sample type are B, bone, T, tooth, A, antler, and H, horn core. * indicates the isotope values and the C:N ratio are the average of two measurements.

Tables 1 and *4–5* are as follows.

[1] *Whittle et al. 2002.*
[2] *Bronk Ramsey et al. forthcoming.*
[3] *Bronk Ramsey et al. 2004.*
[4] *Bronk Ramsey et al. 2004.*

Site	Lab no	Date BP	Calibrated range 2 sigma	Material, context, associations
Tumba, near Porodin	Tx-1787	6760±110	5850BC (95.4%) 5470BC	charred wheat grains of Triticum, house (RC 19, 322)
Veluška-Tumba	Tx-1785	6950±120	6030BC (95.4%) 5620BC	charred wood, house of phase IV – earliest phase (RC 19, 322)
Veluška-Tumba	Tx-1786	6890±140	6030BC (95.4%) 5530BC	charred wheat grains, house, phase II – next to latest (RC 19, 322)
Veluška-Tumba	Tx-1809	6900±90	5990BC (5.5%) 5940BC 5930BC (89.9%) 5630BC	charcoal, posts of house – phase II (RC 19, 322)
Tumba I	Z-498	7010±190	6250BC (95.4%) 5500BC	charcoal, trench I, layer 28 – phase III (RC 19, 475)
Čuka-Topličani	Z-494	7680±160	7050BC (95.4%) 6200BC	charcoal, trench I, layer 15–16 (RC 19, 474)
Čuka-Topličani	Z-495	7010±190	6250BC (95.4%) 5500BC	charcoal, trench I, layer 22 (RC 19, 474)
Vršnik	H-595/485	6865±150	6050BC (95.4%) 5450BC	? (*Gimbutas 1991* 441, table 2)
Hisar	LE-534	8785±130	8250BC (95.4%) 7550BC	? (*Gimbutas 1991* 441, table 2)
Porodin	H-1486/987	7110±140	6250BC (95.4%) 5700BC	? (*Gimbutas 1991* 441, table 2)
Anzabegovo	LJ-2178	7050±150	6250BC (95.4%) 5600BC	charcoal, sq. VII, unit 87, 65 cm E, 105 cm N, 291 cm, below datum (*Gimbutas 1976* 30; RC 19, 21)
Anzabegovo	LJ-2185	6510±110	5670BC (95.4%) 5260BC	charcoal, sq. V, unit 62, 28 cm E, 60 cm N, 355 cm below datum – from small post-hole, phase III (*Gimbutas 1976* 30; RC 19, 21)
Anzabegovo	LJ-2330/ LJ-2331	7180±60	6220BC (85.2%) 5970BC 5960BC (10.2%) 5910BC	charcoal, sq. VII, unit 257, depth 437 cm below datum – from fire-pit of earliest occupation, expected to be oldest from sq. VII – phase Ia (*Gimbutas 1976* 30; RC 19, 21)
Anzabegovo	LJ-2332	7110±120	6220BC (95.4%) 5730BC	charcoal (charred wood), sq. VII, unit 256, depth 427–437 cm below datum – phase Ib (*Gimbutas 1976* 30; RC 19, 21)
Anzabegovo	LJ-2333	6840±120	5990BC (3.9%) 5940BC 5930BC (91.5%) 5520BC	charcoal (charred wood), sq. VII, unit 253, depth 417–427 cm below datum – phase II (*Gimbutas 1976* 30; RC 19, 22)
Anzabegovo	LJ-2337	7080±60	6070BC (95.4%) 5800BC	charcoal, sq. VII, unit 122, 2nd block layer of fire-pit – phase Ib or II – expected younger (*Gimbutas 1976* 30; RC 19, 22)
Anzabegovo	LJ-2338	6800±140	6000BC (95.4%) 5450BC	charcoal, sq. VII, unit 177, from fire-pit – phase II (*Gimbutas 1976* 30; RC 19, 22)

Table 1. Previous radiocarbon dates for the northern Starčevo and Körös cultures (apart from those cited in the site catalogue for Lepenski Vir, Padina, Starčevo and Donja Branjevina)

SITE	LAB NO	DATE BP	CALIBRATED RANGE 2 SIGMA	MATERIAL, CONTEXT, ASSOCIATIONS
Anzabegovo	LJ-2339	7110±70	6160BC (2.5%) 6140BC 6090BC (92.9%) 5800BC	charcoal (combination of samples coll. throughout unit), sq. phase Ib; VII, unit 240, depth 397–407 cm below datum – same layer as LJ-2341 and -2342 (*Gimbutas 1976* 30; RC 19, 22)
Anzabegovo	LJ-2341	7230±170	6450BC (95.4%) 5750BC	charcoal, sq.VII, unit 188, depth 367 to 377 cm below datum – phase Ib; same layer as LJ-2339 and -2342 (*Gimbutas 1976* 30; RC 19, 22)
Anzabegovo	LJ-2342	7120±100	6220BC (95.4%) 5770BC	charcoal, sq. VII, unit 251, phase Ib; same layer as LJ-2339 and -2341 (*Gimbutas 1976* 30; RC 19, 22)
Anzabegovo	LJ-2343	7000±280	6500BC (95.4%) 5300BC	charcoal, sq. VII, unit 121, depth 316 cm sloping to 374 cm below datum – end of phase II/transition to phase III (*Gimbutas 1976* 30; RC 19, 22)
Anzabegovo	LJ-2344	7000±270	6500BC (95.4%) 5300BC	charcoal, sq. VII, unit 117, overlying LJ-2343 – phase III (*Gimbutas 1976* 30; RC 19, 22)
Anzabegovo	LJ-2345	6540±120	5720BC (95.4%) 5290BC	charcoal (sample coll. throughout unit), sq. VII, unit 191, depth ca. 350 cm below datum – phase III (*Gimbutas 1976* 30; RC 19, 22)
Anzabegovo	LJ-2347	6700±150	5900BC (95.4%) 5300BC	charcoal, sq. VII, unit 120, depth 370-380 cm below datum – expected phase Ia but the age is less (*Gimbutas 1976* 30; RC 19, 22)
Anzabegovo	LJ-2349	6440±120	5650BC (95.4%) 5050BC	charcoal (sample coll. throughout unit), sq. VII, unit 189, depth 367–377 cm below datum – phase Ib (*Gimbutas 1976* 30; RC 19, 23)
Anzabegovo	LJ-2351	7050±80	6060BC (1.9%) 6040BC 6030BC (93.5%) 5730BC	charcoal (sample coll. throughout unit), sq. VII, unit 124 – phase II; stratigraphically same as LJ-2343 (*Gimbutas 1976* 30; RC 19, 23)
Anzabegovo	LJ-2405	6940±80	5990BC (9.5%) 5940BC 5930BC (85.9%) 5660BC	charcoal, sq. VII, units 213 and 215, depth 387-397 cm below datum; in unit 215, 150–170 cm N, 0-20 cm E – phase II (*Gimbutas 1976* 30; RC 19, 23)
Anzabegovo	LJ-2409	6850±50	5840BC (3.6%) 5820BC 5810BC (91.8%) 5630BC	charcoal, sq. VII, unit 156, from ash-ring of well-preserved fire-pit (LJ-2156 from same pit), phase II (*Gimbutas 1976* 30; RC 19, 23)
Anzabegovo	LJ-2156	6630±150	5850BC (95.4%) 5300BC	charcoal, sq. VII, units 156; same fire-pit as LJ-2409, depth 354 cm below datum (*Gimbutas 1976* 30; RC 19, 23)

Table 1 (cont'd)

SITE	LAB NO	DATE BP	CALIBRATED RANGE 2 SIGMA	MATERIAL, CONTEXT, ASSOCIATIONS
Anzabegovo	LJ-2519	7560±70	6510BC (95.4%) 6230BC	charcoal, block L, level 16, depth 219–229 cm below datum (oldest sample) (*Gimbutas 1976* 30; RC 19, 23)
Anzabegovo	LJ-3032	7210±50	6210BC (93.3%) 5980BC 5950BC (2.1%) 5920BC	charcoal, sq. V, units 103, 106, 107, 111 and 120; depth 370–380 cm below datum – phase Ia (*Gimbutas 1976* 30; RC 19, 23)
Anzabegovo	LJ-3183	7150±50	6160BC (4.9%) 6130BC	charcoal (Juniperus), sq. V, depth 90–110 cm below datum, layer 1 – phase Ia (*Gimbutas 1976* 30; RC 19, 23)
Anzabegovo	LJ-3185 5610BC	6830±70	5850BC (95.4%)	charcoal (Quercus, Juniperus and other trees), sq. V, combination of units 125 to 155, expected phase Ia but the age is for phase III (*Gimbutas 1976* 30; RC 19, 23)
Anzabegovo	LJ-3187	7150±70	6210BC (8.7%) 6130BC 6120BC (86.7%) 5840BC	charcoal, sq. V, units 76 to 86 and 116 to 124 depth 390–410 cm below datum – phase Ia (*Gimbutas 1976* 30; RC 19, 23)
Divostin	Bln-823	7080±180	6400BC (95.4%) 5600BC	charcoal, lowest level of Feature 15 (Earth-cabin 5), depth from surface c. 115 cm, Divostin I artifacts only (*McPherron et al. 1988* table 14.1)
Divostin	Bln-824	6970±100	6020BC (95.4%) 5660BC	Same as Bln-823; depth from surface 96 cm.
Divostin	Bln-826	7020±100	6080BC (95.4%) 5710BC	charcoal, posthole in bedding trench 4, House 12 (intended to date Divostin II (Late Neolithic) house's posthole) (*McPherron et al. 1988* table 14.1)
Divostin	Bln-827	6910±100	5990BC (8.0%) 5940BC 5930BC (87.4%) 5630BC	charcoal, posthole in SW corner of House 13 (Divostin I) (*McPherron et al. 1988* table 14.1)
Divostin	Bln-896	6945±100	6010BC (95.4%) 5660BC	charcoal, Feature 120 (Pit 22) – Divostin I contents; directly beneath the floor of Divostin II House 17 (*McPherron et al. 1988* table 14.1)
Divostin	BM-573	6935±100	6000BC (95.4%) 5630BC	Same sample as Bln-896.
Divostin	Bln-862	6995±100	6060BC (1.0%) 6040BC 6030BC (93.2%) 5700BC 5690BC (1.3%) 5660BC	burned earth and charcoal, from uniformly black contents of posthole c. 50 cm NE of House 17 and c. 1m S of stake B5/2 (*McPherron et al. 1988* table 14.1)
Divostin	Bln-899	7200±100	6250BC (95.4%) 5840BC	Same sample as Bln-862.

Table 1 (cont'd)

SITE	LAB NO	DATE BP	CALIBRATED RANGE 2 SIGMA	MATERIAL, CONTEXT, ASSOCIATIONS
Divostin	Bln-866	7060±100	6160BC (1.4%) 6140BC 6090BC (94.0%) 5720BC	charcoal, lying in the soil immediately beneath the fired floor of Divostin II House 17 in B5/2β (*McPherron et al. 1988* table 14.1)
Divostin	Bln-931	7050±100	6160BC (1.0%) 6140BC 6080BC (94.4%) 5720BC	Same sample as Bln-866.
Grivac	Bln-869	7250±100	6380BC (5.0%) 6280BC 6270BC (90.4%) 5890BC	charcoal, lower portion of unnumbered Starčevo pit in subsoil and north profile of Sonda B, depth c. 2 m; unexcavated part of the pit left after excavation in 1969 (*McPherron et al. 1988* table 14.1; RC 29-1, 140)
Banja	Bln-873	7048±100	6080BC (95.4%) 5720BC	charcoal, remains of pit left in east profile of south sonda (IIb); depth c. 1 m (*McPherron et al. 1988* table 14.1)
Gornja Tuzla 2	GrN-2059	6640±75	5720BC (95.4%) 5470BC	charcoal, pit dwelling in habitation layer, depth 5 m. Starčevo III (RC 5, 183)
Obre I	UCLA-1605I	7240±60	6230BC (95.4%) 5990BC	Starčevo III Impresso (*Gimbutas 1974* 16)
Obre I	UCLA-1605G	6710±60	5730BC (95.4%) 5510BC	Starčevo III Impresso (*Gimbutas 1974* 16)
Obre I	UCLA-1605F	6430±60	5490BC (95.4%) 5300BC	Starčevo III Impresso (*Gimbutas 1974* 16)
Obre I	Bln-636	6795±150	6000BC (95.4%) 5450BC	Starčevo III Impresso (*Gimbutas 1974* 16)
Magareći Mlin	Bln-15971	6910±45	5890BC (95.4%) 5710BC	bone, Körös pit that cuts House 1 (*Tasić 1993* 101, table 2)
Magareći Mlin	Bln-15972	7015±90	6030BC (95.4%) 5720BC	bone, edge of a Körös pit that cuts House 1 (*Tasić 1993* 101, table 2)
Magareći Mlin	Bln-15973	7130±60	6160BC (3.4%) 6140BC 6090BC (92.0%) 5840BC	bone, besides the hearth of House 1 – context associated with pottery with white dotted decoration (*Tasić 1993* 101, table 2)
Gyálarét	Bln-75	7090±100	6170BC (2.9%) 6130BC 6110BC (92.5%) 5730BC	sherd, 'early Körös' pottery (*Horváth – Hertelendi 1994;* RC 6, 315)
Maroslele-Pana	Deb-2733	7497±56	6440BC (95.4%) 6230BC	bone, pit 4, with 'Protovinča' pottery *(Horváth – Hertelendi 1994);* highly doubtful date
Röszke-Lúdvár	Deb-2730	6972±59	5990BC (11.8%) 5940BC 5930BC (83.6%) 5720BC	bone, 'Körös pottery *(Horváth – Hertelendi 1994)*
Endrőd 39	BM-1668R	6970±110	6030BC (95.4%) 5660BC	charcoal, ?, 'mid-late Körös pottery' (*Horváth – Hertelendi 1994;* RC 25, 49)
Endrőd 39	BM-1870R	6950±120	6030BC (95.4%) 5620BC	charcoal, ?, 'mid-late Körös pottery' *(Horváth – Hertelendi 1994;* RC 25, 49)

Table 1 (cont'd)

