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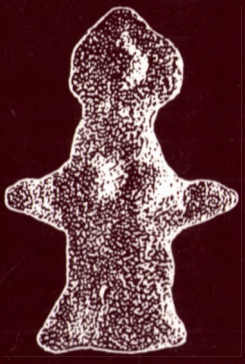

ARCHAEOLOGY AND SETTLEMENT HISTORY IN THE HAHÓT BASIN SW-HUNGARY

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ARCHAEOLOGY AND SETTLEMENT HISTORY IN THE HAHÓT BASIN, SOUTH-WEST HUNGARY

From the Neolithic to the Roman Age

Edited by Béla Miklós Szőke

Budapest 1995

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Co-editors:
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Editor's note

The Archaeological Institute of the Hungarian Academy of Sciences and the Directorate of the Museums of Zala County conducted archaeological and settlement historical researches in the Hahót Basin in South-West Hungary in 1986-1993.

In the present volume we publish our results concerning the periods from the Neolithic through the Roman Age.

Works carried out at Migration Period and medieval sites are published in Antaeus 23 under the title: *Archäologie und Siedlungsgeschichte im Hahóter Becken, Südwest-Ungarn. Von der Völkerwanderungszeit bis zum Mittelalter.*

ABBREVIATIONS

AAC	Acta Archaeologica Carpathica (Kraków)
AFWL	Ausgrabungen und Funde in Westfalen-Lippe (Münster)
ActaArchHung	Acta Archaeologica Academiae Scientiarum Hungaricae (Budapest)
ActaBiol	Acta Biologica Academiae Scientiarum Hungaricae (Budapest)
ActaEthnogr	Acta Ethnographica Academiae Scientiarum Hungaricae (Budapest)
AgrártörtSz.	Agrártörténeti Szemle (Budapest)
AJA	American Journal of Archaeology (New York)
Antaeus	Antaeus. Communicationes ex Instituto Archaeologico Academiae Scientiarum Hungaricae (Budapest)
AntJ	The Antiquaries Journal (London)
Archaeolingua SM	Archaeolingua. Series Minor (Budapest)
ArchÉrt	Archaeologiai Értesítő (Budapest)
ArchFrib	Archéologie Fribourgeouise (Fribourg)
ArchHung	Archaeologia Hungarica (Budapest)
ArchInform	Archäologische Informationen (Bonn)
Archlug	Archaeologia lugoslavica (Beograd)
ArchKorrbl	Archäologisches Korrespondenzblatt (Mainz)
ArchKözl	Archaeologiai Közlemények (Budapest)
AUBSH	Annales Universitatis Budapestiensis de Rolando Eötvös Nominatae. Sectio Historica (Budapest)
AV	Arheološki Vestnik (Ljubljana)
AVANS	Archéologické Výskumy a Nálezy na Slovensku (Nitra)
BalácaiKözl	Balácai Közlemények (Veszprém)
BAM	Beiträge zur Ur- und Frühgeschichtlichen Archäologie der Mittelmeer-Kulturraumes (Bonn)
BollArch	Bollettino di Archeologia (Roma)
BonnerJb	Bonner Jahrbücher des Rheinischen Landesmuseums in Bonn und des Vereins von Altertumsfruenden im Rheinlande (Köln)
BRGK	Bericht der Römisch-Germanischen Komission (Berlin)
BudRég	Budapest Régiségei (Budapest)
Bvbl.	Bayerische Vorgeschichtsblätter (München)
CommArchHung	Communicationes Archaeologicae Hungariae (Budapest)
Dacia	Dacia. Revue d'archéologie et d'histoire ancienne (Bucarest)
DissPann	Dissertationes Pannonicae (Budapest)
EAZ	Ethnographisch-Archäologische Zeitschrift (Berlin)
EgriMÉ	Az Egri Múzeum Évkönyve (Eger)
FBBW	Fundberichte aus Baden-Württemberg (Stuttgart)
FolArch	Folia Archaeologica (Budapest)
FontArchHung	Fontes Archaeologici Hungariae (Budapest)
FöldrKözl	Földrajzi Közlemények (Budapest)
GCBI	Godišnjak Centra za Balkanološka Ispitivanja Akademije Nauka i Umjetnosti Bosne i Hercegovine (Sarajevo)
Germania	Germania. Anzeiger der Römisch-Germanischen Komission des Deutschen Archäologischen Instituts (Mainz)
IpArchmetT	Iparrégészeti és Archeometriai Tájékoztató (Budapest)
IPEK	Jahrbuch für Prähistorische und Ethnographische Kunst (Berlin)
Istraživanja	Istraživanja. Institut za Istoriju Vojvodine (Novi Sad)

JAS	Journal of Archaeological Science (London)
JFA	The Journal of Field Archaeology (Boston)
JIES	The Journal of Indo-European Studies Washington)
JPMÉ	A Janus Pannonius Múzeum Évkönyve (Pécs)
MÁFI jel	A Magyar Állami Földtani Intézet jelentése (Budapest)
MAGW	Mitteilungen des Anthropologischen Gesellschaft in Wien (Wien)
MFMÉ	A Móra Ferenc Múzeum Évkönyve (Szeged)
MIA	Materialy I Issledovanija po Arheologii SSSR (Moskva)
MittArchInst	Mitteilungen des Archäologischen Instituts der Ungarischen Akademie der Wissenschaften (Budapest)
MMezőMK	A Magyar Mezőgazdasági Múzeum Közleményei (Budapest)
MÖAG	Mitteilungen der Österreichischen Arbeitsgemeinschaft für Ur- und Frühgeschichte (Wien)
MúzMF	Múzeumi Módszertani Füzetek (Budapest)
MVV	Magyarország Vármegyéi és Városai (Budapest)
NK	Numizmatikai Közlöny (Budapest)
NyíregyháziMÉ	A Nyíregyházi Jósa András Múzeum Évkönyve (Nyíregyháza)
OA	Opuscula Archaeologica (Zagreb)
OJA	Oxford Journal of Archaeology (Oxford)
PamArch	Památky Archeologické (Praha)
PArch	Prace Archeologiczne. Zeszyty Naukowe Uniwersytetu Jagielloñskiego (Kraków)
PBF	Prähistorische Bronzefunde Hrsg. von H. Müller-Karpe. (München)
Poročilo	Poročilo o Raziskovanju Paleolita, Neolita i Eneolita v Sloveniji (Ljubljana)
PreAlp	Preistoria Alpina (Trento)
Pulpudeva	Pulpudeva. Semaines Philippopolitaines de l'histoire et de la culture Thrace (Sofia)
PZ	Praehistorische Zeitschrift (Berlin)
RVM	Rad Vojvodjanskih Muzeja (Novi Sad)
RégFüz	Régészeti Füzetek (Budapest)
SAB	Studie Archeologického Ústavu Československé Akademie Víd v Brné (Brno)
SCIVA	Studii şi Cercetări de Istorie Veche şi Arheologie (Bucureşti)
SlovArch	Slovenská Archeológia (Bratislava)
SomogyMMK	Somogy Megyei Múzeumi Közlemények (Kaposvár)
SPFFBU	Sborník Prací Filosofické Fakulty Brnenské University (Brno)
StudArch	Studia Archaeologica (Budapest)
StudPraehist	Studia Praehistorica (Sofia)
ŠtudZvesti	Študijné Zvesti Archeologického Ústavu Slovenskej Akademie Vied (Nitra)
SzekszárdiMÉ	A Szekszárdi Béri Balogh Ádám Múzeum Évkönyve (Szekszárd)
TapolcaiVMK	Tapolcai Városi Múzeum Közleményei (Tapolca)
Thraco Dacica	Thraco Dacica (Bucureşti)
VAH	Varia Archaeologica Hungarica (Budapest)
VAMZ	Vjesnik Arheološkog Muzeja u Zagrebu (Zagreb)
VeszprémMMK	A Veszprém Megyei Múzeumok Közleményei (Veszprém)
WMMÉ	Wosinsky Mór Megyei Múzeum Évkönyve (Szekszárd)
WPZ	Wiener Prähistorische Zeitschrift (Wien)
ZalaiMúz	Zalai Múzeum (Zalaegerszeg)
ZalaiGyüjt	Zalai Gyűjtemény (Zalaegerszeg)

Béla Miklós Szőke

BORDERLAND OF CULTURES
Settlement patterns in the Hahót Basin (Aims, methods, results)

Contents

Natural environment
History of research
Techniques and procedures
The results
References

Natural environment

The Hahót Basin is located in the southwestern corner of Hungary, west of Lake Balaton, surrounded by the ridges of the rolling hills of Zala which run north to south (*Pl. 1*). Characteristic streams of the basin's watershed include the *Szévíz* (previously Pölöske) and *Principális* (Kanizsa) streams whose valleys running in a meridional direction form a joint basin. The original divide between the Szévíz and Kanizsa creeks has to a great extent been eroded, its altitude hardly exceeding the 150 m topographic contour line. The extent of this tendency is clearly illustrated by the 5-6° slope running down in the directions of both the Principális valley and Szévíz creek.[1]

Several hypotheses have been put forward concerning the formation of meridional valleys in eastern Zala county. According to L. Lóczy, the depressions were created by the sinking of ditches.[2] J. Cholnoky, on the other hand, assumed that they were windblown depressions that had formed along tectonic lines while the rolling hills were the remains of ridges whose slopes being less exposed to wind were covered by loess.[3] Others regarded the valleys oriented north to south and the system of perpendicular ditches as alluvial deposits that had been created during

[1] *L. Kádár*: A Magyar medence feltöltődése (The filling of the Hungarian basin). Acta Geographica Debrecensia 1964; *S. Radó* (ed.): A Dél-Dunántúl atlasza (The South Transdanubian atlas). Budapest 1974; *M. Pécsi* (ed.): Magyarország tájföldrajza (Hungary's landscape geography). A Kisalföld és a Nyugat-magyarországi peremvidék (The borderlands of the small plain and western Hungary). Budapest 1975.

[2] *L. Lóczy*: A Balaton környékének geológiai képződményei, ezeknek vidékek szerinti telepedése (The geological developments in the environs of the Balaton and the settlement of these lands). in: A Balaton tudományos tanulmányozásának eredményei. I. kötet 1. rész 1. szakasz. Budapest 1913.

[3] *J. Cholnoky*: A Balaton hidrografiája (The hydrographics of the Balaton). in: A Balaton tudományos tanulmányozásának eredményei (Results of scientific studies of the Balaton). I. kötet 2. rész. Budapest 1918.

the development of the Ancient Danube river and its tributaries.[4] Most recent research results have shown that the origins of these valleys are rooted in a complex of all these possibilities,[5] and thus the following developmental history may be reconstructed.[6]

The Upper Pannonian Sea had become filled in by the Upper Pliocene, the salinity of its water declined and the sea slowly turned into a lake. Alluvial deposits advancing from a western and northern direction slowly forced the water surface towards the depression of today's Dráva river. The Ancient Rába and Ancient Mura rivers criss-crossed over the surface of this dry slope, spreading a layer of pebbles. During the ancient phase of the Pleistocene, as a result of the further emergence of land surfaces, the rivers flowing in this area cut into the surface and broad, flat valleys were formed.

Fundamental changes began during the middle of the Pleistocene. As a result of ongoing emergence, waters flowing across the area could not dominate the landscape any longer, and the Rába and Mura river gradually withdrew into what are their beds today. In addition to the epirogenetic emergence, structural changes also occurred along the slopes oriented north to south in eastern Zala county. The beds of the Principális and Szévíz as well as their tributaries started forming from the direction of the Mura and Zala rivers along structural lines and according to the topographic relief. Meanwhile, the present day 4-5 km wide depression between the village of Felsőrajk and the Mura river has sunk as well: it attained a breadth of 50-60 m by late Pleistocene times. The elevation between the valleys of the Principális and Szévíz became lower south of Felsőrajk and tilted toward the south, thereby providing a pathway for the southern tributaries of Szévíz. During this time the mounds and slopes were covered by a thick deposit of silted loess. The sinking of the basin continued during Holocene times and remains of the marshland vegetation resulted in peat formation.