SITE	LAB NO	DATE BP	CALIBRATED RANGE 2 SIGMA	MATERIAL, CONTEXT, ASSOCIATIONS
Endrőd 39	BM-1863R	6950±140	6200BC (95.4%) 5550BC	charcoal, ?, 'mid-late Körös pottery' *(Horváth – Hertelendi 1994;* RC 25, 49)
Endrőd 39	BM-1971R	6830±120	5990BC (3.1%) 5940BC 5930BC (92.3%) 5520BC	charcoal, ?, 'mid-late Körös pottery' *(Horváth – Hertelendi 1994;* RC 25, 49)
Méhtelek	Bln-1331	6835±60	5840BC (3.3%) 5820BC 5810BC (92.1%) 5620BC	?, Körös pit 1–3a *(Horváth – Hertelendi 1994)*
Méhtelek	Bln-1332	6655±60	5670BC (95.4%) 5470BC	?, Körös pit 4–5a *(Horváth – Hertelendi 1994)*
Méhtelek	GrN-6897	6625±50	5630BC (95.4%) 5470BC	?, Körös pit 4–5a *(Horváth – Hertelendi 1994)*
Deszk-Olajkút	Bln-581	6605±100	5720BC (95.4%) 5360BC	charcoal (Quercus sp.), pit 8, 100–160 cm, with 'Protovinča'pottery (*Horváth – Hertelendi 1994;* RC 12-2, 408)
Deszk-Olajkút	Bln-584	6540±100	5640BC (95.4%) 5310BC	charcoal (Quercus sp.), pit 8, 100–110 cm, with 'Protovinča' pottery (*Horváth – Hertelendi 1994;* RC 12-2, 408)
Deszk-Olajkút	Bln-583	6410±120	5650BC (95.4%) 5050BC	charcoal (Quercus sp.), pit 15, 200–210 cm, with 'Protovinča' pottery (*Horváth – Hertelendi 1994;* RC 12-2, 408)
Deszk-Olajkút	Bln-582a	6390±100	5650BC (95.4%) 5050BC	charcoal (Quercus sp.), pit 15, 100–130 cm, with 'Protovinča' pottery (*Horváth – Hertelendi 1994;* RC 12-2, 48)
Deszk-Olajkút	Bln-582	6260±100	5500BC (95.4%) 4900BC	Late Körös/early Vinča (RC 12-2, 48)
Battonya	BM-1862R	6580±60	5630BC (90.9%) 5460BC 5450BC (2.8%) 5420BC 5400BC (1.8%) 5380BC	charcoal, pit no. III - 'late Körös' (*Horváth – Hertelendi 1994;* RC 25, 48)
Hódmezővá-sárhely-Kotacpart	Bln-115	6450±100	5620BC (3.9%) 5580BC 5570BC (91.5%) 5210BC	sherd, 'Körös' (*Horváth – Hertelendi 1994;* RC 6, 315–316)
Szarvas 23	BM-1866R	6780±110	5890BC (95.4%) 5480BC	charcoal, with 'Early Körös' i.e. linear white-painted pottery (*Horváth – Hertelendi 1994;* RC 25, 49)
Szarvas 23	BM-1865R	6400±170	5700BC (95.4%) 4850BC	charcoal, with 'Early Körös' i.e. linear white-painted pottery, vast standard deviation (*Horváth – Hertelendi 1994;* RC 25, 49);
Katalszeg	Bln-86	6370±100	5520BC (95.4%) 5060BC	sherd, 'Körös' (*Horváth – Hertelendi 1994;* RC 6, 315–316)
Endrőd 35	Bm-1864R	6090±60	5210BC (8.8%) 5160BC 5150BC (86.6%) 4800BC	charcoal, pit no. III 'Körös' (RC 25, 49) 1990/ *(Horváth 1991)*
Ószentiván	Bln-479	6460±80	5610BC (2.1%) 5580BC 5560BC (93.3%) 5290BC	Early Vinča, RC 12-2, 411

Table 1 (cont'd)

PHASE	MAIN STYLES	CORRELATIONS	C14 AND STRATIGRAPHIC SUPPORT
Early Neolithic	Monochrome red; impressed only in W Balkans	D. Garašanin I/Milojčić I	Unpublished C14 for Maroslele pit 8, claimed 6400–6200 BC; also C14 for Poljanica; Donja Branjevina III–II stratigraphy; also Grivac, Drenovac and Kopriveci stratigraphies
Protostarčevo I	Earliest dotted white-on-red paint	D. Garašanin IIa/Milojčić II	Anza Ia C14 c. 6100 BC; Gura Baciului I–II stratigraphy; also Anza, Cîrcea and Gradinile
Protostarčevo II	Developed white-on-red paint, floral and curvilinear	D. Garašanin IIa/Milojčić II	Anza Ib C14 c. 6000 BC; stratigraphies of Anza, Cîrcea, Grivac, Drenovac and Krainitsi
Protostarčevo III	Highpoint of white-on-red paint, spirals, barbotine	D. Garašanin IIa/Milojčić II	one C14 date from Gâlâbnik I c. 5900 BC; stratigraphies of Anza, Cîrcea, Grivac, Drenovac, Krainitsi and Slatina
Starčevo I	White- and red-on-red paint, spirals and linear, barbotine	D. Garašanin IIa/Milojčić II	C14 for Anza II c. 5800 BC; stratigraphies of Anza, Cîrcea, Grivac, Drenovac, Gâlâbnik, Rug Bair and Lepenski Vir III
Starčevo II	'Classic' dark-on-red, spirals, barbotine	D. Garašanin IIb/Milojčić III	C14 for Divostin (BM-573), Anza II, Starčevo (GrN-9036) and Gornja Tuzla VI (GrN-2059); also stratigraphies of Anza, Cîrcea, Gâlâbnik, Drenovac, Ostrovul, Lepenski Vir III, and Zelenikovo
Starčevo III	'Classic' dark-on-red, linear and 'garlands', barbotine	D. Garašanin IIb/Milojčić III	C14 for Anza III c. 5500/5400 BC; C14 for Obre I; also stratigraphies for Anza, Cîrcea and Gâlâbnik

Table 4. Outline of Schubert's phasing (1999) for the development of Starčevo pottery, with major correlations with previous schemes and key stratigraphies and dated sites

Site	Pot Summary	Supposed Phase	Actual Date
Blagotin	barbot, dk and white, linear and some spiral	middle-late ?	earlyish
Starčevo	overall Pit 5A: spirals, dk on red, white on dk, barbot, Vinca traits Pit 6: dk on red, white on dk, inc spirals Pit 7: white on dk, some dk on red Pit 10: dk on red, linear	early-late late late middle ? late	 mid-late mid-late mid-late earlyish
Vršac	monochrome, dk on red, surface pinching	late	late
Perlez	finger and nail pinch, open pedestalled dishes	?	earlyish
Sajan	pinching, plastic, barbot, dk and white spirals, open pedestalled dishes	late	middle ?
Kudoš	barbot, biconical forms, dk on red, linear and spiral	late ?	mid-late
Golokut	dk on red, spiral and curvilin, barbot and monochrome	late	late
Topole	dk on red, red slip, barbot monochrome, finger imp	late ?	earlyish
Donja Branjavina	III monochrome and finger pinch II white paint and dotting III-II no paint, barbot, pinch Ia/Ib barb, dk on red, monochr	early earlyish middle late	earlyish ?? ?? earlyish-mid
Vinogradi	slip, barbot, ? monochrome	early ?	earlyish
Ribnjak	barbot, dk on red, finger and nail	late	mid-late
Ludoš	red monochr, white on dk, dk, nail, barbot	middle	middle
Biserna	monochr, white on red, pinch, finger	middle	middle

Table 5. A summary of possible Starčevo pot phasing, based on the sites dated in this paper (barbot = barbotine; dk = dark; imp = impressions; monochr = monochrome)

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László Bartosiewicz

ANTAEUS 28 (2005) 357–364

ALL QUIET ON THE WESTERN FRONT? REVIEWER'S COMMENTS ON THE THESIS "SZENTGYÖRGYVÖLGY-PITYERDOMB: THE 6TH MILLENNIUM BC BOUNDARY IN WESTERN TRANSDANUBIA AND ITS ROLE IN THE CENTRAL EUROPEAN NEOLITHIC TRANSITION" SUBMITTED BY ESZTER BÁNFFY

The title of the classic novel by Erich Maria Remarque has become popular slang for stasis. It is well worth posing here as a question, given the historically known emphasis on Neolithic research on the Great Hungarian Plain of eastern Hungary *(fig 1)*.[1] The Candidate has devoted two decades of her professional career to studying prehistoric cultures in the western half of Transdanubia, the latter defined as the part of the Carpathian Basin located west of the River Danube. She has concentrated her research predominantly on the Neolithic, providing additional insights into both the very beginnings of this period (as is summarised in this thesis) and the subsequent Copper Age. On the basis of this *oeuvre,* the treatise under discussion here clearly meets the high standards set by the Hungarian Academy of Sciences for granting the distinguished title "Doctor of Science" to scholars beyond the university qualification system in Hungary. The thesis is based on the first-hand analysis and interpretation of a major body of original data, acquired through the Candidate's own work.

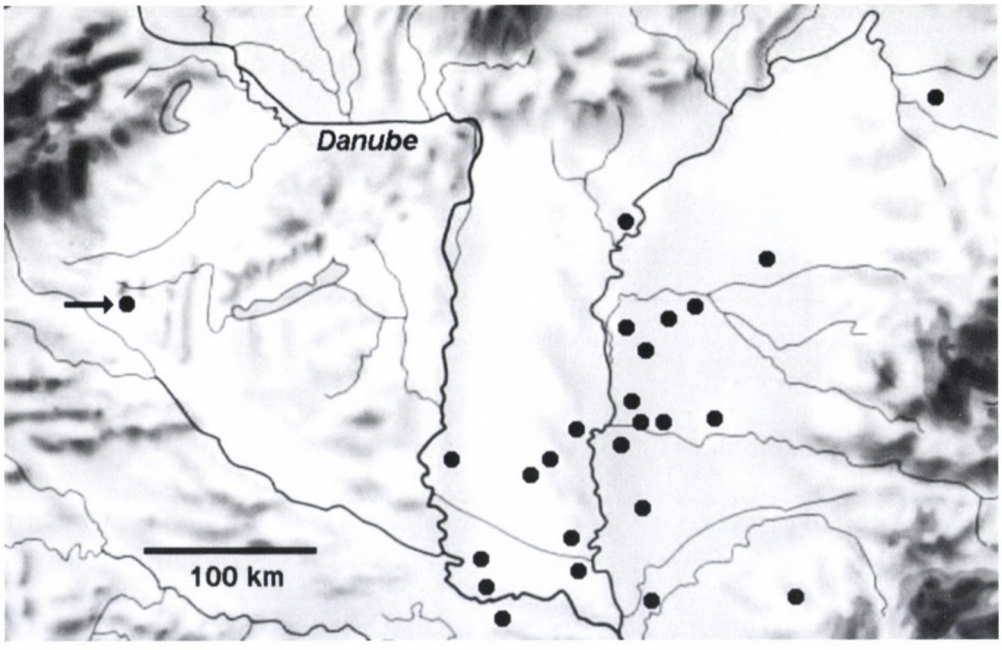

fig. 1. The geographical location of Szentgyörgyvölgy-Pityerdomb (arrow) in Transdanubia relative to radiocarbon dated early Neolithic sites in the Great Hungarian Plain (Redrawn and edited after *Whittle et al. 2002* fig. 1; Base map after *L. Zentai 1996*)

[1] *A. Whittle – L. Bartosiewicz – D. Borić – P. Pettitt – M. Richards:* In the beginning: new radiocarbon dates for the Early Neolithic in northern Serbia and south-east Hungary in: *Prehistoric studies 2002* fig. 1.

It is worth noting that the text submitted for consideration has already been published by the Archaeological Institute of the Hungarian Academy of Sciences.[2] That forum, in itself, guarantees a high scholarly standard. As a reviewer, however, I have been invited to discuss the original manuscript, considering its merits and possible shortcomings as they are relevant to the eventual granting of the title "Doctor of Science".

Structure and Scope

The thesis has been submitted in two volumes and, without its nine pages long Foreword, it is 600 manuscript pages long. It is followed by a Bibliography of 105 pages with 928 entries. Considering that only 20 of these refer to the works by the Candidate herself, this impressive body of references is indicative of the comprehensive nature of the meticulously written work. The intensive contribution of the author during the last twenty years to accumulating information in the literature relative to other works cited in the Bibliography is shown by the steep line obtained after logarithmic transformation as shown in *fig. 2.* It is also worth pointing out that almost one-sixth (15.6%) of the papers and books referred to in the thesis were published already in the first five years of the 21st century. Given the publication year of the manuscript in a book format, this shows the unusually up-to-date nature of the scholarship it represents.

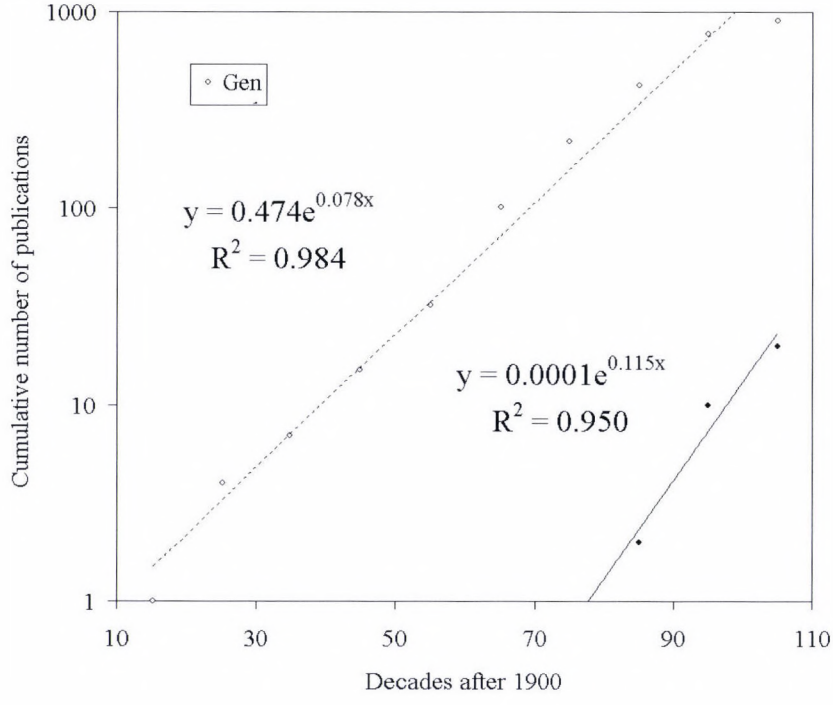

fig. 2. Diachronic trends in the distribution of 928 items in the Bibliography showing the Candidate's contribution

Six of the ten chapters (1 to 3 and 6 to 8, respectively) directly address questions that could not be tackled in modern prehistoric archaeology without applying methods developed by natural scientists. Understandably, as a scientist myself, I felt most compelled to concentrate on these issues, although they should not be seen separately from their archaeological context. In fact, their merits can be appreciated only in close association with those of archaeological research.