During the 1920's, hydrological measurements were carried out in the Hahót basin in preparation for the draining of wetlands that occupied most of the valleys formed by the two major creeks under discussion here. According to a description from 1832,[7] the area known as the Hahót

[4] *Gy. Gódor*: A Közép-Zalai dombság felszínfejlődési problémái (Problems surrounding the surface development of the middle Zala hills). ZalaiGyűjt 12 (1979) 5-24.

[5] *M. Pécsi*: A zalai meridionális völgyek, dombhátak kialakulásának magyarázata (Explanation of the development of the hill ridges of the meridional valleys of Zala). FöldrKözl 110 (1986) 3-11.

[6] *Gy. Lovász*: A Zalai dombság főbb morfológiai problémái (Chief morphological problems of the Zala hills). in: *Gy. Lovász* (ed.): A Magyar Tudományos Akadémia Dunántúli Tudományos Intézete Értekezések I (1969) Földrajzi tanulmányok a Dél-Dunántúl területéről (Geographical studies of the territory of south Transdanubia). Budapest (1970) 11-83. *F. Cseke*: Nagykanizsa és környékének természeti viszonyai (Natural conditions in Nagykanizsa and surroundings). in: *Nagykanizsa 1994* 13-17.

[7] Zala megye útikönyve és Zala megye vízi leírása 1832 (Zala county guide and 1832 hydrological description). OL Vízrajzi Intézet S 81.

or Pötréte wetland was located in the region surrounded by Alsó- and Felső-Hahót, Fakospuszta, Szévíztava, Pötréte and Sárkánysziget. The source of water was located near Pölöskefő, from where the water flowed both to the north and south and formed marshes in both directions. The southern branch merged with the valley of the Kanizsa wetland in the outskirts of Kacorlak village near Hosszúsziget. The northern branch formed the almost 20 ha large Hahót wetland. The source of the Pölöske stream was found at the northern edge of this area and formed a major lake in the outskirts of the village of Zalaszentmihály. It should not be considered unusual, therefore, that major villages (such as Hahót and Zalaszentbalázs) were established at the base of smaller hills, while smaller ones settled on islands (Gelsesziget, Hosszúsziget, Sárkánysziget). Following the regulation of the Szévíz the former Szévíz lake ceased to exist, although its silted in, marshy remains may be observed even today, since the valley has practically no decline over a section 16 km long.

Soils covering the valleys' bottom and hills are acidic woodland soils of medium quality. These include predominantly medium or sometimes strongly obdurate brown and rusty brown forest soils with iron content and clay contamination. Another group is that of the soils that formed at the bottom of hills from the material washed down from the slopes. Yet another category is represented by "raw" soils with a very low utilizable humus content, that are known as marshland or floodplain meadow soils respectively.[8]

The vegetation settled on this soil is the typical flora of the *Praeillyricum* phytogeographical province that is wedged between the *Illyricum* phytogeographical region of the Western Balkans and the *Pannonia* region that includes most of modern day Hungary. Within the aforementioned *Praeillyricum* phytogeographical province, the western and southwestern ranges of rolling hills in the smaller Hahót area belong to the Göcsej beech region that is characterized by a mixture of beech and pine forests. Typical tree species include common pine (*Pinus sylvestris* L.), common beech (*Fagus sylvatica* L.), durmast oak (*Quercus petraea* Liebl.) and hornbeam (*Carpinus betulus* L.). east and southeast of the discussed area beech forests are gradually replaced by hornbeam and oak associations. In addition to hornbeam and durmast oak these forests include common oak (*Quercus robur* L.) as well as Austrian oak (*Quercus cerris* L.). It is possible that major chestnut (*Castanea sativa* Miller) groves in these forests have occurred since times predating the Roman conquest of Pannonia. Numerous Illyric, Mediterranean and Alpine flora elements inhabit the undergrowth of oak forests, while common alder (*Alnus glutinosa* L.) grows in wet meadows whose water table is constantly high. The calcareous sand of the Szévíz/Principális water divide stretching between the villages of Kilimán and Homokkomárom is characterized by fescue (*Festuca spp.* L.) associations that commonly occur in sandy soils.

[8] *Cseke op. cit.* 30-34.

Meadow fescue (*Festuca pratensis* Huds.), common rock-rose (*Helianthemum nummularium* Mill.), meadow grass (*Poa* spp. L.), purple viper's grass (*Scorzonera purpurea* L.), bastard-toadflax (*Thesium arvense* Horv.), soapwort (*Saponaria officinalis* L.) as well as both common and hairy feathergrass (*Stipa pennata* L. and *Stipa capillata* L. respectively) contribute to the diversity of vegetation of these higher, sandy backs.[9]

Ranges of rolling hills running along the Western and Eastern sides of the *Microregion* research area under discussion here have mostly been covered by forests since historical times, making penetration difficult and forcing the direction of most external connections toward the more open northern and southern ends of the basin. Ancient international commercial routes passing by the small region under discussion here have always played a decisive role in the area's cultural affiliations. A main stretch of the Amber Route running from the Adriatic Sea through Emona, Salla, Savaria, Scarbantia and Carnuntum all the way to the Baltic Sea passed west of the Hahót Basin (along the line of modern day National Route 86). Moreover, it is possible that a side branch of the Amber Road crossed the Hahót basin itself. In addition, the so-called *via regia*, a commercial and military road[10] that ran between the Adriatic coast, Aquincum and Kiev (crossing the Carpathian Basin diagonally) during the Middle Ages reached the Hahót basin at its southern end. These routes guaranteed contacts between the region under discussion here and far away areas, especially to the southwest and west.

The previously described features of natural geography make the Hahót basin, the territory under discussion here, a clearly defined, major areal unit that can be easily distinguished from its surroundings. It is also representative of the larger Transdanubian section of western Hungary which makes it a *microregion* suitable for developing feasible models in research on settlement history.

Due to its geographical position the Hahót Basin played an alternating role throughout various historical periods. Sometimes it served as a central area, while periodically it also became a frontier area between power zones, political formations and cultural regions. Although this special position has raised a multitude of archaeological and historical questions, answers were slow in coming until recently. Namely, the region under discussion here (which, during its modern history, again became a peripheral border zone distant from cultural centers) has long remained a white spot, inaccessible for research as well.

[9] *F. Gyulai*: Dél-Zala növényvilága (Plant world of south Zala). in: *Nagykanizsa 1994*, 46-52.

[10] *T. Füssy*: A zalavári apátság története (The history of the abbey of Zalavár). A pannonhalmi Szent-Benedek-Rend története (A history of the Pannonhalma Benedictan Order) VII. Budapest 1902, 76.

History of research

Very little was available in the way of information on the archaeological relics of this region. A survey of the archaeological sites was carried out between 1975 and 1985 by László Horváth; in 1986 we identified additional sites in the area.[11]

Between 1986-1990 and 1991-1994 we carried out our investigations with a grant from the National Scientific Research Fund (OTKA). The project ('Interrelations between Pannonia, Illyricum and Northern Italy from prehistory to the Middle Ages. Micro-regional research in Transdanubia') was originally conceived as a large-scale research programme involving several sites; however, the limited funds became even less and we therefore decided to restrict our investigations to the Hahót basin, and carry out all-encompassing investigations there.[12] The field surveys and excavations,[13] as well as the first reports on the work done in the Kis-Balaton area[14] enabled a more detailed analysis of the cultural interrelations between the Hahót microregion and adjacent areas.

The theoretical and methodological models to our research were the complex settlement studies carried out in Germany at the North Sea littoral (Küstengebietforschung in Norddeutsch-land) and at Lake Boden (Bodensee-Oberschwaben Projekt).[15]

Concurrently with the investigations in the Hahót basin, a similar project was launched in the Gyomaendrőd microregion (Békés county), in southeast Hungary.[16] The settlement surveys and the reconstruction of

[11] *L. Horváth*: A hosszúvölgyi római fazekaskemencék. In: Iparrégészet I. Veszprém 1981, 27-31; *L. Horváth*: Késő vaskori ház- és településtípusok Dél-Zalában (Späteisenzeitliche Haus- und Siedlungstypen auf dem südlichen Teil des Komitates Zala). ZalaiMúz 1 (1987) 59-80; *L. Horváth*: A magyarszerdahelyi kelta és római temető (The Celtic and Roman cemetery at Magyarszerdahely). ZalaiGyűjt 14 (1979). Supplements A and B (95-98) contain a list of all identified sites together with the relevant literature.

[12] The members of the work group were Eszter Bánffy, Mária Bondár, Ferenc Redő, Béla Miklós Szőke (Archaeological Institute of the Hungarian Academy of Sciences), Judit Kvassay, László Vándor (Göcsej Museum, Zalaegerszeg) and László Horváth (Thúry György Museum, Nagykanizsa). Tibor Frankovich, archaeological technician of the Göcsej Museum, provided invaluable assistance, as did László Pintér. The technical personnel (geodetic surveyors, conservators, photographers, drawers, etc) of the Archaeological Institute and the Zala county museum organzation also participated in the field work.

[13] *H. Simon 1990*; *Horváth 1994a*.

[14] *L. Vándor* (ed.): Régészeti kutatások a Kis-Balaton térségében. 1. Az Alsó-Zalavölgy régészeti emlékei. Zalaegerszeg 1986; *Kis-Balaton 1989*; *Szőke et al. 1992*.

[15] Archäologische und naturwissentschaftliche Untersuchungen an ländlichen und frühstädtischen Siedlungen im deutschen Küstengebiet vom 5. Jahrhundert v. Chr. bis zum 11. Jahrhundert n. Chr. *G. Kossack — K. E. Behre — P. Schmid* (eds): I. Ländliche Siedlungen; *H. Jahnkuhn — K. Schietzel — H. Reichstein* (eds): II. Händelsplätze des frühen und hohen Mittelalters. Weinheim 1984; *H. Schlichterle* (ed.): Siedlungsarchäologie im Alpenvorland I-II. Stuttgart 1990.

[16] *S. Bökönyi* (ed.): Cultural and Landsape Changes in South-East Hungary I. Reports on the Gyomaendrőd Project. Budapest 1992.

settlement patterns based on a series of rescue excavations carried out between 1979 and 1986 in the Lower Zala valley and in the Kis-Balaton region can be seen as a precursor and a model to both projects. Over sixty archaeological sites were identified, most of which were also excavated, along the over 70 km long shoreline section and on the islets in this microregion, where two reservoirs were constructed in order to restore the filtering, purifying role of the former inlets of the Balaton that had been drained in the last century.[17]

Techniques and procedures

A total of eighteen settlements, including several large villages extending along a road, such as Hahót, Zalaszentbalázs, Alsórajk-Kilimán and Gelse, can be found in the 120 km^2 large area that was investigated. We identified a total of seventy-eight sites in the course of our surveys (*Pl. 2*); most sites were repeatedly occupied, the number of burial grounds being much lower.

The density of sites is relatively low, with an average of 1.5 sites per 1 km^2.[18] The distribution of sites is uneven: while in some areas they form an almost continuous chain, while in others they are almost entirely lacking, reflecting an absence of human settlement. The reason for this disparity is in part to be sought in modern settlement patterns and in part in the geographic environment.

(a) The modern settlements and their intensely cultivated plots have occasionally made the identification of sites, as well as their subsequent excavation rather difficult (e.g. site 47, Hahót-Cseresznyés).

(b) The hills flanking the river valleys are either forested or under viticulture. Forests preserve mounds and ditches in an almost unaltered form (e.g. site 16, Gelsesziget-Gózon erdő), but tend to conceal settlements that can only be identified by surface pottery finds. In contrast, viticulture involves an intensive ploughing of 80-100 cm that practically destroys any archaeological sites that may have lain there (e.g. site 58, Zalaszentbalázs-Szőlőhegyi mező, where, fortunately, only some parts of the prehistoric settlement had been destroyed).