[2] *E. Bánffy:* The 6th Millennium BC boundary in western Transdanubia and its role in the Central European Neolithic transition (The Szentgyörgyvölgy-Pityerdomb settlement). VAH 15. Budapest 2004, 452.

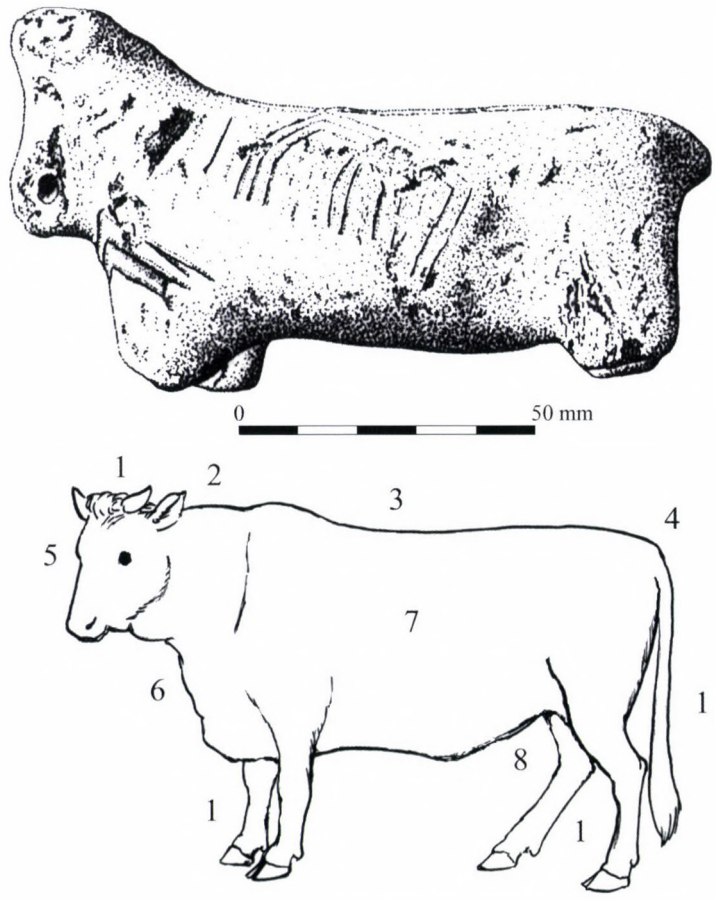

fig. 3. Comparison between the animal figurine from Szentgyörgyvölgy-Pityerdomb compared to the sketch of a pre-modern cattle

Identifying criteria (ranked by reliability of evidence): 1. horns (?) legs and tail are of unknown length on the figurine (broken off and/or limited by the raw material), 2. lack of mane (non-Equid), 3. lack of hairy crest (non-Suid), 4. downward bent tail (not a goat), 5. robust (non-Canid) head with concave profile line (not a ram), 6. stout neck and shoulder region (Bovine), 7. general outline of trunk (Bovine), 8. primary (penis) or secondary (udder) sexual organs are not shown (Figurine drawing reproduced with the kind permission of the Publisher of VAH).

Problem presentation

In this thesis, the discussion of early, sedentary food production, a complex criterion for the appearance of Neolithic culture in the region of western Transdanubia, has been presented using the case study of a single site, Szentgyörgyvölgy-Pityerdomb. The research hypothesis is that a contact zone formed here as immigrants representing a Neolithic way of life, arrived from the Balkans in the south-east and interacted with local Mesolithic populations. This would have produced a special Early Neolithic culture that figured as a significant stepping stone in the emergence of the Neolithic in Central Europe.

Two questions, of utmost relevance to international scholarship, have been addressed in this thesis:

1. Indubitably, as is apparent in the material culture, Neolithic achievements reached the heartland of Central Europe from a south-eastern direction. The question is whether these diverse manifestations of a new material culture represent diffusion of peoples, or only reflect the dissemination of ideas (innovation, style).
2. To what extent did the natural and social environment of the studied area (i. e. Mesolithic western Transdanubia) favour neolithisation in this region?

The first approach by the Candidate to these tantalising questions is rooted in the method of ceramic typochronology, a method that has provided the broadest basis for the traditional

school of prehistoric archaeology in Hungary. Owing to her own extensive field surveys throughout the whole region and the fortunate discovery of two houses at Szentgyörgyvölgy-Pityerdomb, she had the opportunity to include the analysis of settlement structure and architectural remains in her study. These findings have been evaluated against the background of the aforementioned rich and up-to-date review of the relevant literature. Last but not least, referring to the works of her numerous collaborators, the Candidate has provided an exemplary synthesis of results in the natural sciences (geology, petrography, palaeohydrography and archaeobotany) and archaeology.

Contents

Chapter 1 is based on the detailed environmental archaeological analysis of three adjacent microregions in western Transdanubia. It reveals that, within the framework of historical-climatological changes, local conditions have always been influenced by the proximity of the Alps as well as moderated by the Mediterranean Sea from the south-west. The interaction between these two effects has created a climate characterised by high precipitation and mild temperatures that favoured the formation of a closed canopy of extensive deciduous forests. The question is, whether these climatic effects, observed throughout the millennia, resulted only from the balance between the Alpine and Mediterranean effects or were specifically influenced by major, global climatic changes as well?

It is worth mentioning here, that the typically acidic, clayey soils resulting from this humid climate have been detrimental to bone preservation at the majority of archaeological sites known in the region. With the exception of the nearby Hahót Basin characterised by a somewhat drier climate, only a near negligible number of archaeozoological assemblages have survived this form of massive taphonomic loss.[3]

In addition to the information yielded by the excavations at Szentgyörgyvölgy-Pityerdomb, data from large-scale field surveys carried out by the Candidate in this area have also offered artefactual evidence of the extensive presence of the *Linearbandkeramik* culture (LBK), especially in the valleys of this gently rolling, hilly landscape. This thesis is the first scholarly work to have ever shown the influence of this culture in the region located west of Lake Balaton, beyond the marshland known as the Little Balaton region. New data presented in the thesis have significantly expanded the known frontier of the LBK westwards in the area of Hungary, as delineated using the evidence of lithic and ceramic finds.

By studying the north to south orientation as well as the structure of the two houses excavated at the site of Szentgyörgyvölgy-Pityerdomb (Chapter 2), the Candidate addressed two fundamental questions: to what extent was this orientation defined by practicalities of the natural environment versus the tradition of the people who had built the houses? On the basis of her intimate knowledge of the LBK, she prefers the second option. It remains a question, however, how much this tradition was actually in contradiction with the natural features of the gently rolling landscape of western Transdanubia? Should there have been such a contradiction, the arguments for the power of tradition would be even more convincing. In my opinion, it is traditions that are being preserved for a relatively long time, even in the face of environmental hardship (e. g. Early Neolithic sheep keeping in the marshy habitats of the Great Hungarian Plain[4]), that indicate the diffusion of a culture by the movement of people, rather than only objects or ideas. Houses, as fixed features of material culture, whose construction requires a major investment of both expertise and time, may indeed be considered diagnostic from this point of view. Therefore, the observation by the Candidate that the type of Neolithic house characteristic of South-Eastern Europe is rare in Transdanubia is of outstanding significance.

The in-depth analysis of ceramic finds from the site (Chapter 3) makes it clear even to the non-specialist that LBK stylistic influence here was relatively weak, while many motifs are

[3] *L. Bartosiewicz:* Archaeozoological studies from the Hahót Basin, SW Hungary, in: *Hahót Basin 1995* 307–367.

[4] *L. Bartosiewicz:* Plain talk: animals, environment and culture in the Neolithic of the Carpathian Basin and adjacent areas, in: D. Bailey – A. Whittle (eds): (Un)settling the Neolithic. Oxford 2005, 51–63.

of south-eastern, Starčevo character. In sharp contrast to houses, pots represent a more mobile category of artefacts. Therefore it is not only the spread of the individual vessels themselves, but also the dissemination of technology and style that should be reckoned with in the case of these finds. Pottery style and technology, therefore, would characterize the identity of, or possible mixing between groups of people rather differently than houses. It is for this reason that it is necessary to verify relative chronologies based on pottery style by absolute dating.[5] Radiocarbon samples from Szentgyörgyvölgy-Pityerdomb dated this settlement as largely contemporaneous with north-western sites within the distribution area of the Starčevo culture.

It may be hypothesised that the diffusion of objects related to cultic life (Chapter 6) was even faster and easier than that of domestic pottery. Among these, the small, symbolic objects were portable, potentially increasing their visibility over wider regions. Therefore, imitation of them by local craftspeople would also have been more likely. It seems difficult to establish, however, the degree to which the spread of such objects indicates the parallel dissemination and establishment of the ideologies they may have embodied? Referring to the conservative nature of belief systems, the Candidate suggests that the broad choice of artefacts recognised as cult objects may be yet another indicator of south-eastern influences. Should the set of LBK symbolic motifs be considered Mesolithic in origin, the sharp difference between the occurrences of idols made in different styles is in this region looks especially convincing.

Owing to my professional interest as an archaeozoologist, I would discuss the animal figurine shown in fig. 146 of the dissertation in somewhat greater detail. Already during the course of initial analysis we discussed this object with the Candidate and agreed that species identification would be possible only on the basis of excluding animals that the statuette is unlikely to represent. Species identification could thus be narrowed down to some sort of cattle (*Bos* sp.).[6] As far as the animal's sex is concerned, in the absence of genitalia, I would be cautious in identifying this figurine as a bull *(fig. 3)*. It is indeed noteworthy that its nose is pierced through in a transversal direction. Nevertheless, I would hesitate to identify this hole as the place of a nose ring, used in controlling ferocious bulls in modern day animal husbandry. If the hypothesis is accepted that the animal is a bull with a pierced nose, it could be more easily seen as domestic cattle than aurochs. However, the purely formal nature of this analogy may be elucidated by the fact that statuettes of Bastet, the cat goddess in ancient Egypt were often adorned with nose rings having no function whatsoever.[7] Actually, stylistic features, such as the linear patterning of this Bovine figurine linking South-Eastern and Central Europe may be of more interest from the viewpoint of the thesis than the vague anatomical features observed by the zoologist.

Absolute dating (Chapter 7) is of prominent importance in the systematic reasoning put forward in this analysis. The idea of a wave of neolithisation as described by Albert Ammerman and Luigi Luca Cavalli-Sforza[8] over thirty years ago is an unusually clever, comprehensive model. Studying both the spatial and temporal distribution of neolithisation, it estimates the mean speed of this process. It should not be forgotten, however, that in reality one is faced with a tendency that is a composite resulting from individual sites, whose numerous local varieties contribute to a general trend. For example, the mosaic-like character of the natural environment (largely defined by the proximity of the water table), influenced the advancement and establishment of neolithisation differently in various regions. The Candidate arrived at the same conclusion, during the interpretation of radiocarbon dates from Szentgyörgyvölgy-Pityerdomb within a regional context, as she encountered apparent contradictions in the chronology of various types of artefacts.

The variability in speed by which neolithisation spread as reflected by the differential temporal distribution of various classes of artefacts is, therefore, a question of great

[5] *E. Bánffy:* Dating methods, in: Zs. Visy et al. (eds): Hungarian Archeology at the Turn of the Millennium. Budapest 2003, 44–48.

[6] *E. Bánffy:* Eine Tierfigur aus der Entstehungsphase der Bandkeramik, in: *Prehistoric studies 2002* 205–219.

[7] *J. Clutton-Brock:* The British Museum Book of Cats, Ancient and Modern. London 1988.

[8] *A. Ammerman – L. L. Cavalli-Sforza:* A population model for the diffusion of early farming in Europe, in: C. Renfrew (ed.): The Explanation of Culture Change. London 1973, 343–358.

importance. Were the "cruising speeds" of house plans, domestic pottery, cult objects etc. comparable? Should major differences exist between artefact classes, one must also reckon with a kind of artefact-dependent chronological mosaic pattern that would be manifested in the occurrence of Neolithic lifestyles/populations. In addition, the Candidate has noted a gradual deceleration in the spread of neolithisation from the Balkans, across Thessaly, into the Carpathian Basin. This again points to the non-linear character of the simple relationship described in the aforementioned seminal model by Ammerman and Cavalli-Sforza. It seems relevant here that, millennia later, a similar deceleration and gradual decline may be observed in the mobile lifeways of various eastern pastoral groups (from Sarmatians to Cumanians) in the Carpathian Basin as they were forced to adapt their animal husbandry practices to the ever-changing natural and social environments in this region.[9] Fortunately, however, in these later cases, the historical and political background was at least partially documented in written sources.[10]

Although owing to the aforementioned destructive soil conditions no animal bones survived at the site of Szentgyörgyvölgy-Pityerdomb, the study of some well-preserved macrobotanical remains (Chapter 8) show evidence of numerous domestic plants, including three kinds of wheat (einkorn, spelt and common wheat). It is noteworthy from a general, bioarchaeological point of view, that this relatively great taxonomic richness of remains was manifested in a relatively small sample. It seems that the inhabitants of the settlement knew these plants, but were less successful in cultivating within climatic conditions that was cooler and more humid than in the Near East and subsequently in the Balkans where these animals came from. Presuming that forest fires during the Mesolithic in the region reflect a conscious form of clearance, one cannot rule out the hypothesis that the local population somehow managed hazel-nut, a wild resource, long before Szentgyörgyvölgy-Pityerdomb became inhabited. As is the case with other finds from the settlement, the evidence from domestic plants raises questions concerning the mode and speed of diffusion under local conditions. There is no doubt that these plants originate from the Near East and arrived to the Carpathian Basin through the Balkans. Were they, however, adopted as a new element into the local culture, or was it settlers of south-eastern origins themselves who experimented with their cultivation (apparently with modest success) in a new homeland?

There are two archaeozoological aspects of this very same problem. Similarly to domestic plants, sheep and goat also had to be imported from the Near East in the absence of wild ancestors in the Carpathian Basin. Indigeneous aurochs, however, would have been available for local domestication here.[11] Mitochondrial DNA from extant European cattle showed variation, similar to some of the sequences found in the Near East, implying an imported, not local origin.[12] Recent investigations on Early Neolithic Bovine bones from Hungary resulted in the aurochs-like haplotype, contributing to the "star-burst" pattern indicative of a post-glacial expansion for the wild aurochs, but not seen as part of the Near Eastern domestication process or recognised in modern cattle.[13] Domestic cattle seem to have been imported with sheep and goat as part of the "Neolithic package".

Tillage is a shared aspect of ancient plant cultivation and animal exploitation. I share the prudence by which the Candidate treated the theory concerning Early Neolithic oxen, that is,

[9] *L. Bartosiewicz:* A millennium of migrations: Protohistoric mobile pastoralism in Hungary. Bulletin of the Florida Museum of Natural History 44 (2003) 101–130.

[10] *L. Bartosiewicz:* Hungary, in: P. Bogucki – P. J. Crabtree (eds): Ancient Europe, 8000 B. C. to A. D. 1000: An Encyclopedia of the Barbarian World. New York 2004, 572–579.

[11] *S. Bökönyi:* Környezeti és kulturális hatások késő neolitikus Kárpát-medencei és balkáni lelőhelyek csontanyagán [Environmental and Cultural Impacts in the Bone Material of Sites from the Carpathian Basin and from the Balkans]. Értekezések. Emlékezések. Budapest 1988, 62.

[12] *C. S. Troy – D. E. MacHugh – J. F. Bailey – D. A. Magee – R. T. Loftus – E. P. Cunningham – A. T. Chamberlain – B. C. Sykes – D. G. Bradley:* Genetic evidence for Near Eastern origins of European cattle. Nature 410 (2001) 1085–1091.

[13] *C. J. Edwards –D. G. Bradley:* Chapter 15: Ancient DNA analysis of aurochsen, in: A. Whittle (ed.): The Early Neolithic on the Great Hungarian Plain: Investigations of the Körös Culture Site of Ecsegfalva 23, Co. Békés. VAH. In press.

castrated bulls, in relation to the animal figurine.[14] While draught cattle undoubtedly became important during prehistory, the osteological identification of the "first" castrates and/or working animals has shown to be a task far more complex than previously thought.[15]

The state of the water table has always had a fundamental impact on the mosaic patterning of natural environments, thereby influencing the spatial distribution of settlements in all periods. Therefore, observations concerning a Neolithic rise in the level of Lake Balaton in comparison to the Mesolithic may have a direct bearing on the hypotheses concerning interaction between local communities and possible immigrants during the Neolithic. Did people of the so-called Keszthely phase occupy higher ground trying to avoid flooding, or did they consciously search for fertile loess soils? The question again is, to what extent the archaeologist can distinguish between the consequences of a marked natural phenomenon and the emergence of a food producing economy in this extremely complex environment?

Given the nature of archaeological evidence available, the Candidate took a very cautious position concerning the continuity of the Mesolithic local human population, which is the only sober, acceptable scholarly stance at this point of research. The characteristically broad spectrum of chipped stone tools (Chapter 9) already first showed a reduction in variability during the LBK Period. Yet again, one is faced with an apparently different time schedule for transformation in another class of artefact represented, in this case, by local, Mesolithic types.

As stated in the title, the subject of this thesis is the role of western Transdanubia in the Central European Neolithic transition. According to investigations summarised by the Candidate (Chapter 10), the topography and hydrography of this region were favourable for the formation of a contact zone in which an important stage of Central European neolithisation could develope. The variable, mosaic-like environment may have prolonged the interaction between human populations who met here. The multitude of resultant influences seems to be manifested in the unusual complexity of material culture and the differing time schedules by which various classes of artefacts seem to have occurred in the region.

Discussion

Whether admittedly or not, trying to understand the process of neolithisation one is always faced with the nagging question: who inhabited the site under study and what was the degree of mixing between "immigrants" moving north-west and "local" Mesolithic populations? The Candidate sees correctly that, in the region under discussion here, one must reckon with the contemporaneous effects of migration and sedentism as an explanation for the great variability seen in the inventory of artefacts. As the she points out, the different forms of mixing, noted by Alasdair Whittle in general terms,[16] seem to fit perfectly with the mosaic patterns, both natural and cultural she observed during the Early Neolithic of Western Transdanubia. However, the demographic background of the Neolithic process is unclear even in areas to the south-east, where research has had a much longer tradition. In spite of their initial difficulties, one must hope that studies of human DNA will sooner or later produce direct answers as to the relation between migrating and local populations during this apparently hectic period. It is possible, however, that the already dazzling variety of archaeological artefacts would be further confused by the genetic complexity of the people(s) who used them, not to speak of the known complexity of the relationship between genetics and ethnic identity. The same material culture may represent different human populations, especially in a contact zone at the time of transition, as defined by the Candidate in her thesis. Unfortunately, similarly to animal remains, no human bones were preserved given the detrimental soil conditions of Szentgyörgyvölgy-Pityerdomb to test this important aspect of neolithisation.

[14] *J. Lüning:* Steinzeitliche Bauern in Deutschland. Die Landwirtschaft im Neolithikum. UPA 58. Bonn 2000, 285.

[15] *L. Bartosiewicz – L. W. Van Neer – A. Lentacker:* Draught cattle: their osteological identification and history. Koninklijk Museum voor Midden-Afrika, Annalen, Zoologische Wetenschappen Vol. 281. Tervuren 1997, 147.

[16] *A. Whittle:* Europe in the Neolithic. The Creation of New Worlds. Cambridge 1996.

Of the seventeen criteria for Neolithic transition listed by Marek Zvelebil,[17] the Candidate singled out four, as most relevant to her area of study. These are worth briefly summing up as follows:

- *migration, i. e. the directional movement of a population,* as indicated by the occurrence of Starčevo type artefacts,
- *infiltration, i. e. the gradual penetration of small groups* as seems apparent in the variable settlement structures observed in the region and in the fact that previously uninhabited areas were first occupied by newcomers,
- *frontier mobility, i. e. short range movements within contact zones* flanking the so-called Central European–Balkan agroecological barrier[18] that ran across the Carpathian Basin,
- *contact, i.e. trade and exchange* that provided a framework for communication/ innovation as testified by consistent patterning and the occurrence of innovation in the material culture.

The simultaneous presence of stylistic characteristics of the early LBK and Starčevo cultures at the settlement of Szentgyörgyvölgy-Pityerdomb is of decisive importance in reconstructing the aforementioned four phenomena. The Candidate analysed this paradigmatic observation within a broad environmental context, thereby arriving at substantial conclusions concerning the possible roles of local Mesolithic and south-eastern immigrant populations in the process of neolithisation in the region. Although no evidence of human remains was available from the site to allow direct distinction between such groups, she offers a comprehensive multidisciplinary analysis of the data available. This scholarly attitude reaches far beyond the traditional approach, commonly biased toward a single group of artefacts, ceramics, all too often attributed a near allegoric role in an effort to draw a simplistic culture historical picture of this important period. In sharp contrast to these theories, a particular strength of the Candidate is doubt, an essential of academic thinking. Her conclusions are careful and circumspect, based on a critical evaluation of both the broader topic and her own data. Therefore, the overwhelming majority of these conclusions is not only consistent within the logical structure of the dissertation itself, but also withstands general scholarly scrutiny.

Concluding statement

As was mentioned in the introduction to this paper, the thesis under discussion here is based on the Candidate's first-hand analysis of original data, acquired through two decades of her own archaeological research. Throughout this work she has demonstrated considerable skill in dealing with this complex body of information. Her scholarly approach in combination with the substantial new information presented in the work submitted qualifies her for the title "Doctor of Science" as granted by the Hungarian Academy of Sciences.

[17] *M. Zvelebil:* The social context of the agricultural transition in Europe, in: C. Renfrew – K. Boyle (eds): Archaeogenetics: DNA and the Population of Europe. McDonald Institute Monographs. Cambridge 2000, 57–79.

[18] *R. Kertész – P. Sümegi:* Theories, critiques and a model: why did the expansion of the Körös-Starčevo culture stop in the centre of the Carpathian Basin? in: R. Kertész – J. Makkay (eds): From the Mesolithic to the Neolithic. Proceedings of the International Archaeological Conference held in Szolnok 1996. Budapest 2001, 225–246.

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REVIEWER'S COMMENTS ON THE THESIS "SZENTGYÖRGYVÖLGY-PITYERDOMB: THE 6TH MILLENNIUM BC BOUNDARY IN WESTERN TRANSDANUBIA AND ITS ROLE IN THE CENTRAL EUROPEAN NEOLITHIC TRANSITION" SUBMITTED BY ESZTER BÁNFFY

Eszter Bánffy is an internationally acclaimed scholar of Neolithic and Copper Age research in Hungary. At the beginning of her scholarly career, her research focused on Neolithic figural art and the associated cult practices. In the 1980s, she participated in the rescue excavations in the Little Balaton region, which largely determined her subsequent scholarly agenda. She participated in the micro-region research projects conducted in County Zala, and as a matter of fact, she directed and co-ordinated the Kerka Valley Micro-Region Research Project. These archaeological investigations covered each period of the Neolithic and the Copper Age in this region and it is therefore hardly surprising that the focus of her research shifted to these periods. This thesis is essentially based on the findings of the field surveys in the Kerka Valley and the excavation of the Pityerdomb settlement near Szentgyörgyvölgy. Owing to a stroke of archaeological good luck, Eszter Bánffy succeeded in uncovering the first Hungarian site, whose finds shed light on the earliest, formative phase of the *Linearbandkeramik* culture (LBK), which later spread across Central Europe. The Pityerdomb settlement site is unique not only for its finds, but also for its architectural remains: two houses with upright walls were uncovered, the earliest of their kind in Transdanubia, and thus the relevance of the site points well beyond south-western Transdanubia. In the light of these remarkable finds, Eszter Bánffy could set herself an ambitious research agenda: to study the transition from a hunter-gatherer to a food-producing economy in a wider European context through the analysis of the site and its broader environment. The transition to the Neolithic is one of the most fascinating and most oft-debated issues in prehistoric research, and thus the choice of her thesis' subject was by all means justified.

In addition to the minute analysis of the settlement features and their finds, the findings of the natural sciences were also drawn into the detailed evaluation of the settlement. These include radiocarbon measurements, the reconstruction of the one-time environment and climate based on the analysis of sediment, macrobotanical and pollen samples, as well as recent advances made in mtDNA studies for reconstructing prehistoric events. The impressive bibliography of over one thousand books and studies reflects a mastery of the main models and theories in this field of prehistoric research, which could then be tested against the archaeological record from Transdanubia, leading to the birth of this monumental study with its new, provocative conclusions, some of which will be discussed here in greater detail.

The first part of the thesis is devoted to settlement history and related subjects: the reconstruction of the one-time environment, a description of the settlement's location and the evaluation of the two house remains, the two earliest architectural structures from Transdanubia. The Pityerdomb settlement was quite small, consisting of these two houses and the various features around them. It is to be regretted that the settlement could not be uncovered in its entirety since the exact length of the above-ground houses with wattle-and-daub walls could not be determined, although their width could be reconstructed from the long pits flanking the long walls. These pits are one of the typical features of LBK longhouses in Central Europe.

From her comprehensive overview of the possible Mesolithic and Early Neolithic antecedents of the buildings uncovered at Pityerdomb and a survey of the architectural remains

from the Ancient Near East to Central Europe, Eszter Bánffy concludes that Mesolithic traditions in architecture can only be assumed in the northern areas of the Starčevo distribution and adjacent regions, from which the architecture blending two traditions noted at Pityerdomb probably emerged. The LBK spreading westward and north-westward from Transdanubia represented the culture's fully-fledged form, and thus its architecture had by then departed from its Balkanic traditions. Eszter Bánffy estimates that the LBK diffusion to the Rhine region lasted about five hundred years. Appearing in the chapter discussing the Pityerdomb houses and their architecture is her chief argument, according to which south-western Transdanubia was a frontier zone, where the interaction between groups from two different culture provinces, i.e. the indigenous population and the new immigrants, led to the adoption of Neolithic innovations by the Mesolithic groups and, later, to the expansion of the newly-evolved culture to the west and north-west. She notes that above-ground buildings have not been reported from the north-western areas of the Starčevo distribution (Slavonia and Srem) and that only so-called pit dwellings (and post-holes) are known from this region, which in her view served as outdoor activity/workshop areas. She rejects the interpretation of these pit-dwellings as residential buildings. While an explanation along these lines for their primary and secondary function seems quite plausible, it is my conviction that the "myth" of pit-dwellings can no longer be accepted in the light of recent excavations. The use of above-ground buildings can be assumed in the northern Starčevo distribution too, even if the remains of such buildings have not been found yet. In his recent study, Jan Lichardus continues to maintain the existence of pit-dwellings, while at the same time claiming that the origins of the LBK (and its houses) are to be sought in the south. Eszter Bánffy believes that the Central European LBK houses evolved in the area between the River Dráva, the River Rába and Lake Balaton from the house construction traditions of the local Mesolithic groups and the Neolithic houses of the western Balkans. Two characteristic features of the Pityerdomb houses, their groundplan and north to south orientation, are examined in the early LBK distribution in Central Europe, following the survey of Mesolithic and Early Neolithic architectural traditions in the Balkans. Jan Lichardus' study indicates that in spite of the welcome increase of archaeological and other material, many controversies remain. For example, there is still no convincing answer to the question of why the origins of LBK houses should be sought in the Dráva–Rába–Balaton region, if there are no Mesolithic buildings foreshadowing LBK houses and if structures of this type are also lacking from the architectural heritage of the immigrant Starčevo population. Only the presence of burnt daub remains suggests the one-time presence of above-ground buildings. Quoting Hans Quitta, she agrees that the evolution of LBK houses, which can be regarded as a local innovation, can be traced to contact with the Balkanic Early Neolithic, as well as to climatic and environmental factors. While Hans Quitta had originally argued that the cradle of the LBK house lay in Moravia, Eszter Bánffy claims that the archaeological record indicates that it had evolved in the western areas of Transdanubia.

Eszter Bánffy convincingly shows that the environment of south-western Transdanubia was suitable for sustaining a Mesolithic population. Even though Mesolithic finds are not known from this region, palaeoenvironmental studies have provided indirect evidence for their presence. The presence of hunter-gatherer groups is demonstrated by extrapolating direct evidence from slightly farther-lying areas and a survey of the indirect evidence. It is suggested that the Mesolithic population living in south-western Transdanubia and to its north was reluctant to change its lifeways offering a secure livelihood, and that the gradual shift to food-production was the result of a long interaction between the local population and the immigrants.