(c) Another explanation for the uneven scatter of sites is to be sought in yet another environmental feature unique to this area: the marshland filling the wide bed of the Principális and the Szévíz. This large open water table practically determined the routes of communication within the basin. It is not mere chance that the two main arteries of communication run along the western and eastern edge of the basin, at the foot of

[17] *B. M. Szőke — L. Vándor*: Kisérlet egy táji egység történeti rekonstrukciójára (Versuch einer siedlungsgeschichtlichen Rekonstruktion einer Region). ZalaiGyűjt 26 (1987) 83-100.

[18] In comparison, a total of 226 sites were identified in the 42 km^2 large area investigated in the microregion of the Great Hungarian Plain, giving an average of 5.4 sites per 1 km^2. *Bökönyi op.cit.* 7.

the hills, and transversal links are rare: in the roughly 20 km long valley there are only three macadam roads and a handful of dirt tracks enabling a crossing to the other side.

Even though the settlement density of the Hahót basin is low compared to that in the southern areas of the Great Hungarian Plain with its excellent climatic and soil conditions, about two-thirds of the sites were repeatedly occupied, with an average of three occupations (including cemeteries) to each site. Several of the sites around the marshland lake had been occupied in as many as eight to eleven different periods, reflecting an almost continuous occupation. Five of these sites – Hahót-Sárkánysziget, Hahót-Telekszeg, Szartóri I-II and Vadaskert (sites 49, 57, 69, 74-75) – were excavated.

Aerial photographs were a useful complement to the field surveys, enabling the identification of a stone quarry near the Alsórajk-Kastélydomb site in which the Pannonian sandstone outcrops, used in the construction of Roman and medieval buildings, had been quarried. These aerial photographs also acted as a useful control in the determination of the extent of prehistoric settlements, as well as the survey of the fortifications of medieval castles (*Pl. 8*).[19]

The more or less twenty sites to be further investigated with an excavation were chosen after a careful analysis of the findings of the field survey. The excavations were either carried out over the entire territory or a smaller, characteristic part of a particular site, depending on the size of the settlement or cemetery, its accessibility and the wealth of the expected information.

The excavated sites, as well as the still visible medieval earthworks and other castles of the Hahót basin were precisely located and surveyed. A very detailed documentation, including descriptions as well as drawings and photos, was prepared of the excavations. The finds were restored in the Archaeological Institute of the Hungarian Academy of Sciences. The illustrations to this volume were also, for the greater part, prepared in the Archaeological Institute.[20]

The present collection of studies describes these excavations and their findings, with the exception of the Late Bronze Age and Iron Age investigations (Gelsesziget A, Hahót-Vadaskert, Gelsesziget-Gózon erdő, sites 15-16, and 57).[21] The archaeozoological, archaeobotanical and

[19] The aerial photographs were made by Zsuzsa Miklós of the Archaeological Institute.

[20] I would here like to thank, in the name of team, the technical staff of the Archaeological Institute: Endre Egyed and Mrs. Judit Merényi, who carried out the geodetic surveys and prepared the maps of the sites, Lúcia Árkay, Mrs. Mária Dévai, Bernadett Dukay and Mrs Ida Szathmáry, who prepared the illustrations, Krisztina Pálfay and Tibor Kádas, who made the photographs to the present volume, Éva Somlósi, Ágnes Zamadits, Lúcia Glattfelder and Katalin Horusitzky, who restored, and often reconstructed, the immense amount of pottery fragments and metal finds.

[21] Owing to the illness of László Horváth, the evaluation of these sites could not be included in the present volume, and they are therefore described at somewhat greater length here.

anthropological material were analyzed separately, together with the mineralogical examination of the worked stone artefacts from the prehistoric sites.

Reports of our work appeared in *Régészeti Füzetek* and, also, in the local dailies;[22] in 1991 we reported the findings of our investigations at a one-day conference organized by the Archaeological Society, while in 1994 an exhibition of the most splendid finds from our excavations toured the museums of Zala county.[23]

The results

The Hahót basin seems to have been uninhabited in the early, Starčevo phase of the Neolithic (*Pl. 2*), even though Starčevo settlements have been identified to both to its north (Gellénháza) and south (Becsehely). It would appear that the northern border of the Starčevo distribution cannot be drawn with a straight line to the west of Lake Balaton: the earliest Neolithic culture did not colonize the Zala forests between the Kerka-Cserta and the Zala rivers, extending to the southern Zala plainland. With the exception of a single pit (site 69, Hahót-Telekszeg), the Transdanubian Linear Pottery is also absent from this area, as is the Zselíz culture. The single TLP pit suggests a short, transitional, rather than a long settlement. Interestingly enough, the Szévíz and Principális valley sections to the north of the Hahót basin, and the neighbouring Válicka valley were similarly unoccupied during the TLP period. Farther north, however, in the Cserta and Kerka basin, in the Zala valley to the north,[24] as well as in the Alsó Zala valley–Kis-Balaton–Keszthely basin to the east,[25] and in the southern Zala plainland around Nagykanizsa[26] a fairly dense network of settlements had evolved.[27] The reason that the Hahót basin had not been occupied in the later phases of the Early Neolithic, in spite of the fact that the environmental conditions in the basin are more or less identical with the areas that had been occupied, can perhaps be attributed to the fact that this microregion did not offer any additional attractions: no major routes (such as the Amber Road or the Adria-Kiev route) led through it and neither could it boast deposits of important raw materials or good quality soils for cultivation.

Occupation in the Hahót basin seems to have remained transitional in the Middle Neolithic as well. The pit excavated at Zalaszentbalázs-Pusztatető (site 43), with its red and yellow, more rarely black painted pottery, can be assigned to the close of phase I or the beginning of phase II of the Lengyel culture.

[22] Zalai Hírlap, August 8, 1987, November 30, 1991, August 15, 1992.
[23] *Szőke — Vándor 1994.*
[24] *H. Simon 1990* Fig. 2.
[25] *Zs. M. Virág*: Jungsteinzeit und Frühkupferzeit. In: *Kis-Balaton 1989* 17-18, map. 2.
[26] *Horváth 1994a* 87, Fig. 4.
[27] *Horváth 1994a* 87.

A more dense settlement network only emerged in the Late Neolithic and Early Copper Age, even though the Hahót basin had still not been fully colonized: most sites lie on the shores of the Szévíz and the Hahót marshland, at that time still an open lake. It is perhaps not mere chance that the areas that were now occupied coincided with the area that had earlier been sporadically settled. The eastern half of the Hahót basin, the lower terraces of the Principális valley – that otherwise offered excellent conditions for human settlement – continued to remain unoccupied.

Phase III of the Lengyel culture has been assigned to the Early Copper Age. One major site was identified at Zalaszentbalázs-Szőlőhegyi mező (site 58). The rectangular residential and work buildings (pottery and weaving workshops), erected around a framework of upright posts, connected with a wattling of intertwined twigs daubed with clay, had almost all been consumed by fire. These buildings were not rebuilt, the debris was rarely cleared away, and thus their entire inventory survived practically intact: thick-walled pots, storage jars, strainers, jugs, a wide variety of bowls ranging from biconical forms with inturned rim to pedestalled bowls (occasionally painted with red and black), as well as thin-walled cups ornamented with red-and-yellow, white, red and black painting, ladles and their miniature variants. The number of ritual objects was conspicuously high, and included rectangular altars, idol and 'throne' fragments, vessels with lugs modelled on various animals, as well as lid knobs in the form of a dog and a ram with two heads. Most finds from the settlement can be assigned to the latest (IIIb) phase of the culture that came under a strong culture influence from the northern Balkans and forms the immediate precursor to the Balaton-Lasinja culture. The raw material for the stone tools and implements had in part been procured from the Balaton upland and in part from more distant Lengyel territories, while the raw material for the grinding stones came from the Alps, reflecting an intricate network of long-distance trade.

While the finds do reflect the forms of the Early Copper Age, the population of the extensive Szőlőhegyi mező site still had a predominantly agrarian, Neolithic subsistence. It is also possible that the site had not been occupied simultaneously, and that the large areal extent of the settlement can be attributed to the periodic shift of smaller settlement nuclei. This possibility seems to be borne out by the fact that finds from the earlier Lengyel phases could be noted to the north of the dirt track traversing the site, while only finds of the latest phase were found in the southerly areas of the settlement.

The Hahót basin was first evenly settled, with a proliferation of smaller sites, in the Middle Copper Age, in the Balaton-Lasinja period (*Pl. 3*), most probably as a result of a subsistence based on animal husbandry. Smaller settlements were identified at Zalaszentbalázs-Pusztatető (site 43), Hahót-Szartóri II (site 74) and Magyarszerdahely-Homoki dűlő (site 28).[28] Both in

[28] *Horváth 1994* 91.

the Alsó-Zala valley-Kis-Balaton region[29] and in the southern Zala plainland there was a conspicuous increase in the number of settlements, and, as a matter of fact, prehistoric settlement density reached its peak at this time.[30] A similar concentration of settlements can be noted in the Principális and Szévíz valley sections to the north of the investigated area.[31] The growing importance of the region is reflected in the large gold discs that had come to light earlier at nearby Csáford.[32]

At the close of the Middle Copper Age and during the Late Copper Age the Hahót basin was deserted. There are no traces of a Furchenstich (earlier called Balaton II-III) occupation, although it must in all fairness be noted that its presence is sporadic in the wider region also,[33] and neither were Boleráz and Early Baden sites identified. Only at one single site – Hahót-Szartóri II (site 74) – did we find traces of occupation (?transitional) from the Classical Baden period. The Hahót basin was again unoccupied during the Late Baden and, also, during the ensuing Kostolac-Vučedol period. The same does not hold true for the neighbouring Kis-Balaton region, where twenty-eight sites,[34] or of the Zala plainland, where eleven sites were identified, including the Late Boleráz settlement at Nagykanizsa-Inkey kápolna with its more than twenty settlement features.[35] In contrast, there is hardly any Late Copper Age occupation to the west and the north of the Hahót basin: only three Boleráz and a single Baden site are known from the area.[36] This uneven pattern of occupation most likely reflects that the western boundary of the distribution of Late Copper Age cultures lay somewhere in this area. That the region was nonetheless important in the Baden period is indicated by a copper diadem found in a burial at Vörs.[37]

Aside from the shore of the Hahót marshland, settlement is still sparse in this area. One pit at Magyarszerdahely-Homoki dűlő (site 28),[38] and the remains of a briefly occupied larger single layer settlement of the Somogyvár-Vinkovci culture were found in one of the side valleys, along the Kürtös stream (Börzönce-Temetői dűlő, site 44).

No house remains were found at the Börzönce settlement; a total of thirty pits were excavated, yielding a rich ceramic assemblage ranging from large storage jars, one or two handled pots and two handled

[29] *Zs. M. Virág*: Mittelkupferzeit. In: *Kis-Balaton 1989* 23-25, Map. 3.
[30] *Horváth 1994a* 91, 93-95, Fig. 7.
[31] *H. Simon 1990* Fig. 5.
[32] *I. Bóna*: Javarézkori aranyleletekről. Fejezetek a magyar ősrégészet múltszázadi-századeleji történetéből. VeszprémMMK 18 (1986) 21-72.
[33] *H. Simon 1990* Fig. 5.
[34] *M. Bondár*: Spätkupferzeit. In: *Kis-Balaton 1989* 26-29, Map. 4.
[35] *Horváth 1994a* 93-95, Fig. 7.
[36] *H. Simon 1990* Fig. 6.
[37] *J. Banner*: Die Péceler Kultur. ArchHung 35. Budapest 1956 111, Pl. LXXXVII; *Kis-Balaton 1989* Pl. 4.
[38] *Horváth 1994a* 97.

amphorae to a variety of bowls, some of them ornamented with encrustation, jugs, juglets and cups, as well as lids, an enigmatic vessel open at both ends and lamps. Noteworthy among the finds is the mould for a pin and the high number of animal statuettes modelled on cattle, sheep, dogs and wild boar, as well as a clay waggon model and a female statuette with a triangular, slightly thrown back head, wearing a dress reaching down to her ankles and the head fragment from another female idol.