Eszter Bánffy offers a detailed catalogue and an exhaustive analysis of the pottery recovered during the excavation since ceramic finds are the perhaps most important category of evidence for the cultural attribution of a site. Unfortunately, the overwhelming majority of the roughly sixteen thousand pottery fragments were indistinct, small sherds and the acidic soil covering the site often destroyed vessel surfaces. Even so, the ceramic inventory from Pityerdomb provided a suitable basis for an overview of the Early Neolithic in Transdanubia and for drawing wide-reaching conclusions, justifying the detailed discussion. The perhaps

single most characteristic feature of the pottery is the joint presence of late Starčevo traits and of elements characterising the formative LBK phase, which would later dominate the LBK. I wholly agree with this evaluation. When I studied the pottery finds, I too found that were it not for the presence of LBK motifs (such as spiral patterns), the assemblage would represent typical Starčevo wares. Eszter Bánffy's main argument is that the uniqueness of the site lies in that it cannot be wholly attributed to either the Starčevo or the LBK culture. Even though manufacturing techniques, vessel forms and decorative patterns of these two cultures share many similarities, the pottery from Pityerdomb is dominated by Starčevo elements. At the same time, incised linear patterns occur but sporadically on late Starčevo pottery. The few pottery fragments decorated with incised motifs from Pityerdomb suggest that these were inspired by the black painted patterns of the late Starčevo Spiraloid B phase, a possibility I too consider most likely. Still, it seems to me that some ceramic traits are overrated, especially as regards the application of the lustrous red slip. Red slipped vessels were very popular in the Early Neolithic and even though this decoration survived into the late Starčevo period, this decoration is rather rare in both the Starčevo and the Körös culture. It would appear that carefully polished pottery fired to a bright red colour was a substitute for red slipped wares.

The most closely related site to Pityerdomb is Brunn II near Vienna. From her analysis of the finds, Eszter Bánffy concludes that sites resembling the Pityerdomb settlement (representing the formative LBK phase) and late Starčevo settlements were co-eval in western Transdanubia, a phenomenon reflecting not only the close contacts between the two populations, but also an ethnic mixing between them. The LBK assemblages regarded as being the earliest from the Carpathian Basin (Bicske, Budapest-Aranyhegyi út, Bíňa/Bény) differ from the Pityerdomb finds both as regards their manufacturing technique and their ornamentation. I agree with Eszter Bánffy that these differences can perhaps be attributed to their different chronological position, an issue which certainly merits further study. I also agree with Eva Lenneis' suggestion, based on her comparison of the finds from Neckenmarkt and Brunn with the Pityerdomb assemblage, that the label "earliest *(älteste)* LBK" should be reserved for Brunn, Pityerdomb and similar sites, while Neckenmarkt should be termed "earlier *(ältere)* LBK". This chronological distinction seems reasonable, even though the transition in northern and eastern Transdanubia is still unclear – what is certain is that the Bicske–Bíňa/Bény type differs markedly from Pityerdomb, as well as from Neckenmarkt and other comparable sites. The typical Bicske–Bíňa/Bény features are absent from Neckenmarkt and it remains a task for future research to determine whether this difference is merely regional or one of chronology.

The references to the studies by Károly Sági and Zoltán Törőcsik as an informed study are most regrettable. Although the authors have indeed uncovered genuine LBK finds at Tapolca resembling the assemblage from Pityerdomb, the Tapolca group construed by them is based on the archaeological heritage of at least eight different cultures from various periods of prehistory: these include a few finds of the Starčevo complex and, for the greater part, artefacts of the Late Copper Age Baden culture alongside LBK wares, reflecting a less than rudimentary knowledge of archaeology.

The chapter devoted to the cult finds covers all important aspects of research in this field, even though the single truly remarkable find from Pityerdomb is the animal figurine, the others being rather nondescript pieces. In her discussion of the cult finds and the religious beliefs of the local and Central European Mesolithic and Neolithic communities, Eszter Bánffy traces the origins of some motifs to the Upper Palaeolithic and Epipalaeolithic, citing also the relevant evidence from the monumental pre-Neolithic architecture of south-eastern Anatolia and the early farming communities of the southern Balkans. Her conclusion is that the cult finds of the transitional (Pityerdomb) phase reflect cultural impacts of the late Starčevo culture and their blend with local, powerful Mesolithic symbolism. Ritual activities, which permeated the life of prehistoric communities, and cult paraphernalia too indicate the mixing of the two populations. She also notes that figural depictions, whose roots lie in the Balkans, changed substantially: their number declined and they virtually disappeared by the later LBK period, a phenomenon which can perhaps be explained by the persistence of Mesolithic traditions, which proved

stronger than the cultural impacts from the south. She has convincingly argued in earlier studies too, that the small clay figurines had several functions and that their interpretation can only be based on their find context. The use of figurines was manifold, ranging from community rituals to domestic ones, and thus the simplistic interpretation of all female figurines as symbols of fertility should by all means be discarded.

There are many more figural relics of cult and religious beliefs in eastern Hungary than in Transdanubia, and articles of Balkanic origin or betraying cultural impacts from the south have been found in greater number too. It has been clear ever since the first comprehensive overview of the Alföld LBK that an entirely different cultural development can be noted in the Great Hungarian Plain from the Early Neolithic onwards than in Transdanubia, reflected, for example, by figural art and anthropomorphic vessels. Eszter Bánffy has argued that the cultural impacts from the Balkans were transmitted by different population groups northward of the northern Morava region, explaining the differences between the artefactual heritage of the Starčevo and Körös culture, and the emergence of the Alföld LBK through the latter. The counterparts of the unique flat figurines from Méhtelek are not restricted to the Great Hungarian Plain as claimed by Eszter Bánffy: comparable pieces can be quoted from Transylvania and the Early Neolithic of Bulgaria. This point should by all means be borne in mind when addressing the origins of these figurines.

The remarkable animal figurine most certainly depicts a bovid, although its gender could not be determined with certainty. It apparently portrays a domesticated creature, perhaps an ox, for its nose is pierced, indicating the possible use of oxen as draught animals. However, this issue needs further study and additional evidence.

Eszter Bánffy devotes a lengthy section to the interaction between rituals and social life. Her main argument is that certain avenues of communication and contacts established during the Mesolithic influenced the emergence of accepted symbols and the social standing of individuals or certain groups, as well as the appearance of various prestige commodities and of competition for the control over raw material resources and rituals, leading to an incipient social ranking. Her line of reasoning, drawing from an impressive number of sources, is wholly acceptable and a good basis for further studies in this field. The section describing the difficulties faced by communities making the transition from the Mesolithic to the Neolithic is most insightful. She notes that hunter-gatherer economies were quite stable and it cannot be claimed that food production, calling for the human manipulation of the environment, was an economically rewarding activity. The life of the first farmers was in many respects more difficult and more toilsome than that of hunter-gatherers. The amount of time devoted to the production of food rose substantially, the quality of food deteriorated and communities hit by a bad harvest were apt to be decimated by famine. The shift to food production nonetheless took place since it enabled more advanced and more versatile subsistence strategies in the long run. Environmental changes may also have played a role in this shift.

The absolute dates for the Pityerdomb settlement provide the chronological framework. A total of ten samples were submitted for radiocarbon dating in Vienna. The measurements indicated that the settlement was occupied between 5480–5360 cal BC, i.e. its life spanned about 120 years. Radiocarbon dates from other Early Neolithic sites suggested that late Starčevo sites (Becsehely and Vörs) were co-eval with late Körös (Protovinča) settlements, a contemporaneity supported also by traditional archaeological typology and cross-dating. The radiocarbon dates fall into the period marked by the formative phase of the Transdanubian LBK and are vital for determining the shift from a hunter-gatherer subsistence to food production for they indicate that the transition spanned a fairly long period of time, reflected by the contemporaneity and the overlap between the late Starčevo and the formative LBK culture in Transdanubia and the late Körös (Protovinča) and Alföld LBK culture in eastern Hungary. This is one of the many important points made by Eszter Bánffy in her study, based on her careful analysis of many categories of evidence.

I do not share her concerns about the early dates for the Brunn II site near Vienna, which is culturally the closest to the Pityerdomb settlement. Calibrating the Brunn dates with the

1 sigma value (68.2 % confidence) as in the case of the Pityerdomb samples, the calibrated dates for the Brunn sites fall between 5480 and 5210 cal BC. Brunn II can thus be assigned to the early period, with the end of the occupation falling into the classical LBK period. In this case, the beginning of Brunn II roughly coincides with the onset of occupation at Pityerdomb. Similarly, some of the early dates from Central Europe can be challenged, if they are not part of a larger series. It must also be borne in mind that different laboratories often yield diverging dates for the same sample and that only one or two dates are available for most sites.

Every chapter of Eszter Bánffy's work draws from a wide body of information in her discussion of various aspects of the Mesolithic–Neolithic transition, such as environmental changes, the shifts in settlement patterns, the transformation of subsistence strategies, and various other related issues, including the appearance of plant cultivation, the acquisition, the exchange and the transportation of lithic raw materials, the spread of pottery making, as well as of regional and long-distance trade and other contacts during the Mesolithic, the Early Neolithic and even the Middle Neolithic. These issues have not been addressed in such detail and in such a broad context. Bánffy's work represents a major advance in Hungarian Neolithic research.

I have already mentioned that I wholly agree with her reconstruction of a frontier zone in the late Starčevo period, represented by sites such as the one at Pityerdomb and its broader area, reflecting the mixing of the immigrant late Starčevo population and indigenous groups and the emergence and spread of a new life-style and new culture. A complex and nuanced picture of this frontier zone is presented, together with a wide-ranging survey of the evidence.

However, there are a few questions in this respect, which certainly merit further discussion. One of these is the assumption of a Mesolithic horticulture involving the manipulation of the environment to encourage the growth of hazel; another is the suggestion that plant cultivation was practiced in the area between and around the houses and in the narrow strip along the stream, and that the range of this plant cultivation was broadened with the species received from the Starčevo groups. Should this be taken to imply local plant cultivation before the arrival of the first farmers? Eszter Bánffy argues for a cultivation of this type in the Early Neolithic. The main issue is the amount of cereal which could be produced using this cultivation technique. Wheat is not particularly suited to horticulture; it can be better grown with extensive cultivation. Would the small yields of an assumed horticulture cover the needs of the settlement's occupants? And, assuming as Eszter Bánffy does, that cereals functioned as an exchange commodity, how much remained for the occupants? The pollen profiles from this region indicate small cereal percentages, supporting her claim. I agree that cereal cultivation became more intensive during the Middle Neolithic Keszthely phase, when the LBK communities moved to the higher-lying, fertile loessy ridges. A demographic growth may also have played a role in the intensification of cereal cultivation, a process reflected also in the growing frequencies of cereals in the pollen record. Eszter Bánffy's proposal is that the Neolithic Revolution occurred, when plant cultivation became dominant. This fascinating issue calls for further studies to determine whether cereal cultivation had indeed played a subordinate role in the economy of the earliest farmers and whether large-scale cultivation had only begun in the Middle Neolithic. It is regrettable that the evidence for animal husbandry and hunting was not preserved owing to the acidic soil, which destroyed animal bones.

I agree with Eszter Bánffy that major differences can be noted between the late Starčevo assemblages from eastern and western Transdanubia. The reasons for this are not entirely clear. In Eszter Bánffy's view, it can be traced to the persistence of indigenous Mesolithic traditions. One of the typical pottery decorations is Schlickwurf (or smeared barbotine), which was quite popular in eastern Transdanubia – its use can be traced to Budapest and Bíňa/Bény in Slovakia – but is very rare in transitional assemblages, such as the ones from Pityerdomb and Tapolca. The cultural attribution of the Early Neolithic find assemblages from the area between Lake Balaton and the Kapos Valley is rather controversial. It seems acceptable to me that Starčevo groups settled along Lake Balaton's southern shore and that the surprising discovery of a Starčevo site at Tihany on Lake Balaton's northern shore can be associated with the colonisation of new areas by the Starčevo population. At the same time, pottery

ornamented with Schlickwurf barbotine (and its channelled variant) occurs in the Bicske–Bíňa/Bény–Budapest-Aranyhegyi út type assemblages assigned to the early LBK, whose beginning is uncertain, but which most certainly post-date Pityerdomb and the late Starčevo period.

There is indirect evidence for the presence of an indigenous Mesolithic population in western Transdanubia, indicated for example by the pollen record and the location of settlements by Lake Balaton in areas which were unsuited to farming, as well as the lithic finds from Pityerdomb reflecting the survival of Mesolithic traditions. It is commendable that in her discussion of the emergence of the contact zone, Eszter Bánffy takes note of the imaginary east to west line dividing Transdanubia, which coincides with the agro-ecologic barrier extending to Lake Balaton. The interaction between various population groups in this contact zone undoubtedly stimulated the transition. The occurrence of radiolarite from Szentgál far to west and the north-west in Mesolithic contexts reflects the existence of an extensive network of contacts well before the Neolithic and suggests that the colonisation of Central Europe can be conceptualised as the advance of LBK groups along well-established routes leading chiefly along major rivers. In other words, a not particularly wide contact zone is assumed as the setting of the transition, from where a part of the population born from the mixing of indigenous Mesolithic groups and immigrants from the Balkans first migrated to neighbouring areas (south-western Slovakia, Lower Austria and perhaps Moravia), and then to more distant regions, diffusing the new culture up to the Rhine region, exploiting and expanding the regional contacts of the Mesolithic. In her interpretation of the evidence, Eszter Bánffy favours an integrationist position between the migrationist theory advocating the exclusive role of southern (Balkanic) immigrants in the rise of the Central European LBK and the indigenist model arguing that neolithisation meant the adoption of the "Neolithic package" without immigration. She assumes that the northernmost boundary of migration from the Balkans lay in southern Transdanubia. The mixed Early Neolithic population emerging in this region advanced towards south-western Slovakia, Lower Austria and perhaps Moravia at the time, when the blend between the two populations was still underway, reaching the boundaries of the early LBK distribution quite rapidly. Bone chemical and mtDNA studies suggest that the assumed proportion of immigrants was around 80 per cent in Thessaly, 50 per cent in Transdanubia and 20 per cent in the Rhine region, even if local variations can be noted. There are many uncertainties in this field of prehistoric research, hence the rich array of different models and theories. It might be useful to examine whether the transition and the mixing between the two populations did not occur over a larger area. The Brunn settlement resembles Pityerdomb to such an extent that Peter Stadler assigned the pottery to the Starčevo culture. Comparably early assemblages could theoretically occur in Slovakia too, although there is no record of a site yielding finds of this type there. Eszter Bánffy is correct in rejecting Juraj Pavúk's claim that the LBK evolved in Slovakia, as well as his chronology of the early LBK and the idea that the LBK, the first Neolithic culture of Central Europe, was not the cultural successor of the Starčevo–Körös culture, but an entirely autonomous cultural complex. I too have dismissed Pavúk's model, based on his typological analysis of the pottery, and Eszter Bánffy has similarly demonstrated its absurdity with convincing examples.

The last chapter is devoted to a comparison of the Mesolithic–Neolithic transition in Transdanubia with the transition in other regions (surveyed in detailed from the southern Balkans to the Carpathian Basin), with the aim of identifying regional similarities and differences. I shall here briefly touch upon her conclusions concerning the eastern Carpathian Basin. Eszter Bánffy attributes the divergences between the western and the eastern LBK to the fact that the route taken by the immigrants from the south branched in two directions in the northern Morava region, with the groups continuing their advance along an eastern route eventually forming the basis of the Körös culture. She notes the many differences between the neolithisation of the Upper Tisza region and Transdanubia. In her view, the Körös culture and its eastern branch too came into contact with the indigenous Mesolithic population and the formative Alföld LBK sites probably represent the settlements of a mixed population,

as in Transdanubia. It would appear that the main stimulus for the interaction between the indigenous population and the immigrant groups was the trade in various lithics (chiefly obsidian) and that the transformation was similarly a consequence of this interaction. It must here be noted that the terminological changes have led to certain misunderstandings. Before the excavations at Méhtelek, the Szatmár I label designated a more archaic pottery type (mostly assemblages collected during field surveys), while Szatmár II denoted later wares, most of which were brought to light during smaller excavations. The excavation of the Méhtelek site proved that the assemblages assigned to the Szatmár I group represented a local variant of the Körös culture and differed substantially from the Szatmár II group representing the formative Alföld LBK phase.

Eszter Bánffy notes that even though environmental and other conditions in the Great Hungarian Plain were, generally speaking, more favourable for the settlement of the Körös culture and the Mesolithic–Neolithic transition, the Körös (and the subsequent Alföld LBK) distribution covered a much smaller area than that of contemporary cultures in Transdanubia. She is probably correct in assuming that the earlier bridgeheads and regional contacts exploited by the LBK groups advancing westward from Transdanubia facilitated the spread and adoption of Neolithic innovations. The transformation and the subsequent expansion could hardly have been so rapid, spreading over an extensive area, without the exploitation of the pre-Neolithic regional contacts, as well as possible ethnic kinships, the similarities between social structures and, no less important, the shared elements of religious beliefs. The differences between the transition in the Great Hungarian Plain and Transdanubia are surprising since the trade in lithic raw materials – Szentgál radiolarite in the west and obsidian in the east – played an important role in both regions. The successive phases of the transition were as complex in the Upper Tisza region as in western Transdanubia, because the actors included the Körös culture, which played a role in the emergence of the Szatmár group, and the Szatmár group itself, which stimulated the transformation farther to the north.

Eszter Bánffy notes that the Mesolithic–Neolithic transition in Central Europe can be traced to interaction between various population groups, rather than to demographic or climatic factors, and that local traditions were stronger, this being the reason that the southern, Balkanic heritage gradually faded and eventually disappeared in regions lying farther from the Carpathian Basin. The role of diffusion and of immigrant groups in the spread of the Neolithic remains a subject of heated controversy. While most scholars agree that the southerly areas of the Carpathian Basin were colonised by immigrant groups from the Balkans, there is no similar consensus as regards the neolithisation of the Central European regions. Eszter Bánffy suggests that the neolithisation of Central Europe can be explained by the migration of the mixed population from the secondary neolithisation centre in the Carpathian Basin. The southern elements of the original Neolithic package had gradually faded and the unique features of the LBK, the earliest Neolithic culture of Central Europe, can in fact be attributed to the contribution of the colourful mosaic of indigenous groups. It would appear that adaptation and adoption played a more important role than migration. Eszter Bánffy's suggestions concerning the role of bridgeheads is worthy of further study. This is especially true for the Niedermörlen site in Germany, notable for the "insular" presence of finds bearing a remarkable similarity to find assemblages from the Carpathian Basin.

In the closing section of her thesis, Eszter Bánffy suggests an element, which may already have played a role during the transitional period, but which has not been explored yet: the role of salt as an exchange commodity in the network of regional contacts. In her view, Transdanubian communities acquired salt not from the rich Transylvanian salt deposits, but from distant westerly regions, and that Szentgál radiolarite was one of the commodities traded for salt.

In the Afterword to the thesis, Eszter Bánffy notes that while the natural sciences can hardly be neglected in archaeological studies, these should be used in combination with traditional archaeological data in order to paint as full a picture of the past as possible. We may say that she has pursued this approach consistently throughout her work.

The above are no more than brief excerpts, which hardly do justice to the substance and depth of Eszter Bánffy's thesis. The perhaps most important result is that based on her excavation, she has drawn together many strands of evidence – including the findings of palaeoenvironmental studies and other fields of the natural sciences – to reconstruct the setting, the time and the process of the transition from a hunter-gatherer life-style to one based on food production in western Transdanubia. Her work is a major contribution to one specific field of prehistoric research. She has placed the Transdanubian transition in the wider perspective of the Mesolithic–Neolithic transition in Europe through her survey of other regions extending from the Balkans and the Marmara to the Rhine and the Saale region. This work will be one of the major monographs for all scholars researching this period.

Seeing that Eszter Bánffy's ambitious scholarly agenda, analytical method and her research results admirably fulfil the criteria the Academy's criteria for doctoral theses, I recommend that the Doctoral Committee accept her thesis with the highest distinction.

Tibor Kemenczei

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REVIEWER'S COMMENTS ON THE THESIS "SZENTGYÖRGYVÖLGY-PITYERDOMB": THE 6TH MILLENNIUM BC BOUNDARY IN WESTERN TRANSDANUBIA AND ITS ROLE IN THE CENTRAL EUROPEAN NEOLITHIC TRANSITION" SUBMITTED BY ESZTER BÁNFFY

Eszter Bánffy's thesis examines the role of western Transdanubia in the dissemination of farming in Central Europe based on the finds and findings of several seasons of excavation work at Szentgyörgyvölgy-Pityerdomb, as well as on the evidence from other contemporary sites in the region. Lengthy chapters are devoted to the settlement patterns, subsistence strategies, cultural and other contacts, chronology, vessels forms and decorative repertoire of pottery, and the religious beliefs of the Early Neolithic in Transdanubia.

A total of 15,751 pottery sherds and many lithic finds were brought to light during the investigation of the Early Neolithic settlement at Szentgyörgyvölgy-Pityerdomb. However, no more than 448 pottery fragments were characteristic enough to be shown in one of the eighty-two illustrations accompanying the thesis, on photos and/or as a reconstructed drawing of the vessel. Two different methods were employed in the evaluation of the settlement features and their finds: firstly, the traditional approach, based on the classification of the finds according to their formal traits, and secondly, an interdisciplinary one drawing from results of palaeoenvironmental and other studies.

The description of the settlement features and their finds takes up about one-third of the thesis. This section undoubtedly called for meticulous attention to detail and systematic classification, and it can undoubtedly be regarded as a major accomplishment, as well as a precondition to scholarly argumentation.

The reconstruction of the settlement's one-time environment, the climate and the pedology of the site's broader geographic setting provides a dynamic picture of the conditions, which influenced the life and the subsistence of the community settling there. This reconstruction represents a multi-dimensional approach to prehistory, moving beyond the presentation of the culture, the economy and the development of a given population based on the typological evaluation of the finds.

The two longhouses are undoubtedly the most remarkable of the thirty-two settlement features uncovered at Szentgyörgyvölgy-Pityerdomb, and this is certainly reflected in their discussion. The conclusions drawn from the comprehensive overview of Mesolithic and Early Neolithic houses in the Balkans and in Central Europe seem well founded. The Early Neolithic population of western Transdanubia drew from the house building traditions of both the Mesolithic and the Neolithic Starčevo culture when constructing the buildings, which became the hallmark of the Central European *Linearbandkeramik* culture (LBK). This house type was characterised by its northern orientation, a gable roof resting on heavy timbers aligned into rows, a plastered clay floor, the *Längsgrube* flanking the houses and a relatively large size. In addition to determining the architectural origins of longhouses, this systematic overview also provided additional proof that western Transdanubia was one of the cradles of the Central European LBK.

The description and evaluation of the finds is very detailed and circumspect, even though a relatively low number of finds is actually presented in the thesis. The pottery making techniques and the fact that pottery was fired in an oxidising atmosphere suggest that this was an innovation adopted from the south. The parallels to the vessel types and their variants reconstructed from the pottery fragments (cooking pots, storage jars, bowls, cups, pedestalled vessels) and the

Balkanic (red polished surfaces, black-topped wares) and Central European (incised linear patterns) ornamental repertoire revealed that the pottery represents a blend of Starčevo and LBK traits. The comparative analysis of the pottery wares enabled the determination of the date and chronological position of the find assemblage. The Starčevo heritage dominating the ceramic inventory from Pityerdomb can be derived from the culture's late phase (Spiraloid B). The survey of comparable wares from the Great Hungarian Plain (the late, Protovinča phase of the Körös culture, the Szatmár II period of the Alföld LBK) and the Balkans (Vinča, early Dimini) too contributed to fitting the finds into the Early Neolithic sequence.

A smaller portion of the decorative motifs on the pottery from Pityerdomb reflects the ornamental style of the Transdanubian LBK. Eszter Bánffy notes that this style was in its formative phase, and can hardly be regarded as fully-fledged. This again supports the dating of the settlement to the early LBK period.

The joint occurrence of pottery wares representing two distinct traditions suggests that the ceramic assemblage reflects an ethnic mixing between the two populations. This conclusion raises the theoretical problem of whether prehistoric pottery is suitable for determining the origins of the population which made the vessels. Some prehistorians hold that different pottery wares from the same region and the same period represent the heritage of diverse populations, i.e. they regard pottery forms and decorative motifs as a hallmark of a particular population. The proponents of this view hold that the use and spread of a particular pottery ware from one region to another is a reflection or downright proof of population movement – many studies reflecting this view can be quoted from the archaeological literature. Changes in the form and ornamental repertoire of various Copper Age and Bronze Age cultures of the Carpathian Basin have been interpreted as a consequence of population movements even in cases when other elements of the material culture remained unchanged. This model was sometimes ridiculed as one of the central tenets of the Budapest prehistoric school in foreign research. The identification of prehistoric cultures and culture groups based on the distinctive traits of pottery wares alone can be challenged on the grounds that prehistoric potters sometimes changed the form and decoration of their pots in periods when there is no indication of the arrival of new population groups. The emergence of a uniform pottery style over an extensive area may equally well have been stimulated by interaction between various population groups and the intricate system of contacts between them. Challenging the absolute primacy of migrations is another equally radical view, according to which prehistoric finds are unsuitable for determining the origins of a population, irrespective of whether the finds in questions, be they made from clay or metal, come from a settlement, a burial or a ritual context. A curious blend of these widely opposing interpretations is the model of autochthonous development, which rejects population movements, but holds that the ethnic identity of prehistoric populations can be determined and accordingly identifies Slavs, Venets, Dacians, Thracians and their ancestors with certain Bronze Age cultures of the Carpathian Basin. Eszter Bánffy sets the intriguing issue of pottery wares and the identity of their makers in the context of the Early Neolithic – in her discussion, the association of pottery wares with population groups rests on the evidence from settlement and subsistence patterns, religious beliefs, and cultural and other contacts. Her admirably prudent approach to this problem is best illustrated by the fact that the expression "ethnic group" hardly occurs in the text, since ethnic identity can seldom be determined from the material and ritual heritage in this early phase of prehistory. The analysis of skeletal remains from burials will no doubt contribute a wealth of new and reliable data compared to what is currently available.

The spread of a population's entire material and spiritual culture, or certain elements thereof, to another region can rarely be explained by a single model. A lengthy section is devoted to a critical evaluation of the various models explaining the spread of Neolithic innovations from south to north. Four main factors are emphasized, which seem to have been the case in Transdanubia and Central Europe: migration, smaller population movements, interaction in frontier and contact zones, and the creation of an intricate network of contacts. Migration is regarded as one of the major factors leading to the diffusion of the Neolithic life-style and economy. In this model, LBK groups from western Transdanubia and the Balaton

region migrated to the Elbe–Saale region and the Munich Basin, where the indigenous population adopted certain elements of their culture and economy. Eszter Bánffy advocates this model for the spread of the LBK, even though she is aware of the fact that the diffusion of innovations, subsistence strategies, crafts, religious beliefs from one region to another is possible though exchange networks and community interaction too, without the need to invoke the migration of larger or smaller population groups for transmitting these innovations. Several examples can be quoted for cultural diffusion from various prehistoric periods. In the lack of comparable anthropological profiles, a model of the transmission of the LBK through the network of contacts between various populations could equally well be constructed from the archaeological record instead of a demic diffusion from Transdanubia to the north-west.

A separate chapter is devoted to the clay figural depictions (idol head, hand shaped vessel lug, human foot fragment, animal figurine) and altar fragment from Pityerdomb, assigned to the category of cult finds, and the comparable finds from Transdanubia (Gellénháza, Kéthely, Balatonszentgyörgy). The find context of the animal figurine depicting an ox or a bull, and the analogous finds provide a convincing argument for its interpretation as a cult find, which had originally been part of the cult inventory set in the cult corner of one of the houses. Even though the number of comparable finds is low, their informed overview allows a glimpse into the religious beliefs of the Early Neolithic communities populating the Balkans and Central Europe. The survey of similar Neolithic figurines from South-East Europe and Central Europe, and of the various interpretations proposed for their function, reveals that the human and animal imagery known from western Transdanubia was adopted from the cults of the early farmers in the Balkans – yet another cultural element, whose origins can be traced to the south, similarly to food production, and the form and ornamentation of pottery. The survival and, later, dominance of the indigenous population's religious beliefs could also be documented. However, the claim that simpler, coarser portrayals (as compared to southern figurines) can be taken as a reflection of the ethnic origins of their makers, does not seem to be wholly founded.