The finds from Börzönce betray strong links with the pottery of the late Vučedol C and the Vinkovci A_1 period, reflecting the survival of certain Vučedol groups. Cultural contacts can be traced as far as the Coţofeni, Glina III-Schneckenberg and Gyula-Roşita cultures that probably reached Börzönce from the south, along the Danube, as well as with the Belotić-Bela Crkva group, the Ljubljana and the Proto-Nagyrév cultures. Contact with the more distant regions is hardly surprising since the use of the waggon did offer greater mobility. Settlement remains, comparable to the Börzönce site, are known from Nagykanizsa-Inkey kápolna with twenty settlement features, including the remains of a dwelling,[39] while cremation burials were uncovered near Keszthely.[40]

Similarly to its broader environment, the entire Zala upland and the southern Zala plainland, the Hahót basin too was deserted in the second phase of the Early Bronze Age, with the expansion of the Encrusted Pottery culture. The nearest Kisapostag settlements are known from the Keszthely area and from the Kis-Balaton region (including a fortified settlement at Balatonmagyaród-Hídvégpuszta).[41] Neither is the settlement of the Encrusted Pottery Culture attested in the Hahót basin and the Zala woodland, the reason being that the western boundary of the distribution of these cultures again lay at the western edge of the Alsó-Zala valley and the Kis-Balaton.[42]

At the beginning of the Early Bronze Age, the expansion of the pastoralist Early Tumulus culture from the northwest brought an end to the isolation of the Hahót basin, as demonstrated by the large, at least 20 m by 10-11 m, SW-NE oriented house (its eastern end was not cleared) that was uncovered at Gelsesziget-Homoksziget A (site 15). A series of postholes for the upright posts that supported the roof were aligned along both sides of the more or less rectangular, single roomed structure. Its floor lay some 50 to 60 cm deeper than the contemporary surface, with an entrance in the southwestern corner. The postholes found to the north of this building allow the reconstruction of a pen-like structure. The fill of the house yielded numerous pottery fragments and animal bones; a total of fifty vessels, most of them decorated with incised patterns, knobs and

[39] *Horváth 1994a* 95-96.
[40] *M. Bondár*: Früh- und Mittelbronzezeit. In: *Kis-Balaton 1989* 31.
[41] *Ibid.* 31-33.
[42] *Ibid.* 33-35, Map. 5.

appliqué ornamentation, could be reconstructed (including one- and two-handled footed pots, knob-ornamented cups, bowls, and an urn shaped vessel). Miniature vessels were also found.[43] An abundance of bone artefacts, spindle whorls came to light, and, perhaps even more important, the fill of the house also yielded a mould, two bronze daggers and five bone pins with ornamented neck.[44] The finds can be assigned to phase C_2 of the Tumulus culture.[45]

Two cremation burials (one of them containing a pair of spiral bronze armrings) and a pit which, aside from a rich ceramic assemblage, were excavated at Magyarszentmiklós-Újréti dűlő (site 33), dating from the Late Tumulus-Early Urnfield period (BrD-HA_1).[46] The six inurned burials (BrD-HA_1) and a slightly younger storage pit (HA_2) whose fill yielded a lunular fire-dog from Hahót-Vadaskert (site 57) at the western edge of the Pötréte fisheries dates from the same period.[47] A BrD-HA_1 hoard of female dress ornaments and a necklace strung from amber beads came to light at Pötréte during peat cutting. The carefully folded, lavishly ornamented garment had most probably fallen into the then 80-90 cm deep water during fording.[48]

The inurned grave (HB) found beside the Gelsesziget longhouse and a smaller pit from Magyarszerdahely-Homoki dűlő (site 28) represent the latest phase of the Urnfield culture.[49] The Hahót basin was more or less evenly settled during the Late Bronze Age (*Pl. 4*), with a roughly similar settlement density as in the southern Zala plainland to its south[50] and the Kis-Balaton region, in which lay one of the most important fortified sites and cemeteries of the period (Balatonmagyaród-Hídvégpuszta).[51]

The Hahót basin and its broader environment, the Zala woodland was again deserted in the Early Iron Age (8th-5th centuries BC); in contrast, a number of sites from this period have been identified in the Mura region and a few more richly equipped graves have been reported from the Keszthely area.[52] The apparent lack of occupation can be attributed either to an internal border, most likely between tribal territories, or to an as yet little known economic phenomenon.

This situation changed in the wake of the Celtic expansion of the 4th century BC. Following the advance of the Celtic tribes along the Danube,

[43] *Horváth 1994b* Fig. 4-6.
[44] *Horváth 1994a* Fig. 9.
[45] *Horváth 1994b* 219.
[46] *Horváth 1994a* 100.
[47] *Szőke — Vándor 1994* 7.
[48] *R. Müller*: A pötrétei késő bronzkori kincslelet (Der spätbronzezeitliche Schatzfund von Pötréte). VeszprémMMK 11 (1972) 59-74.
[49] *Horváth 1994a* 102.
[50] *Horváth 1994a* Fig. 11.
[51] *L. Horváth*: Spätbronzezeit. In: *Kisbalaton 1989* 36-45. Karte 6
[52] *Horváth 1994a* 104; *L. Horváth*: Früheisenzeit. In: *Kisbalaton 1989* 45-46.

the Zala uplands had been drawn into the orbit of the Celtic world by the LT B phase. New Celtic invasions during the LT C period saw the establishment of yet newer settlements and cemeteries that ultimately complemented the earlier areas settled by the Celts. The written sources and the archaeological evidence would suggest that the Zala region between the Rába, the Balaton and the Mura had been occupied by a tribe whose name is not known and who seems to have been less advanced in socio-economic terms then their neighbouring kinsfolk. The Hahót basin was settled evenly (*Pl. 4*), with a settlement density comparable to that of the southern Zala plainland[53] and the Kis-Balaton region.[54]

Dating from the early (LT B) occupation is an inhumation burial found at Felsőrajk (site 2), the grave of a young girl that yielded a torc, a late bird-headed fibula, early Dux fibulae, as well as armrings and anklets;[55] this burial might be contemporaneous with the first burials of the cemetery uncovered at Magyarszerdahely-Homoki dűlő (site 28).[56] The latter burial ground can be dated from the LT B/C transition to the close of the LT C_2, to the last quarter of the 2nd century BC. Most of the burials in this burial ground were scattered cremation burials. Outstanding among the graves uncovered at this site are the burials of two warriors (grave 30 and 63) whose remains had been laid to rest with their sword in their scabbard, belt chains, shields, iron spearheads and various articles of jewellery after cremation. Both burials can be assigned to the LT C_1 period.

The 4 m by 3 m large semi-subterranean house uncovered at Hahót-Tsz major (site 48) dates from the LT C_2 period. The finds from this house include pottery sherds, clay loom weights, an iron fibula, whetstones, spindle whorls and iron slag, as well as the fragments of a graphitic crucible that had probably been used in bronze metallurgy.[57] Another settlement site, dated to the LT D, was investigated at Magyarszentmiklós-Újréti dűlő (site 33): uncovered were three semi-subterranean houses and a workpit that, beside pottery fragments, also yielded spindle whorls, whetstones, loom weights, a clay 'goldsmith's hammer', the fragment of a silver bracelet with engraved ornamentation and a Nauheim bronze fibula.[58] Two south to north oriented inhumation burials, also from the LT D period, contained bronze and iron fibulae, belt chain fragments, blue glass armrings and the fragments of a stamped vessel.[59]

[53] *Horváth 1994a* Fig. 18.
[54] *L. Horváth*: Späteisenzeit. In: *Kis-Balaton 1989* 47-50, Map. 8.
[55] *L. Horváth*: The surroundings of Keszthely. In: *T. Kovács — É. Petres — M. Szabó* (eds): Corpus of Celtic Finds in Hungary I. Transdanubia I. Budapest 1987, 75-76, Pl. VI.
[56] *Horváth 1994a* 105.
[57] *L. Horváth*: Késő vaskori ház- és településtípusok Dél-Zalában (Späteisenzeitliche Haus- und Siedlungstypen auf dem südlichen Teil des Komitats Zala). ZalaiMúz 1 (1987) 63.
[58] *Ibid.* 64.
[59] *Horváth 1994a* 114.

The Roman conquest of Transdanubia was completed by the mid-1st century AD and the province of Pannonia was occupied by the Romans. A small pit uncovered at Magyarszentmiklós-Újréti dűlő (site 33), to the south of the LT D settlement, can be dated to this period. The finds from this pit include the body fragment of vessel decorated with a grid pattern on the shoulder and the smoothed-in figure of a horse; the antecedents of this Late Iron Age vessel with its truly unique ornamentation are to be sought in the pottery of the native population of the Roman period.[60]

The Roman occupation of the Zala uplands involved the influx and settlement of a northern Italian population in this region (*Pl. 5*), reflected also by the inurned and scattered cremation burials from the mid-1st to the mid-3rd century AD found at Magyarszerdahely-Homoki-dűlő (site 28). A tombstone carved from Steier marble erected by a partly northern Italian and partly Aquileian family (*Canius*) in the early 2nd century probably comes from this cemetery.[61] The graves were conspicuously rich in terra sigillata wares (the earliest being a Claudian vessel with applied ornament, the latest Rheinzabern and Pfaffenhofen wares), and a northern Italian barbotine decorated cup too came to light (late 1st-early 2nd century). Other pottery wares included western Pannonian urns, pots, cups, jugs, three-footed vessels and imitation terra sigillata bowls, as well as a black-slipped urn and vessels with cross shaped stamps from the pottery workshop in nearby Hosszúvölgy that was active during the early 2nd century to the 3rd century. Two vessels of Norican-Dalmatian and northern Italian origin bear incised names (*Avitus, Tenatia*).[62]

Similarly to Noricum and other areas in western Pannonia, in the 2nd and 3rd centuries the population of the Zala upland cremated its dead and marked their burials with a mound. Eight burials of a smaller burial ground were uncovered at Gelseszíget-Gózon erdő (site 16). The size of the mounds varies, the largest has a height of 1.9 m and a diameter of 17.5 x 14.5 m, whilst the smallest is a bare 20-30 cm high, with a diameter of 4-5 m. A few graves were dug between the mounds. In four burials, the ashes were deposited into a small pit and in the case of three other graves the burial lay directly on the surface. Grave 5 had a chest of sandstone slabs (the grave itself was robbed in antiquity, and the glass urn was broken). Two urn burials were also found. The grave goods are simple, being mostly provincial wares. Grave 8 yielded eleven vessels, including a thin-walled northern Italian cup and a relief ornamented Gaulish terra sigillata. The cemetery can be dated to the first half of the 2nd century.[63]

[60] *Horváth 1994a* 118.

[61] *A. Mócsy*: Római sírkő Magyarszerdahelyről (Une pierre tombale romaine de Magyarszerdahely). FolArch 9 (1957) 83-90; *I. Bilkei*: A Canius kereskedő család Pannoniában (The Canius merchant family in Pannonia). ZalaiGyűjt 16 (1981) 3-12.

[62] *L. Horváth*: A magyarszerdahelyi kelta és római temető (The Celtic and Roman cemetery at Magyarszerdahely). ZalaiGyűjt 14 (1979); *L. Horváth 1994a* 119-120.

[63] *Szőke — Vándor 1994* 8.

The true florescence of the Roman period in this region fell into the late 1st century and the earlier 2nd century that saw the prospering of Salla (Zalalövő), a settlement of municipal rank. While the peaceful development of that settlement was rudely interrupted by the Marcomannic-Sarmatian incursions in 160-180, the Hahót basin avoided this fate, most probably because it lay beyond major communication routes, a phenomenon reflected also in the continuity of the burials in the Magyarszerdahely cemetery and by the absence of a destruction layer at Alsórajk-Kastélydomb.

The largest excavation of the microregional investigations in the Hahót basin were carried out at the Alsórajk-Kastélydomb site (site 6), in the course of which practically all buildings of a Roman villa, a bath house ("A") and a 40 m by 40 m large main building ("B") were uncovered.

The earliest building period of the main building ("B") of the villa was a log-constructed '*proto-villa*' that had two distinct building phases. The excavated parts of the building suggest a fine quality building complex with an *atrium* layout that can be dated to between the late 1st century and the mid-2nd century on the basis of the scanty terra sigillata finds. The villa was rebuilt in stone sometime in the later 2nd century. The height of its prosperity coincides with the second phase of the stone villa, with the late 2nd century and the earlier 3rd century, when several rooms were provided with an ornate mosaic floor. Another period of prosperity in the region can be noted under the reign of Septimius Severus, indicated also by the construction of the villa at Nagykanizsa-Inkey kápolna and a comparable settlement at Újudvar-Zsidóföldek (site 20).[64]

The main entrance, with its wide gates, of the symmetrically constructed villa with its atrium layout, built in the second period, lay on the southern side. Its facade was proportioned by pillars of octagonal bricks. To the east of the entrance lay workrooms (one provided with a black and white mosaic floor with a geometric pattern) and rooms with a *hypocaustum* to the west; the external *praefurniums* adjoined the building, suggesting that the bath was in this area. An east-west corridor separated these rooms from the northern part of the building. Also found were a spacious *peristylium* (with a basin in its centre) and representative rooms in its two wings. Two of these rooms too had a mosaic floor. The mosaics in the western wing were completely destroyed; a mosaic floor was partially preserved in an apsidal room on the eastern side. Framed with a swastika and meander pattern, the rectangular mosaic was divided into trapezoidal and hexagonal fields containing floral, figural and animal depictions. The layout of the villa's main building was based on Italian models and has few parallels among the Pannonian villas; its closest parallels can be quoted from Eisenstadt and Baláca. Remains of a smithy and a bakery were uncovered beside the entrance.

[64] *Horváth 1994a* 115.

The third building period of the villa is represented by the stone walls, painted plaster remains and terazzo flooring of a building erected in the *peristylium*, above the ruins of the second building period. The rubble on the floors of this somewhat humbler, but nonetheless fine building yielded coins from the second third of the 4th century. The villa of the second period had been probably destroyed by the Barbarian incursion of 260, that marks also the abandonment of the Magyarszerdahely burial ground and the destruction of the villa at Nagykanizsa-Inkey kápolna. Both were later rebuilt under Diocletian and Maximian, although the Alsórajk villa was much humbler.[65]

The detached apsidal bath house ("A") lies southwest of the main building ("B"); equipped with a terazzo floor, its walls were painted red, green, yellow and black in the first phase. The building phases of this building correspond to the second period of the main building.

Around 377, in the last third of the 4th century, a new wave of Barbarian attacks – the first wave of the Migration period – swept through the province (*Pl. 6*). The Alsórajk villa was probably destroyed by the Ostrogothic-Hunnic-Alanian groups led by Alatheus and Saphrax. The coin hoard of 285 bronze coins – the latest being a coin of Gratian (367-383) – found at Gelse (site 14) was probably also hidden at this time.[66] Swept here with this Barbarian invasion was a family whose burials were found near the Alsórajk villa, at Kilimán-Felső major (site 9). Most of the twenty-two grave had been robbed in antiquity; the few surviving finds (gold dress pins, beads, iron and bone buckles, vessels) and the burial rite suggest that this small cemetery, used for a brief period in the last third of the 4th century and the early 5th century, can be culturally linked to the Marosszentanna-Chernakhov circle and ethnically to an Ostrogothic group of the Barbarians of Alatheus and Saphrax who had been settled here as *foederati*.

None of the successive Hunnic, Ostrogothic, Suebian and Langobardic groups settled the Zala upland that had been virtually deserted by the first half of the 5th century; this area lay beyond the western settlement area of these groups.[67]

The Hahót basin was more or less a frontier zone of the Avar kaganate that in the later 6th century and the early 7th century incorporated the entire Carpathian Basin. The Zala valley and the southern Zala plainland was in the early 7th century settled by a mixed Avar-Slav (du[d]leb) population; sporadic settlement finds suggest that a group may also have settled in the Hahót basin. Their biritual cemeteries remained in use until end of the 7th century. In the late 7th and early 8th century the Hahót basin and,

[65] *Horváth 1994a* 115.

[66] *L. H[uszár]*: A Magyar Történeti Múzeum Éremtárában feldolgozott éremleletek. NK 48-49 (1949-1950) 58.

[67] For the southern Zala and Little balaton region, see *Szőke 1994* 145-153 and Map 1.

also, the Zala upland was again deserted and was only settled in the late 8th-early 9th century, after the dissolution of the Avar kaganate.[68] The new occupants were probably the descendants of the population group that had migrated elsewhere at the close of the 7th century: a conspicuously high number of graves were found in earlier, 7th century burial grounds and the burial rite too is predominantly biritual – cremation burials according to the Slavic, and inhumation according to the Avar custom. A pit unearthed at Börzönce (site 44)[69] and various settlement features uncovered at Gelsesziget-Homoksziget "B" (lineman's house) (site 15) represent the settlement remains of this period. Noteworthy among the finds from these two sites are an early 9th century hoe and a pair of spurs (Hakensporn).

The Carolingian period ushered in a number of changes in the life of the region.[70] Pribina and his son, Kocel, established an Eastern Frankish administrative centre at Mosaburg/Zalavár around 840, which probably also extended over the Hahót basin. The burials of a biritual cemetery from the later 9th century were uncovered at Alsórajk-Határi tábla (site 9), lying at the western end of the road – used also in the Middle Ages – that passed through Orosztony and Kerecseny and connected the Lower Zala valley with the Principális valley. The thirty-five graves of this family burial ground yielded the usual Eastern Frankish jewellery (earrings, bead necklaces, glass beads, shield rings, combs), as well as a pair of spurs made in a Carolingian imperial workshop and a nielloed iron strap end. The most exciting finds from this site, however, were the cremation burials, some of which were scattered cremation burials in a so-called house of the dead (Totenhaus), with burnt animal bones (including horse bones) and pottery. Their closest analogies are the burials uncovered at Zemplénagárd and the Alt-Käbelich type burials from Lutiz/Wilz in northeast Germany and western Poland. Similarly to other contemporaneous cemeteries, such as Garabonc I-II and Zalaszabar-Dezsősziget,[71] this cemetery again indicates that Pribina's call was indeed heard in faraway lands when he began to organize the estate that he received from Louis the German (817-876): "*coepit ... circumquaque populos congregare ac multum ampliari in terra illa*".[72]

The Hungarians of the Conquest period occupied the southwestern areas of Transdanubia in 900. As so often before, the Zala valley again marked the western boundary of the settlement territory: an unpopulated marchland lay to its west. Under the first Christian kings this boundary

[68] *Szőke 1994* 153-167 and Map 2.
[69] Earlier dated, incorrectly, to the late 7th century: *Szőke — Vándor 1994* 10.
[70] *Szőke 1994* 182-195 and Map 3.
[71] *Szőke et al. 1992.*
[72] *H. Wolfram*: Conversio Bagoariorum et Carantanorum. Das Weissbuch der Salzburger Kirche über die erfolgreiche Mission in Karantanien und Pannonien. Wien — Köln — Graz 1979, 52-53.

was soon shifted more to the west,[73] and by the early Árpádian Age the Hahót basin was part of the royal estate, with a number of villages (*Pl. 7*). The cemetery of one of these early Hungarian communities was identified at Hahót-Cseresznyés dűlő (site 45) and the graves of a similar cemetery had probably been destroyed at Zalaszentmihály-Téglagyár, lying somewhat farther to the north.[74]

A royal *curia* was built at Újudvar (*Nova Curia*), at the southern end of the Hahót basin in the early Árpádian Age that was donated to the Hospitallers of St. John in Székesfehérvár by Eufrozina, wife of King Géza II's (1141-1162).[75] Its large church, with an apsidal choir, that was built later by the Hospitallers of St. John, was uncovered in the Törökkori cemetery. The late 12th century gate tympanon, now housed in the National Gallery, had probably adorned this church.[76] A wide ditch encircled the church, beyond which stood semi-subterranean houses in the 13th-14th centuries.

The one decisive event that determined the fate of the Hahót basin in the Árpádian Age occurred in 1163. István III (1162-1172) who fled to the west from István IV, the pretender supported by Byzantium, later returned with ample troops; among his retinue were Hahold (Hahót) and Bussold (Buzád) of Thuringia who founded the Hahót-Buzád *gens* (kindred), to whom the king donated considerable estates for their help in securing his victory. Its centre probably lay in the Hahót basin and most of the villages that had earlier belonged to the royal *curia* (manor) at Újudvar (*Nova Curia*) now probably passed into their possession. Fourteen of the twenty-three villages in the Hahót basin and its periphery became wholly or partially owned by the *gens*. The seat of the family that swiftly rose to a high position was established at Buzád-(Sárkány-)Sziget, and a common kindred monastery was built at Hahót. The seats of various branches of the family were also soon established as shown by the forts at Pölöske, Fakos and Kacorlak, as well as by the kindred monasteries at Alsórajk and Fakos, and by the dense network of servicing villages in the Hahót basin.

The motte type castle, surrounded by earthwork banks and ditches at Buzádsziget (site 49) was built sometime in the last third of the 12th century. In 1292 the castle passed into the possession of the Kőszegi family, and was destroyed in the internal wars at the turn of the 13th and

[73] *B. M. Szőke — L. Vándor*: Pusztaszentlászló Árpád-kori temetője (Árpádenzeitliches Gräberfeld von Pusztaszentlászló). FontArchHung. Budapest 1987, 83-85; *Vándor 1994* 218-220.

[74] *B. M. Szőke — L. Vándor*: Pusztaszentlászló XI. századi temetője (Begräbnisstätte aus dem 11. Jahrhundert in Pusztaszentlászló). ZalaiGyűjt 6 (1976) 144.

[75] We are informed that in 1193 Béla III (1172-1196) confirmed his mother's donation of the Monastery of St. Stephen at Székesfehérvár and its estates to the Convent of Knights Hospitallers of St. John of Jerusalem. Some decades later the Monastery of Hospitallers of St. John was already in existence, and its existence can be traced since 1236. Cp. *Vándor 1994*, 223.

[76] *T. Gerevich*: Magyarország románkori emlékei. Budapest (1938) 192, Pl. CCIV. 1.

14th centuries, for in 1365 it is mentioned as the site of a former castle. In the 15th century the Sárkány family of Ákosháza built a new stronghold on the site of the earlier castle: the central part was raised to form a quadrangular area surrounded by a palisade within which brick buildings were erected. In the 16th century the castle was one of the border forts in the wars against the Turks. It was destroyed by its garrison prior to the Turkish occupation of Kanizsa.

The village of Buzádsziget (site 69), lying to the south of the castle, is mentioned in charters from 1260. Its small Árpádian Age church – mentioned in a papal tithe register –, as well as the surrounding cemetery have been almost wholly uncovered. A cemetery ditch separated the cemetery from the village; a large economic building constructed around a framework of upright posts connected with wattling and daubed with clay stood beside this ditch. Another building, a terre pisé house from the 15th-16th century lay somewhat farther; a well lined with wooden beams was uncovered in its L shaped extension. Outstanding among the finds from the well was a tin flask with its own tin cork that had belonged to a set of six similar pieces which had been kept in a wooden chest. The village remained in the possession of the Sárkány family until the end of the 17th century.