The radiocarbon dates suggest that the settlement was occupied for about four or five generations in the mid-6th millennium BC. The radiocarbon dates allow a comparison with the radiometric record for other Hungarian and Central European Neolithic sites. The rather long occupation of 120 years suggested for the Pityerdomb settlement is only indicated by the radiocarbon dates since the find assemblage recovered from the site is rather uniform, suggesting that there was no profound change in the subsistence and decoration of pottery wares for several generations, i.e. the occupants of the site had mastered the art of house construction and domestic plant cultivation characterising the culture of Early Neolithic communities in western Transdanubia.

The settlement's broader environment and the plant remains suggest that the farming activity of the settlement's occupants took the form of horticulture. According to the explanation presented in the thesis, the Mesolithic hunter-gatherer groups in Transdanubia adopted plant cultivation from the immigrant Starčevo communities. Although there is direct (lithic types, pollen record, traces of pre-Neolithic forest burning, boat find) and indirect evidence (settlement shifts conforming to the changes in Lake Balaton's shoreline, pottery of southern origin, local copies of cult devices) that the region was occupied during the Mesolithic, nothing is known about the proportion of indigenous groups in the Early Neolithic population. The occupants' regional contacts are best illustrated by the chipped stone implements, whose raw material was procured from the Szentgál mine, lying some two hundred kilometres away. The tool types reflect the survival of Mesolithic traditions. The distribution of Szentgál radiolarite revealed that the regional contacts of Transdanubia's population could be traced as far as Lower Austria, Moravia and southern and central Germany.

A series of excellent maps accompany the chapter devoted to Mesolithic and Early Neolithic settlement patterns, which also suggest that the boundary between the Balkanic and the Central European culture complexes lay in this region. The finds of the Starčevo culture from southern Transdanubia and the LBK assemblages from sites in the Balaton region illustrate the differences between the two complexes. The conclusion that the gradual spread of food production to the north and north-east occurred through this frontier region seems wholly acceptable.

Eszter Bánffy proposes a model of mosaic patterning for the complex process of the transition to the Neolithic and the spread of Neolithic innovations in various regions under different circumstances. A broad canvas is painted of the transition to the Neolithic and the emergence of food producing economies in various regions extending from the Greek mainland to Central Europe, illustrating the diversity of the conditions under which this transition occurred. A similar mosaic-like patterning is suggested for Transdanubia, where Neolithic settlements were founded in the southerly and westerly areas with the participation of immigrant groups from the south, although indigenous Mesolithic hunter-gatherers still lived in other areas, whom the new innovations reached but gradually. It follows from the above that migration and diffusion both played a role in the spread of the Neolithic in this region.

The emergence of the Neolithic in Central Europe is the subject of heated debates in prehistoric research. Eszter Bánffy surveys the alternative models proposing migration and indigenous development. One of the key arguments in support of the former is the existence of a network of contacts between Transdanubia and south-western and central Germany reflected by the distribution of stone implements made from Szentgál radiolarite which, on the testimony of the finds, had evolved by the Mesolithic. However, the existence of exchange networks does not necessarily have a bearing on the origins of the groups, which transported the stone tools or the raw material, or reveal which region they came from.

The northerly and north-westerly migration of the population emerging from the blend of the indigenous Mesolithic groups and the immigrant communities from the Balkans is traced along the Marcal, Rába and Danube rivers. The conclusion that the main routes of communication led through the river valleys during prehistory is essentially correct. However, the possibility of a population growth in Transdanubia as a probable reason for why a part of the mixed population set off to colonise new regions and another part remained in Transdanubia and created a flourishing Neolithic farming economy is rejected as an explanation for the rapid LBK expansion. It is suggested that "pull forces" can be more readily invoked for triggering the migration. In theory, however, the transmission of various elements of the Neolithic package from any of the intermediate regions is at least as plausible as a direct migration from Transdanubia as far as southern and central Germany.

Recent genetic studies on skeletal remains from the Balkans and Central Europe seem to confirm the role of demic diffusion from south to north in the dissemination of Neolithic lifeways. However, the findings of these studies should be treated with caution. An estimate based on settlement finds suggests that the ratio of southern immigrants to indigenous Mesolithic groups probably reached a balance of 50–50 per cent in Transdanubia, but this can hardly be treated as a proven fact.

One fascinating suggestion is that the network of contacts between the Transdanubian population and the regions to the north and north-west was in part created for the acquisition of salt. This suggestion seems quite plausible in view of the available resources of the broader environment and the archaeological record, and while it certainly provides one possible explanation for the existence of contacts between these regions, it does not explain how these contacts were maintained.

Eszter Bánffy's study fulfils the Academy's criteria for doctoral theses. The source material comes from independent research, and both traditional archaeological methods and interdisciplinary analyses were used in its evaluation. The thesis offers a coherent picture of the culture, the subsistence and the beliefs of the Early Neolithic population living in western Transdanubia, based on newly uncovered find assemblages from a little researched area. The assemblages in question are linked to the Starčevo culture of the Balkans and the LBK of Central Europe in view of the geographic location of the sites, their one-time environment, the meticulous analysis of the finds and the critical appraisal of the relevant archaeological literature. An informative picture is drawn of the transition to a food-producing, farming economy in Transdanubia and the wide range of contacts between populations living in different regions. Drawn together, the different strands of evidence shed light on the emergence and early development of a major prehistoric cultural complex in Central Europe. I warmly recommend the conferral of the Academic Doctoral Degree by the Doctoral Committee.

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AN INTERIM REPORT FROM THE WESTERN FRONT: REPLY TO THE REVIEWERS' COMMENTS ON THE THESIS "SZENTGYÖRGYVÖLGY-PITYERDOMB: THE 6TH MILLENNIUM BC BOUNDARY IN WESTERN TRANSDANUBIA AND ITS ROLE IN THE CENTRAL EUROPEAN NEOLITHIC TRANSITION"

I must begin my reply with an expression of gratitude. In addition to the natural gratefulness one feels, I most certainly wish to thank all three reviewers for carefully reading through and reviewing my English language thesis, which undoubtedly called for quite some time and effort on their part.

While one of the obvious aims of this work was the evaluation of the Pityerdomb settlement, another no less important objective was to attempt to determine the role of western Transdanubia, a region lying between South-East and Central Europe, in the transition to the Neolithic, by comparing the settlement to other contemporary sites in the region and by examining the evidence from settlement patterns and the recent findings from palaeoenvironmental and related disciplines.

I first employed the traditional archaeological approach, which was complemented with the evidence from the region's geology and hydrology, the pollen record and the macrobotanical finds, as well as radiocarbon measurements, not as an exercise for its own sake, but in order to complement the archaeological record. I continuously collated and compared these data. I am flattered that all three reviewers agreed with this research agenda and accepted my conclusions.

I strove to analyse and evaluate the archaeological evidence from the settlement. Tibor Kemenczei has noted that the find material was rather small. True enough, the corpus of Transdanubian Early Neolithic finds is indeed small and rather humble compared to other periods and other cultures. The situation is not so bleak compared to the currently known assemblages from a broader region. The number of finds published from the Pityerdomb settlement is by no means insignificant if compared to the sixteen pottery sherds from Nitra (Nyitra), claimed to represent a separate phase by Juraj Pavúk, or the 139 pottery fragments from Gura Baciului (Bácsi Torok) in Transylvania, which merited a monograph of their own, or, to quote an example from Transdanubia, the 165 vessel fragments from Lánycsók, one of the major sites of the Starčevo culture. Let me quote the number of finds from a few other contemporary settlements: 65 sherds were published from Kaposvár, 50 from Vörs, 118 from Gellénháza and 110 vessel fragments from Budapest-Aranyhegyi út. A total of 77 sherds are known from Strögen in Austria, while the finds from Brunn II, the settlement closest to Pityerdomb in a cultural sense, have officially only "appeared" in an exhibition leaflet. It is my belief that the 488 professionally excavated and published finds, and the statistics for the 15 thousand pottery fragments are hardly insignificant, especially since the published finds include about 150 reconstructed vessels (either restored from their fragments or reconstructed in drawing). The weight and the frequencies of pottery fragments for each excavated feature, as well as their distribution in the features inside and outside the houses have also been presented, together with a comparison of the pottery finds from the two houses and their associated features.

As I wrote in the foreword to the thesis, my goal with the detailed publication of the Pityerdomb site and its finds was to offer my colleagues, who would have to do with the description of the finds, a sound basis for comparison with their own assemblages and for an interpretation perhaps differing from mine. The other reason for this detailed description was

that I was reluctant to turn to the findings of other disciplines and the studies by my colleagues before gathering and evaluating the available archaeological evidence. It is my belief that only after the archaeological evaluation was properly finished would it make sense to compare the sites and find assemblages with the findings of the natural sciences.

The first major critique voiced by my reviewers concerned the first major theme of the thesis and I will therefore reply in this order too.

Architecture. In my study I noted that the typical features of South-East European domestic architecture became somewhat blurred in the Danube–Drava–Sava valley and that architectural tradition apparently branched in two separate directions a little south of the Danube–Tisza confluence. The Körös communities living east of the River Tisza followed the South-East European tradition of house construction. In the northern and western Starčevo distribution, however, a number of new architectural traits can be noted: the occurrence of burnt daub fragments suggests the one-time presence of small or medium sized above-ground houses. It would appear that timber played an increasingly important role in house construction. I agree with Nándor Kalicz that there is no evidence whatsoever that the occupants of the earliest settlements had lived in pit-dwellings. At the same time, we must do justice to our Croatian colleagues arguing for the existence of pit-dwellings since pits containing a hearth and provided with some sort of protective roofing can be interpreted as daytime activity or workshop areas. In other words, a kind of living-room function may be attributed to the "pit-dwellings" (or *Kurvenkomplexhütten*), and we can certainly assume the presence of above-ground buildings beside these pits, even if their remains have not yet been brought to light during excavations. We may say that Early Neolithic research in the Carpathian Basin was fortunate in that it was not burdened with a legacy resembling the Greek "pit horizon" and that there was no pressure to reconstruct a "pit period" preceding house construction proper such as the one born from the rivalry between Vladimir Milojčić and Demetrios Theocharis.

The architectural features, which evolved in the north-western Balkans and southern Transdanubia are the following: a strict northern orientation, a heavy roof structure, the *Längsgrube* flanking the walls, and the stamped clay floor without a wooden subframe, which became typical elements of the *Linearbandkeramik* (LBK) houses of Central Europe. It follows from the above that the LBK houses could hardly have evolved in the contact zone between the South-East European and the western house building tradition or especially to its south, and neither could it have evolved in an area, which did not border on the northern fringes of the Starčevo distribution or especially to its north. The Central European house type evolved from the architectural traditions of the indigenous Mesolithic groups and the Neolithic buildings of the western Balkans, somewhere between the Drava and Rába rivers, perhaps in the Balaton region.

An interesting question was raised by László Bartosiewicz, namely to what extent house structure and orientation was determined by the natural environment and to what extent by the architectural traditions of the people, who built them. When exploring the issue of house construction, I found that both played a role: the diminishing use of clay, a material sensitive to water, and the growing importance of timber as a construction material can obviously be explained by environmental and climatic factors. At the same time, the adherence to the strict northern orientation at Pityerdomb and on other early LBK sites, often in the face of practicality, can most likely be regarded as a canonisation of local tradition, which survived after the adoption of the above-ground, wattle-and-daub walled houses of the Starčevo culture. This custom was alien to South-East European architecture. Even though Mesolithic buildings have not yet been found in Transdanubia, we do know of three buildings in Bavaria and to its north, each of which has a north–south row of posts and one even contained a north oriented hearth, from which the site's excavator concluded that the buildings had probably been oriented to the north. The discovery of these buildings led me to assume a Mesolithic tradition in LBK architecture, to answer a question by Nándor Kalicz. I am fully aware that we still know very little about the earliest houses and thus my assumption will no doubt be modified or perhaps even discarded in the light of future research.

Pottery. I am flattered that my reviewers found the method and the results of the pottery evaluation acceptable. Nándor Kalicz voiced his disapproval that I quoted the finds from the field surveys and smaller excavations conducted by Károly Sági and Zoltán Törőcsik. I wholly agree with his criticism and reservations concerning their work. I too have criticised their "Tapolca group" on the grounds that the finds of different prehistoric cultures were lumped together under this label. As I noted in my thesis, "there was a transitional group in western Transdanubia, but the label 'Tapolca group' can be rejected since many of the finds assigned to this group obviously date from a later period and the proportion of vessel fragments mistakenly identified as LBK wares is rather high. Most of these can be assigned to the Late Copper Age Baden culture, but they also included Bronze Age ones from the Tumulus period and the Late Bronze Age Urnfield culture. Owing to these obvious mistakes the designation 'Tapolca group' should be discarded." (pp. 510–511). Thank to my colleagues' kindness, I could personally examine the finds in 2002 and I found that the early LBK finds could be distinguished from the later wares. Seeing that these finds have much in common with the Révfülöp–Szepezd type assemblages identified by Nándor Kalicz, I thought it would be inappropriate to neglect them simply because they had been brought to light and published by colleagues, whose expertise lies in other fields of archaeological research. These sites and the ones listed in the volumes of the Archaeological Topography of Hungary constitute an impressive corpus of sites and find assemblages, which in turn allow a finer distinction to be made between the Starčevo and the earliest LBK finds and also to draw conclusions about settlement patterns.

In his comments on my evaluation of the pottery finds, Tibor Kemenczei raised a point, which has also been voiced by the other two reviewers: "Can prehistoric pottery provide any clues to the origins of the people who made the pots?" True enough, the uncritical association of pottery changes with population changes has come under heavy fire. The New Archaeology of the 1960s rejected explanations along these lines in favour of models emphasizing local innovations and a culture's internal dynamics. There can be no question that Tibor Kemenczei's objection is quite justified. The mere fact that a pot is a humble copy of a Balkanic Early Neolithic vessel does not in itself warrant the assumption of a Mesolithic potter. I approached this problem from another angle: if there are different categories of evidence for the presence of an indigenous population (ten different categories, including settlement patterns, as well as the geologic, hydrologic and palaeobotanical record), the search for the elusive traces of a Mesolithic population in the archaeological record – among the pottery finds and the stone implements – and among the settlements preserving vestiges of their hunter-fisher lifestyle in the one-time marshland lining the lakeshore is surely justified. These coarser wares appear on sites occupied by smaller groups engaged in fishing and foraging. In other words, I did not associate ethnic changes with pottery changes, but sought to complement the conclusions drawn from other categories of evidence by identifying differing pottery making techniques.