A Benedictine monastery, dedicated to St. Margaret of Antioch was built sometime before 1234 by Arnold I of the Buzád *gens*. Its church was later rebuilt to suit the Baroque taste. Recent investigations have shown that the current church was built over the nave of the earlier Romanesque church. A Romanesque relief, depicting a male figure holding the model of the church in his right hand was found, built into the northern wall of the church. The relief most probably depicts the founder of the church.

Csák I of the Buzád branch of the Hahót family founded a kindred monastery in the late 1230s at Alsórajk-Kastélydomb (site 6). The large church, dedicated to the Virgin Mary of the Premonstratensian monastery was built on roughly 2 m wide foundations. A gallery for the patron family was built somewhat later in the western end the nave of the single nave church with an apsidal choir and a pair of towers at its eastern end. The church itself had been almost wholly destroyed and could thus be dated only on the basis of its groundplan and the finds from the graves around it. However, most of the skeletons from the burials of the Árpádian Age had been deposited in an *ossarium* during the Middle Ages (perhaps in the 14th century) and thus only the date of its destruction (in the second third of the 16th century) could be established on the basis of the 15th-16th century graves. The trial trenches opened to the north and south of the church yielded 13th to 15th century finds, including a complete set of tiles from a stove from the reign of King Matthias, as well as a few fragmentary tiles from another stove.

In the later 13th century, Herbold of Falkos, a member of another branch of the Hahót family, established his seat to the north of Hahót, at

Fakospuszta (site 56). A log construction stood in the centre of his castle in the early phase. The castle was rebuilt in the 14th century: brick buildings and a wall were erected. A coin of King Sigismund (1387-1437) marks the last period of the castle.

Between 1356-1384 the Falkosi family built a Franciscan friary on the hill to the west of the modern village. The tower of the Gothic church of the monastery – that has been completely excavated – stood at the southern side of the polygonal choir. The monastery wing adjoined the northern side of the chapel and a family burial chapel stood at its northern end. Although severely damaged during the Middle Ages, the monastery was rebuilt and even enlarged. A part of the earlier carvings were incorporated into the crypt that was built in the chapel. Ornate stove tiles from at least two stoves, found in the plastering of a large oven, echo the former beauty of the monastery.

Similarly to other regions of Hungary, the medieval population of the Hahót basin, engaged in agriculture, industry and trade, enjoyed a living standard that more or less corresponded to the European average. The flourishing economy of the villages and market towns, of the monasteries and manorial centres was brought to an abrupt halt by the expansion of the Turkish Empire. Most villages were deserted by the mid-16th century. Following the fall of Kanizsa in 1600, the region again became a borderland. The 150 years long Turkish occupation and the constant skirmishes in the border zone decimated the medieval Hungarian population.[77] Following the retreat of the Turks a southern Slavic (Croatian, Slovenian) and German (Austrian) population was brought in to populate the region, whose settlements still form a part of the settlement network of this region.

The results of the settlement surveys in the Hahót microregion can be summarized as follows:

(1) As a result of intensive fieldwork (surveys and excavations) another blank spot has been eliminated from the archaeological map of Hungary.

(2) The details of the rather belated Neolithization of the Zala upland and, also, of the Hahót basin can now be reconstructed: following the rather early occupation of strategically important areas (the southern Zala plainland, the Zala and Kerka-Cserta valleys [Amber Road]), the internal valleys were only occupied in the Late Neolithic and Early Copper Age, in the late phase of the Lengyel culture.

(3) The first true prosperity of the region can be dated to the Middle Copper Age, to the Balaton-Lasinja period. The density of settlements (and the Csáford gold discs) would suggest that one of the main centres

[77] *Vándor 1994* 299-400.

of the culture lay in this area. However, the region soon lost its importance and became a sparsely populated western borderland by the Late Copper Age.

(4) The renewed occupation of the area in the Early Bronze Age, in the Somogyvár-Vinkovci period was interrupted by the expansion of the Encrusted Pottery culture that transformed this area into a depopulated western border zone. The appearance of the Urnfield culture again brought a change in this respect, but the earlier expansion of the Tumulus culture also influenced the development of the settlement network. By the end of this period the settlement density again approximated that of the Early Copper Age.

(5) The Late Bronze Age florescence was brought to an end by the migrations of the Early Iron Age. The Zala upland was again deserted until the arrival of the Celts. By the LT C period the Hahót basin had been occupied by a tribe that was, from a socio-economic point of view, somewhat less developed than its neighbours. The Celtic florescence was not halted by the Roman invasion that saw the influx and settlement of a northern Italian population engaged mainly in trade.

(6) The successive waves of the Migration period swept the provincial population away, turning the region to the west of the Zala river once again into an uninhabited area, a western borderland. A mixed, Avar-(du[d]leb) Slavic population settled in the area in the early 7th century at the time of the Avar kaganate that remained here even after the dissolution of the kaganate, whose descendants became subjects of the Eastern Frankish earldom established by Pribina and Kocel around 840, whose centre lay at Mosaburg/Zalavár.

(7) The appearance of the ancient Hungarians brought an abrupt end to the attempt to link this region to the mainstream of Christian Europe; following their occupation of the Carpathian Basin, the ancient Hungarians again turned this region into an uninhabited borderland. Under the first sovereigns of the Árpádian Age, this border was shifted farther to the west and a royal *curia* was established at Újudvar (*Curia Nova*). In the later 12th century the seat of the Hahót-Buzád *gens* was established in the Hahót basin, bringing an economic and cultural prosperity to this region. This prosperity was brought to an end by the Turkish expansion: from the second half of the 16th century the region became the depopulated, southern borderland of the Hungarian Kingdom and Europe for 150 years.

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Eszter Bánffy

NEOLITHIC AND COPPER AGE SETTLEMENTS AT HAHÓT AND ZALASZENTBALÁZS (ZALASZENTBALÁZS-PUSZTATETŐ, HAHÓT-SZARTÓRI I-II)

Contents

Zalaszentbalázs-Pusztatető
Gelsesziget „B"
Hahót-Szartóri I-II

The present paper describes three Late Neolithic and Copper Age settlements from Zala county in the light of their relevant chronological sequences and historical problems. The excavations of sites Hahót-Szartóri I-II and Zalaszentbalázs-Pusztatető made part of the so-called Zala Microregion project financed by the 'OTKA' (National Scientific Research Found).

As regards the preliminaries of the excavations in the Hahót basin, it should be mentioned that a significant joint undertaking was launched by the Directorate of Museums of County Zala and the Archaelogical Institute of the Hungarian Academy of Sciences in 1979. Previous to the (re-)inundation of the Little-Balaton area, the monuments of the region had to be prospected and rescue excavations were started at the most important sites. Prospecting was carried out at several sites from the earlier phases of Prehistory, that is from the Neolithic and Copper Age periods supervised by experts from the Thury György Museum (Nagykanizsa), Göcsej Museum (Zalaegerszeg), Balaton Museum (Keszthely) and the Archaeological Institute. Preliminary publications were edited about the uncovered finds and their historic relevance by the excavators. The Lengyel culture material from Balatonmagyaród-Hídvégpuszta will be published by L. Horváth and the author of this paper.

The research of the area to be inundated in the Little-Balaton region was not the final step in several-year-long large-scale excavational series, which was called Transdanubian Microregion Research Project in the annual schedule of the Archaeological Institute. The geographical area southwest-west of the Keszthely gulf is constituted of north-south directed river valleys with long hills between them (*Pl. 9*). After 1986, research was shifted westwards from the Zalavár - Zalakomár region to the vicinity of villages Felsőrajk-Gelsesziget and Hahót-Zalaszentbalázs.

Field walkings yielded scattered sherds of the Lengyel and Balaton-Lasinja cultures and also a few items of the Furchenstich type. Accordingly, M. Bondár and the author unearthed a settlement from the late phase of the

Lengyel Culture in the Szőlőhegyi mező at Zalaszentbalázs (see both studies in the present volume). The author also carried out excavations on sites Zalaszentbalázs-Pusztatető and then Hahót-Szartóri I. and II. One settlement feature from the site Gelsesziget "B", excavated by B. M. Szőke, also belongs to the early phase of the Balaton-Lasinja culture.

1. Zalaszentbalázs-Pusztatető

The village of Zalaszentbalázs lies along the road No. 74 connecting Zalaegerszeg and Nagykanizsa. There are only a few houses on the hilltop west of the road, the higher parts are occupied by gardens. The Szentbalázs village of the Middle Ages settled on the hill, an areal which had also been favourable for the people of the Lengyel culture as well as of the Balaton-Lasinja culture (*Pl. 10.*).

On the hill called Pusztatető, there were scattered sherds from the Middle Ages, while the uncharacteristic, worn Neolithic sherds could be found everywhere. On one spot remains of painted, thin-walled pottery were collected. It was here where we opened a 10 x 3 m large cut vertically to the direction of the hill. It opened up a single, although rich pit (Cut A. feature 1. - *Pl. 11.*)

The 66 cm deep, round pit had a 160 cm diametre and it started at a depth of only 22 cm from the present surface. The filling was burnt black soil with pieces of daub. The thresh was probably burnt inside the pit since the bottom and a side of it were red burnt. Beside the fragments of common household pottery with thick walls, the pit contained an unusually great number of thin-walled, red-yellow painted pottery fragments.

In the pit material, it is easy to separate the rough household pottery *(12, 18, 23, 24, 26)* from the red-and-yellow painted, finely levigated, very thin-walled types which probably did not serve everyday purposes *(19-22, 44-48)*.

Household pottery is mainly composed of pots and dishes. Their material is usually yellowish grey or (in the case of dishes) dark grey, sometimes with reddish spots on the surface. For tempering, pebble and mica grains were mostly used, in a few cases sand was mixed. (Tempering with sand was characteristic in the final phase of the Lengyel culture and in the Balaton-Lasinja culture following it.)

Pots have a broad mouth. The slightly protruding rim, which lends a slight S-profile to the pottery is characteristic *(11, 14, 19, 20, 22)*. On one piece, a small knot-handle can be observed, which is rather an ornament than a practical devise. Besides, three pierced handle fragments were found in the pit. One of them is pierced through horizontally, two vertically while the tip of all the three pieces is turned upwards (spouted or cornuted handles). *(16-18)*. This ornament type does not occur in the earliest phase of the culture.

Among the dishes, there are fragments from both the finely and the roughly executed types. They can be of vaulted profile with a carination

along the belly *(30, 42, 43)* or mildly vaulted, without a carina, closer to the cylindrical shape *(8, 10, 28)*. A thick-walled rim fragment belonged to a dish with inverted rim *(20)*.

The specific pottery type characteristic of the whole of the Lengyel culture is the pedestalled bowl. A low pedestalled bowl, which can be restaured, represents the early Lengyel phase (*88*). Four more pedestal fragments were found in the pit *(9, 17, 27, 29)*. One of them is from another low pedestal (which is not frequent in Southern Transdanubia), two are fragments of the high pedestalled bowls characteristic of the classical period of the culture.

On fragments of thin-walled dishes, traces of red, sometimes yellow or pastose white painting can be observed. Regrettably, the chemical composition of the soil did not favour the preservation of the painting, so, except for a few cases *(74-83, 86, 87)* no pattern could be distinguished. It could be observed, however, a fact of chronological importance, that white painting was sporadic and thin unlike the thick cover of the classical period.

The thin walled pieces mostly belonged to cups and mugs, fragments of smaller pottery. The majority had a cylindrical or slightly protruding neck and a somewhat globular profile *(48, 49-51, 56-60, 72, 73)*. An exceptionally intact, reconstructed representative of the type can be seen in *87*.

A light grey, poorly burnt small vessel of porouse raw material shows an unusual shape *(52)*. Judged from the poor finish it might have been either a toy or a once-used equipment of a home ritual. Miniature pottery is present in most of the South East European cultures; they are best known from the Vinča culture, where they were published in details.[1]

The material of feature 1. in Pusztatető can be dated to the early, I. phase of the Lengyel culture, even to its initial part. The following facts attest to it. From the characteristics of the early phase, the incised pattern, otherwise rare in this region does not yet occur, while the yellow-red painting is present. White painting appears sporadically, tempering with sand is not yet typical. Concerning the shape it can be said that the low pedestalled bowl and the thin-walled, red-and-yellow painted vessels represent the early period, while the turned up "cornuted handle" is already occuring in early MOG assemblages in Lower Austria. The pottery can be parallelled to the Sé typed material in Western Hungary. The variety of shapes and ornaments characteristic of the early phase and living on in the classical (II) period suggests that in this region of Transdanubia, Lengyel culture developed in peace without interruption.

In a broader chronological context this phase of the Lengyel culture may be contemporary with the end of the Herpály culture in Eastern Hungary and the D1 phase of the Vinča culture in the South.[2]

Naturally, the question may be raised as to what other settlement features have been found during the excavation. The 3 x 10 m large cut A was "empty" apart from the above described pit. As the closed gardens allowed,

[1] *Letica 1967.*
[2] *Kalicz 1982; Kalicz 1991* 349.

another cut was opened vertically to the hill. It had identical measurements and was attached to cut A in a chess-board pattern so that the hill was prospected from the top nearly to the valley with damper soil. In cut B patches of more than once disturbed soil could be observed with indefinite outlines. Regrettably, the features appeared very close to the present surface and a pit from the modern times disabled any kind of observation. Judged from its filling, one of the indefinite, square-shaped patches and the few smaller holes similar to post holes, it might have been a house, although no find material supported this possibility.

All the above lead to the conclusion that the nucleus of the settlement might have been in the southern part of the hill. The private gardens limited the research possibilities. Following the appearence of a few worn sherds, however, another 3 x 15 m large cut was opened parallelly to the hill, about 200 metres from the previous spot.

Cut C, however, did not contain Lengyel culture apart from a few scattered sherds, perhaps from a pit disturbed by the plough, but some features of the Balaton-Lasinja culture. *(89, 90, 91).*

Regrettably, similarly to other areas, settlement features started at a depth of 20-25 cm, so from several pits of the Balaton-Lasinja culture we could observe only their bottom, while the material from the upper parts was scattered by the plough. Anyhow, finds were denser at a few spots near settlement features. In the southwestern part of the cut a section of an Árpád-period house was unearthed (feature 4.). Beside the great number of pottery remains, a pair of iron scissors were found in the burnt debris.[3] Under the middle age floor the intact, total, hive shaped pit of the Balaton-Lasinja culture was uncovered *(90, 92)*.

The filling of feature 6., similarly to the other pits in cut C, contained nothing but the finds of the Early Balaton-Lasinja culture. No other trace of a settlement feature, e.g. a house could be detected. If there had been anything there, the medieval village in the Árpád Period destroyed it. So only the bottom of the pits could be unearthed in this cut as well. Feature 6., however, was dug deeper and the Middle-Age floor preserved it.

From among the finds of the pit a few black, shiny, polished pottery fragments with dot and fluted ornament can be mentioned *(121-122).* They must have belonged to two vessels. One consisted of several fitting pieces, which could not be completed. This type shows direct Southern contacts belonging to the metal imitating pottery group. A series of good analogues attest to the Balkan origin of this fashion. It is present among the pottery finds of the Salcuta-Krivodol culture and it is also to be found in the closer, late Vinča culture. A very close analogue to our vessel can be recognised in a single-handled jug with identical ornamentation from the site of Jaksič.[4] Our piece from Pusztatető must have come from a similar jug. The few

[3] The material was passed to J. Kvassay for examination.

[4] *Praist. Jug. Zem.* Pl.XXI/3.

ornamented fragments from Keszthely-Fenékpuszta-Vámház and Keszthely-Fenékpuszta II. sites must have belonged to a similar type.[5]

Another black, graphitted sherd reflects indirect Southern influence. Here, fluted decoration is only imitated with deeper grooved parallel lines. Nándor Kalicz, owing a decisive role to Southern immigration and Southern cultural influence, based his arguments, among others, on finds similar to the above describe ones.[6]

In the material of the pit, fragments of other characteristic pottery types of the culture were also found. The two handled, barrel shaped pot is a frequent type in the early phase. Two vessels could be reconstructed *(128-129)*. Several other thick-walled sherds of the type were also found together with fragments with both horizontal and vertical handles.

Another characteristic pottery type is the dishes. They are usually biconical, carinated 3-4 cm under the rim *(97, 123)*. This dish type with inverted rim may be without a carina and also of a slightly bent shape. Special attention should be paid to a fragment of roughly finished pottery with a horizontal handle, ornamented with incised pattern above the carina *(127)*. As fluted ornament is mostly present on finely elaborated vessels (see the above described fragments and 99) and incised pattern can be observed dominantly on household pottery it may be supposed that incision is the local imitation of fluted ornament on similar pottery types. There are horizontal handles in feature C/6 as well, even if they cannot be fit to the vessel with incised ornament *(107)*. From among the handles one is undoubtedly pointed upward, "cornuted" *(107)*. It cannot be excluded that this type, inherited from the Lengyel culture, might be found on dishes with inverted rim very characteristic of the Balaton-Lasinja culture. Further examples for the slightly inverted rim without carina are: *100, 108, 125, 126, 127*. On this upper part, fluted ornament or deeply incised zig-zag line pattern can usually be seen. In one case, hatched pattern is bordered by drop shaped dots *(97, 123)*. On a rare piece the dots form a pattern of concentric circles *(118, 124)*. A few flat, rounded knobs also served the ornamentation of dishes *(94, 99, 126)*, as attested to by analoguous examples from other sites.[7] The latter dish fragment with a knob displays a fluted ornament.

There were no fragments of the one- or two-handled jug also characteristic of the Balaton-Lasinja culture disregarding the shiny black sherds which might be reconstructed to this form. Vertical handle fragments, judged from their size and raw material, seem to have belonged to the earlier mentioned two handled pot type.

Clay spoons should also be mentioned. They are frequently represented from the late phase of the Lengyel culture and survived without carina in the Balaton-Lasinja culture *(100-105)*. Finally, feature 6. yielded an intact miniature vessel and a fragment of another, similar one proving that this

[5] *Kalicz 1973* 138, 4/4.; 139. Fig. 5/1,2,3.
[6] *Kalicz 1969; idem. 1973* 131-163; *idem. 1982; idem 1969-70* 94-96; *idem. 1980* 245-271.
[7] *Kalicz 1988* 354, Fig. 10, p. 358, Figs.5,6.

common type of the late Neolithic survived in the Balaton-Lasinja culture. Their stylistic features, however, belong to the Copper Age types: they resemble a small bucket or a vase.

Gelsesziget "B"

The site mostly contained late bronze age and medieval settlement features,[8] but one small roundish pit (cut 5, feature 1; depth: 60 cm, diameter: 50 cm) belongs to the Balaton-Lasinja culture. From the grey filling with small pieces of wattle and daub a thick-walled, dark grey mug came to light. Its material is coarse, levigated with pieces of pottery. This vessel, having two handles on the shoulder can be considered a close parallel to the two pots of Zalaszentbalázs-Pusztatető. The mug could be restored similarly to the spoon lying near the jug. The pit did not contain fragments of any other vessels.

As the rescue excavation in Gelsesziget "B" consisted of long and narrow cuts, it is not impossible that feature 5/1 was not the only settlement feature of the Balaton-Lasinja culture, which preferred smaller and provisional settlements. When assuming this, we have three small middle chalcolithic settlements within a circle of two km radius. This sort of settlement structure fits our recent knowledge about the Balaton-Lasinja culture in this region.

On the other hand, the regular form and the small size of the pit, as well as its content: two completable pieces of pottery and nothing else allow us to make thoughts about a non-profane use. Certainly, on the basis of one single feature this remains an open question.

2. Hahót-Szartóri I-II

Before evaluating the finds I will describe the finds from the Neolithic and Copper Age Hahót-Szartóri I. and II. sites, which also lay very close to the surface so they are highly disturbed or even perished.

The village of Hahót lies in a valley between North-South directed hills, cca 6 km north of Zalaszentbalázs, also along the road connecting Zalaegerszeg with Nagykanizsa. The two sites are on the hillside and the hilltop east of the valley *(130)*. In clear weather one can see as far as the hills around Zalaszentbalázs.

Site I. was found during the preliminary field survey. B. M. Szőke and L. Horváth collected a few sherds of the Lengyel and Balaton-Lasinja cultures. Accordingly, twenty research cuts were opened vertically to the North-South directed hills each measuring 10 x 3 m. Altogether 600 square metres were uncovered. We could observe a settlement from the older phase of the Lengyel culture close to the present surface, the features of which were

[8] see the study by B. M. Szőke in the present volume. Here I wish to thank the excavator for giving me the chalcolithic finds for publication.

totally destroyed by later settlers. In cut O/5 a few smaller sherds, a spinning ring and an object called (to my opinion, mistakenly) "oil lamp" (*137, 135*) were distributed in a relatively closed circle of about 2 square metres without any traces of settlement features. In cut B/3 a well reconstructable bottle shaped pot was found *(138)* also without traces of a settlement feature. The pottery, although undecorated, can be groupped in the I. or the beginning of the II. (white painted) phase of the Lengyel culture, based on typological characteristics and the finely levigated raw material. Similar finds are known from Aszód.[9] Among the latter ones some are painted and ornamented with small knobs on the carinated belly.

Also in site I., in cut C/4, sherds of the Lengyel culture were found about 25 cm under the surface *(131-134, 136).* It is difficult to decide from a few fragments, still the rough finish, tempering with sand and the large knobs suggest the late, unpainted phase of the Lengyel culture. This time the destroyed settlement feature could still be recognized. Namely, there was an elongated patch in the northern section of the cut, under the sherds. It could not be a house, since the patch did not show up in the next, D/4 cut. Neolithic settlement features might have disappeared due to two reasons: partly because they were close to the present, ploughed surface and partly because people of several later periods settled on the same spot, built houses and dug deep pits.

Settlement features of the chronologically following Balaton-Lasinja culture – contrary to the expectations — did not appear in the site except for a shallow pit destroyed by the Baden culture and a few scattered sherds.

Not even 1 km north of site I., along the ridge of the hill, the later field walkings discovered a settlement of the Balaton-Lasinja culture. In site Hahót-Szartóri II, 120 sq. metres were unearthed in two cuts, where four debris pits of the culture were found. These pits, judged from their size and irregular shape, may have been clay gaining pits with a secondary utilisation for household debris from which only sherds and some stone implements have been preserved. Animal bones were turned porous by the chemical constitution of the soil, so they could not be analysed. Regrettably, no other traces have been found from the settlement. Considering the small size and frequency of the Balaton-Lasinja settlements in the surroundings, this must have been a temporary, perhaps seasonal settlement.

The finds can be characterised by relatively rough finish and tempering with sand. Sherds are worn, poorly preserved, although there are some fragments with incised pattern. The four pits yielded altogether 1040 pieces of pottery.

The mug with inverted rim from feature II/A/1. is a characteristic form in the Balaton-Lasinja culture. It must have had two horizontal handles *(149).* Similar, high dishes with inverted rim are represented by the ornamented fragments from features I/B/2. and 3. *(139, 150-153).* Here, the shoulder of the vessels were ornamented with incised triangles, dotted patches. A similar

[9] *Kalicz 1985* Pl. 35/1, 39/1, 43/1, 47/4, 50/6, 58/7.

fragment was found in feature II/A/2. It was somewhat better finished as regards the incised pattern and the identical material *(172)*. These motifs are also characteristic of the culture. The same pit yielded fragments of a depository vessel (probably the type of Pusztatető with two handles) *(156, 160-165, 174-178, 180)*. The pots have a variety with slightly inverted, cylindrical neck *(162-165, 167, 168)*. This type first appeared in the Balaton-Lasinja culture, and a large reconstructed item is known from Balatonmagyaród-Homoki dűlő site.[10]

Two pedestalled bowls are also known from this pit: it is only the archaeological literature that tells that the pedestal might have been bell-shaped *(173, 179)*.