Changes in cult life. In his comments on the changes in the finds, which can be associated with rituals, Tibor Kemenczei again objected that in my interpretation of the archaeological record I had linked more coarsely made wares with another ethnic group. Without repeating the above, let me quote László Bartosiewicz's suggestion that the westward diffusion of small, portable symbolic artefacts was probably faster than that of pottery and that population movement need not necessarily be invoked for their spread. In other words, the diffusion of ideas and customs can be conceptualised as a result of cultural impacts and interaction.

When I tried to distinguish the more coarsely made copies among the known cult finds, I was guided by the same consideration as in the case of pottery, while bearing in mind that cult finds are in a sense more meaningful than pottery wares because they also reveal much about the religious beliefs they embody. Can we speak of the adoption or copying of cult devices, or their adaptation to an already existing set of beliefs?

Allow me to make a brief detour. In his brilliant study, Jan Assmann[1] recently demonstrated that the Biblical Moses was the first person in history, who considered all other religions but

[1] *J. Assmann:* Mózes, az egyiptomi (Moses der Ägypter. Entzifferung einer Gedächtnisspur). Budapest 2003.

his own as "pagan", i.e. untrue and condemnable. Earlier religious beliefs, especially those of prehistoric peoples, were probably more tolerant and open to assimilating new concepts, more concerned with the similarities between different beliefs. The female principle of one religion could be correlated with that of another one. In this perspective, the variations in cult life did not mean the victory of a new creed over an older one and the declaration that one set of beliefs was illegitimate, but rather a willingness to bridge existing differences between religions and the correlation of similar elements. This phenomenon can be noted in the Bronze Age of the Mediterranean, reflected by the appearance and the copies of certain finds in distant regions and the spread of identical finds to various regions, but vested with different functions. I had the opportunity to study this issue when I was asked to publish a Bronze Age idol from the Levant.

We are, obviously, quite far from raising such issues in the mid-6th millennium BC. Still, it seems instructive to point out a few phenomena, which merit further research since each tiny piece of information is crucial.

The figural fragments from Kéthely and Balatonszentgyörgy suggest that the cult devices of the Starčevo culture were copied by individuals, who had just begun to familiarise themselves with Neolithic innovations. The use of cereal grains to depict the eyes on the Kéthely fragment is perhaps an indication that the indigenous groups were familiar with and possibly even adopted the worship of the supernatural powers revered by the Balkanic immigrants. It is also possible that together with the adoption of the life-style, the fired clay vessels and cult devices of the farmers arriving from the south, their beliefs were also accepted, a process that was similarly motivated by considerations of prestige, rather than economic gain. A similar phenomenon can be assumed in the case of Szentgál radiolarite, transported to regions lying some one thousand kilometres away, where good quality lithics were available, and in the occurrence of Spondylus jewellery in the continent's inland areas during the later Neolithic.

Another notable feature of the idols from Pityerdomb type assemblages is the gradual disappearance of the idols' buxomness and steatopygia, as well as of the representation of pregnant women, and their replacement with angular, flat idols. Idols virtually disappeared from Central Europe during the LBK period. There is increasing evidence that certain elements of LBK symbolism can be regarded as part of the Mesolithic heritage. Agriculture and pottery, as well as certain – modified – forms of house architecture survived and gradually transformed the original social structures. However, beliefs are by their nature highly conservative – it would appear that although the alien, Balkanic influences were endured for some time, they eventually faded from the collective memory. The beliefs of the indigenous groups finally prevailed in the cult life of the LBK communities following the clash between two different religions and two diverse traditions.

Contact between religious beliefs and changes in religious beliefs are inconceivable without a long period of interaction involving exchange contacts or even intermarriage. In my thesis, I emphasized that in Transdanubia, the arrival or infiltration of newcomers from the Balkans came to a halt for several generations, enabling extended contact with indigenous groups. That the groups migrating along the Danube Valley and further to the north-east came from an ethnically mixed population has also been confirmed by genetic studies. The many variations of diffusion discussed in the last chapter of my thesis could only be conceptualised by assuming the existence of a mixed population. The demonstration and the interpretation of the changes in the cult devices was an important cornerstone of the model presented in my study.

Absolute chronology. I am grateful to Nándor Kalicz for dispelling my misgivings about the Brunn II site near Vienna, which can be regarded as the culturally closest settlement to Pityerdomb in terms of its finds, but whose occupation was claimed to begin some 150 years earlier. The beginning of Pityerdomb can be dated to 5480 cal BC (with a 1 sigma confidence level); the dates from Central Europe (including Brunn) are often much earlier, even though the role of Transdanubia in the emergence of farming communities in that region has not been challenged. This is one field of research, where significant new advances have been made since the closing of my manuscript both in LBK research and in the evaluation of earlier

radiocarbon data. It is now clear that the astonishingly early dates apparently represent a wider date range at another sigma confidence level and that they do not represent the average of a series of measurements, but the dates for a single sample, usually taken from charcoal. We are all familiar with the *"Altholz"* problem, the distortion caused by several hundred years old timbers. It has since become clear that the occupation of the Pityerdomb and Brunn II settlements began at the same time, around 5500 cal BC. (I would here like to thank Krisztián Oross for his kind help.) The archaeological record and the radiocarbon evidence can thus be correlated, and we can finally discard the absurd theories visualising a neolithisation pre-dating and independent of the Neolithic in the Balkans.

The lack of animal bones. Similarly to my reviewers, I too regret that the acidic soil destroyed the animal bones, one of the most valuable sources on the subsistence of the settlement's occupants. The reason for their destruction is not only the soil, but also the shallow depth at which the features lay. At nearby Zalaszentbalázs, for example, cattle and goat bones were found in excellent condition in the deeper lying part of the over one meter deep pits. At Pityerdomb, the zooarchaeological analysis was by necessity restricted to the animal figurine, which, no matter how unique a find, left many questions unanswered. The figurine undoubtedly portrays a bovid. It seems likely that it does not represent a cow. Even though the tip of the horns had broken off, it seems likely that the figurine represents a male animal. That it perhaps portrayed an ox is no more than an *argumentum ex silentio,* based on the absence of primary male morphological features. This interpretation is based on analogous finds and the conclusions of a study by Svetozar Stanković,[2] who noted that most of the realistically modelled Neolithic figurines depicted bulls or oxen and that the depiction of these animals differed little from each other. I readily concur that the sex of the Pityerdomb figurine and its interpretation as an ox portrayal remains strongly hypothetical. (I am especially grateful for László Bartosiewicz's remarks – I shall never again mix up "sex" with "gender"!)

As regards the practical or symbolic significance of the figurine's pierced nose, interpretations are highly speculative. We know from Sándor Bökönyi's comprehensive monograph that aurochs was indigenous to the Balkans and that the earliest domesticated cattle bones were found in Early Neolithic contexts in Thessaly. Jens Lüning has argued that the secondary exploitation of cattle as draught animals (and their castration to increase their draught power) can be assumed from the Early Neolithic. The use of wooden ploughs during the Early Neolithic has been repeatedly posited.[3] The use of yokes (and of ploughs) is inconceivable without the presence of oxen. It has been repeatedly argued that tillage with ploughing was practiced from the early LBK period. If this was indeed the case, the pierced nose is an important indication of the animal's presence and of its possible exploitation as a draught animal.

Obviously, I cannot disregard László Bartosiewicz's objection that the piercing of the nose may have been purely symbolic. An interpretation along these lines raises fascinating issues regarding ritual practices, calling for further research in this field. I am grateful for this remark and I shall most certainly watch out for similar finds!

Neolithisation. The survey of the different categories of evidence served to raise and hopefully answer one specific question: when, where and, most importantly, how the transition to a sedentary, food-producing life-style occurred within the span of a few generations over the greater part of Europe. Any discussion of this complex problem must surely begin with a reconstruction of the ecologic and economic conditions encountered by the Balkanic immigrants in the 6th millennium BC, and an examination of whether there was an indigenous population living in this corner of the world. László Bartosiewicz and Nándor Kalicz both voiced their reservations concerning the evidence indicating pre-Neolithic horticulture.

[2] *S. Stanković:* Bull representations in the Early Neolithic. Starinar N. S. 40–41 (1989–90) 35–42.

[3] *K. Kosse:* Settlement Ecology of the Körös and Linear Pottery Cultures in Hungary. BAR IntSer 64. Oxford 1979; *A. Whittle:* Europe in the Neolithic. The creation of new worlds. Cambridge World Archaeology. Cambridge 1996; *J. Lüning:* Steinzeitliche Bauern in Deutschland. Die Landwirtschaft im Neolithikum. UPA 58. Bonn 2000.

Detlef Gronenborn and his colleagues have convincingly demonstrated that late Mesolithic groups created small clearings to encourage the growth and spread of warmth-loving hazel. Their arguments are corroborated by the available pollen profiles. The rapid expansion of hazel and other fruit-bearing shrubs around Mesolithic habitats, the presence of sickle gloss on stone artefacts (which were not necessarily used for harvesting cereals, but for cutting various edible or otherwise useful grass species) and a variety of macrobotanical finds suggested that a rudimentary form of horticulture can be assumed by the close of the late Mesolithic. Even though horticulture was hardly a dominant element in subsistence, the familiarity of Mesolithic groups with plant management suggests that this population was ready to adopt of new plants and their cultivation, a major element of the "Neolithic package" brought from the Balkans and Transdanubia.

To return to western Transdanubia: it was the following circumstances, which to me suggested the existence of pre-Neolithic horticulture. In view of the broader environment of the Pityerdomb settlement, the wet climate, and the narrow ribbon of sedimentary soil along the stream, it is hardly surprising that the burnt houses did not yield higher amounts of cereal grains, in spite of the relative taxonomic richness of the palaeobotanical sample. The cereals were obviously brought here by the Balkanic immigrants. The remarkably small-scale cereal cultivation could theoretically be interpreted as a consequence of less favourable ecologic conditions, as noted by László Bartosiewicz.

The pollen samples from Lake Balaton and the marshland of the Little Balaton region indicate that around 5600 cal BC, i.e. on the eve of the Neolithic, hazel expanded to such an extent that it accounted for over 50 per cent of the arboreal vegetation. The Tardenoisien stone implements on which sickle gloss could be observed, the rise of Lake Balaton's water level, the probable submersion of the Mesolithic settlements along the shore, the appearance of a chain of settlements in the marshland lining the new shoreline suggest that these settlements were founded and occupied by indigenous Mesolithic groups. The shore of Lake Balaton was as unsuitable for large-scale cereal cultivation as was the area around Pityerdomb. Knowing that the region's pollen record contains evidence for different cultivated plant species (with a similarly low number of remains), it seemed reasonable to assume the same phenomenon for Pityerdomb and the Balaton region, i.e. that the small-scale cultivation can be attributed not only to the unfavourable conditions, but also to an earlier tradition of horticulture. This led to the assumption that Neolithic plant cultivation too had some sort of antecedent in this region.

Naturally, I did not assume that the late Starčevo communities exchanged their cereals for the lithic raw material from Szentgál. As Nándor Kalicz has aptly noted, the small yields would hardly have been sufficient for an exchange of this type. It seems more likely that the "commodity" traded was the know-how of cereal cultivation and animal husbandry, the "Neolithic package" so to say. Admittedly, the model outlined here contains many speculative elements and I shall not continue the chain of possible conclusions since there is need for more research in order to stand on firmer ground.

I have tried to adhere to one principle in my discussion of the above point, as in the arguments presented for the other hypotheses in my thesis. I am pleased that László Bartosiewicz noted that "the overwhelming majority of these conclusions is … consistent within the logical structure of the thesis." As a matter of fact, there is no other choice regarding a period, of which so little is known: no matter how slender the evidence supporting a hypothesis, there can be no discrepancies between the elements of the model.

This strict principle is all the more valid as regards the comparison of the transition in Transdanubia and in the eastern half of the Carpathian Basin. I agree with Nándor Kalicz that the neolithization of these two regions proceeded along roughly identical lines. The Körös settlement was more intensive in the Great Hungarian Plain than that of the Starčevo culture in Transdanubia. The major difference between the two regions, which would explain the divergences in their later development, lies in the network of cultural and other contacts. The communities settling in the Great Hungarian Plain had access to all the resources in

Transylvania and the Banat, which were vital for a flourishing economy. The Körös culture did not expand during the Neolithic. The population of Transdanubia counter-balanced the less favourable ecologic conditions by exploiting the exchange networks existing since the pre-Neolithic and thus their cultural development took a different path and eventually led to a rapid expansion towards the heartland of Europe. I briefly noted that there would have been little difference between the Late Neolithic of Transdanubia and that of Moravia and southern Germany had not strong cultural impacts from the Balkans reached this region during the Sopot and Lengyel period, which made this region the north-western boundary of the South-East European Neolithic *koine*. I suggested the possibility that contact with salt-producing regions in the west played a vital role in the divergences between the later development and cultural contacts of the two LBK realms. As far as I know, this aspect has not been explored yet. Although certain elements of the model described here will undoubtedly be modified in the light of new discoveries (and it is my hope that research in this field will be enriched by many new finds), I believe that the main features of the transition as described in the thesis are essentially correct.

As regards the spread of the Neolithic life-style and the Neolithic innovations, I indeed favour an integrationist position, for I do not believe that a rigid migrationist or indigenist stance would make sense in the case of a region, which was demonstrably the farthest point reached by the immigrants from the Balkans, and from where there is abundant evidence for ethnic mixing and the blending of the most diverse cultural impacts during the 100–120 years long period of interaction. This position emerged as a result of long debates. I consider myself very lucky indeed that I had the opportunity to discuss my ideas with the best European, American and Chinese minds, who presented many different views and approaches, enabling me to better formulate my own views. Finally, I believe that an integrationist position is also useful in the sense that it does not call for the rejection of good concepts on doctrinarian grounds.

Finally, I would like to thank all three reviewers for their insightful comments, and round off my answer with a methodological point. Studies, which draw together the evidence from traditional archaeological research and the findings of the natural sciences, tempt one to judge archaeology from the perspective of the natural sciences. It is sometimes claimed that archaeology cannot be regarded as a scientific discipline, seeing that its analytical methods are incidental and do not satisfy the basic criteria of science because the analyses and any accompanying measurements cannot be repeated. It is my belief that interpretations drawing together many strands of evidence make up for this shortcoming. The thesis is perhaps an illustration that the correspondence between the conclusions drawn from the evaluation of the settlement layout, the pottery, the cult finds and the scientific analyses can in a certain sense be regarded as repeated measurements. In this sense, the study of the Szentgyörgyvölgy-Pityerdomb site and of the Early Neolithic in Transdanubia also provided fresh insights into the epistemological problems of a brief, but important period of prehistory.