Among the vertical and horizontal band-handles there was one with a beaked or cornuted shape (*187*). Besides, numerous clay spoons and their fragments are worth mentioning from all the four cuts *(188-192)*.

Remains of the settlement of the Baden culture were also unearthed in site Hahót-Szartóri I., beside the above mentioned scattered Lengyel finds. Some Baden pits obviously destroyed a few features of the earlier Lengyel culture, that is why the latter appeared only as stray finds (e.g. in cut B/5). Nevertheless, later settlers, especially during the medieval Árpád-Period, damaged the Baden settlement in turn. (Feature 4. in cut B/5 is a small pit house from the Middle Ages with a few finds: it did not only destroy Baden settlement features but also annihilated, most certainly, a pit of the earlier Balaton-Lasinja culture as suggested by scattered sherds.)

Consequently, only a part of the remains of the Baden culture in site Hahót-Szartóri I. belong to closed settlement features. These latter are represented by four debris pits and a cca 3 x 5 m large patch consisting of thick, burnt daub and secondarily burnt sherds, probably the remains of a house *(193)*. The east-west directed daub patch was cca 45 cm under the present surface and it was 20 cm thick in average. Under it, there was a pit of identical outline and size with two post holes.

There are many settlements of the Baden culture and its relatives described from Central and Southeast-Europe and also in Asia Minor. No matter how large the number of the settlements is, there are very few houses well described in literature. There were various settlement types. Some were in the plains, some higher, in the hillsides along rivers, some others on even higher places. Some settlements were fortified. Very often only the daub remains found in debris pits hinted at the existence of houses.[11] In other cases archaeologists concluded that some of the pits might have been halfsunk living pits. The measurements of the few real houses suggest a nuclear family organisation. These houses had a rounded rectangular shape. The post structure could not always be observed. The daubed, sunken features found recently at Zók-Várhegy in the Baden layer were interpreted by the archaeologist as depository pits mentioning also that no feature with

[10] *Bánffy 1994.*
[11] *Banner 1956* 211-213.

daubed floor or post structure was found.[12] So, the feature found at Hahót is a rare phenomenon in the culture. At the same time, south of the Danube, on the territory of the present Slovenia and Croatia houses with semicircle ending were also found (Vučedol, Baden layer and Szarvas[13]).

The remains of the building at Hahót-Szartóri I. was probably rounded oblong shaped, but as it was not preserved intact it cannot be stated for certain. At its western end, right at the wall, a large debris pit was attached to it so the entrance could not be there. Its most probable place is the eastern, narrow side, at least that is what the two post holes suggest which may be conceived as the basement of the plank holding the perlin.

The oblong daub patch found here, where neither a foundation ditch nor a significant post structure could be observed under it, provides a good opportunity to raise the possibility that this might have been a frequent type of building in the Baden culture. It would explain why dwelling houses are missing from many settlements, apart from a few houses with apsis and why there are only pit complexes. In settlements where many debris pits and a rich find material attests to the existence of a greater number of population for a longer period, and where still there are no house foundations, perhaps provisional, poorly finished houses, similar to the one at Hahót might have been constructed. Hopefully excavations of further settlements of the Baden culture will add to our knowledge about this building type which is rather difficult to identify with archaeological methods. It is very difficult to find analogues to this feature, since the most similar Baden culture settlement in its find material, the huge settlement at Keszthely-Apátdomb, contained many pits but no dwelling houses.[14]

In the find material, several fragments represented the leading types of the classical phase of the Baden culture. Such are, first of all, a fragment of a two-partitioned dish *(194)* and fragemnts of the so-called fishbarque shaped vessel *(205-206)*. The so called gauges are also characteristic of the classical and the late phase of the Baden culture, several of them were found on this site, too *(237-241)*. The finds *242, 243* may have been fragments of a gauge or of a miniature jug. The incised pattern of parallel lines and dot series and their combinations also characterize the classical phase of the culture.[15]

Contemporary finds of the Baden culture in West and South Tansdanubia are similar to those in Hahót-Szartóri, while the best analogues can be found in the earlier mentioned Keszthely-Apátdomb material.[16]

A largely destroyed pit found at Hahót-Szartóri II. should also be mentioned. It contained a great number of sherds from the Late Mound Grave or the early Urn Grave Culture. All the finds belonged to huge pots or

[12] *Ecsedy 1982.*
[13] *Schmidt 1945.*
[14] *Banner 1956* 24-25.
[15] phase D, *Neustupny 1973* 324-325.
[16] *Banner 1956* 24-25, Pl.5.-8.

depository vessels with thick walls. Neither in the uncovered, desturbed feature nor in its vicinity were found other finds, suitable for a better chronological or cultural grouping.[17]

The hilltops and hillsides West-Southwest of the Balaton, except for the deeper, marshy river and streamlet valleys, were populated at least from the beginning of the Neolithic. The Transdanubian appearance of the Starčevo culture indicates the northwestern fort of a huge, South East Europeaan early Neolithic cultural circle, which spread through the Great Hungarian Plain (Körös), Transylvania (Cris) and Central Balkan (Starčevo) to Bulgaria (Karanovo I.-Pernik-Galabnik-Cavdar-Kremikovci), and even to Thessaly, in the Northern part of the present Greece (Protoseskło-horizon). Analysing these contacts, N. Kalicz carried out the detailed evaluation of the sites and finds of the Starčevo culture in Transdanubia in his recently published monography.[18]

Starting from the finds, Kalicz drew the northern border of the Starčevo culture about 20 km of the Balaton – 40 in he East, the western border at approximately the Zalaegerszeg-Becsehely line.[19] Regrettably, no early Neolithic finds have ever been desbribed from the region of the Zala Microregion either from field surveys or from excavations. However, Katalin H. Simon and László Horváth collected some Starčevo finds at Zalaegerszeg,[20] so these sherds represent the northermost and westernmost point of the distribution of the culture.

Regrettably, the remains of neither the older Linear Ceramic nor the Zseliz culture were found in the examined area, and if there ever had been any, they were destroyed by later settlements and deep ploughing. Thus, no further data can be added to the middle Neolithic development of the area or to the problem raised recently by Kalicz.[21]

The earliest settlers we could identify in the area were the representatives of the older phase of the Lengyel culture. They are, by no means, from the period of the formation of the Lengyel culture, that is it is not the Sopot-Bicske type find material and not the very early Sé type material either.[22] There was not even one sherd with incised pattern among these finds. The red-and-yellow, very rarely black painted, thin-walled vessels, the small knob ornaments and the constricted mouth mugs suggest of the early (I.) phase of the culture. Judged from the recent field walkings around Zalaegerszeg, it can be assumed that the area was densely populated in the older periods of the Lengyel culture.[23]

Comparing the finds with farther areas of the Lengyel culture, we must distinguish this find material from the Lengyel material characteristic of the

[17] *Kőszegi 1988, Patek 1968.*
[18] *Kalicz 1991b.*
[19] *Kalicz 1991a* 117, 118.
[20] oral comm. by K. H. Simon.
[21] *Kalicz 1991b* .
[22] *Károlyi 1983-84.*
[23] *H. Simon 1987.*

Eastern side of Transdanubia where the very characteristic forms are the high pedestal and first of all the large-sized tripartate vessel, that is the widely outverted mouthed pot with biconical belly, which are totally missing from our material. Some more similarities could be detected in the North Transdanubian and the North Eastern border area: in Csabdi-Télizöldes[24] and mostly Aszód[25] and Szőgyén (Svodin)[26]. The frequency of the bi- and polichrome painting, the thin-walled, nearly miniature vessels and the earlier described mug with outverted rim, where the carinated belly is close to the bottom of the pottery, are joint characteristics. We may also add that good analogues to these finds can be found in the polichrome phase of the East Austrian MOG.[27]

The remains of the white painted phase of the Lengyel culture were not found in four excavations. In the vicinity there are only a few sites and few finds from this period as well.[28]

The so far mentioned archaeological cultures and the first and second phases of the Lengyel culture have long been known for the Prehistoric research of Transdanubia. Still, it was an unsolved problem even in the early 60's, when and how the Lengyel culture ended[29] and if it met the Balaton-Lasinja culture, which latter is a relatively recently recognized culture (earlier: Balaton I. group). The finds from the Lengyel site of Veszprém-Felszabadulás út were the first that could be grouped in the late, unpainted phase of the Lengyel culture, which belongs to the early Copper Age and which was already known from other sites.[30] In the same publication, Raczky analysed a few smaller find units from field walkings in the area (Veszprémpinkóc, Veszprém-Nyúlkertek, and the farther Keszthely-Zrinyi út).

Here, it should be mentioned that the finds published from Veszprém-pinkóc were published on page 251 of MRT 3-excavation volume[31] closed in 1960 and edited in 1970, as partly belonging to the Lengyel, partly to the Balaton-Lasinja group.[32] It is, however, possible that they belong to in the final phase of the Lengyel culture (perhaps even the very end of the unpainted phase). The same may be true, in the same volume of the MRT, for pottery fragments from Hidegkút-Linzacker (27/8) and Hidegkút-Középdülő (27/7), where the knobs under the rim and the beaked handles together with a larger pedestal evoke the Lengyel culture, while the fragment with the handle starting from under the rim and the two handled pot are characteristic of the Balaton-Lasinja culture. P. Raczky himself states concerning the finds from Veszprém-Nyúlkertek that they may be all groupped in the III., unpainted

[24] *Antoni 1982.*
[25] *Kalicz 1971; idem. 1972; idem 1974-75; idem 1985.*
[26] *Nemejcová-Pavuková 1980, idem 1981.*
[27] *Ruttkay 1983* Pl. 8,9; *Neugebeuer 1982.*
[28] *H.Simon 1987, idem. 1990.*
[29] *Kalicz 1969,* 201.
[30] *Raczky 1974.*
[31] *MRT* (Hungarian Archaeological Topography) Vol. *3.*
[32] pp. 250-252, Fig.84.

phase of the Lengyel culture, although originally they had been separated to Lengyel and Balaton-Lasinja find units.

The appearance of the late phase of the Lengyel culture at Keszthely was perhaps the first hint that similar sites may be expected in county Zala. In the above described four smaller excavations, it was only Hahót-Szartóri I. that yielded features of this period with a few finds, but M. Bondár unearthed a part of Zalaszentbalázs-Szőlőhegy site between Zalaszentbalázs-Pusztatető and Hahót-Szartóri, where she only found unpainted Lengyel material. (In this site I started new excavations in 1992 and unearthed three burnt houses which seem to be even younger than the material analysed by P. Raczky from Veszprém-Felszabadulás út – see the present volume.) The site of Balatonmagyaród-Hídvégpuszta should also be mentioned, where beside the remains of many other periods, a large settlement of the Lengyel culture was also found together with a circular ditch system. This latter is a unique phenomenon in the younger phase of the Lengyel culture (except perhaps for Wetzleinsdorf).

The Balaton-Lasinja culture means the beginning of the Middle Copper Age in this region. East of it, it was contemporary with the "A" i.e. early phase of the Bodrogkeresztúr culture and to the North, with the Ludanice culture. We have learnt a lot about this culture since N. Kalicz's very important paper published in 1969.[33] Kalicz owes decisive importance to the Southern, Central-Balkan influences in the formation of the culture, and except for some surviving ceramic types, he found the role of the Lengyel culture negligable. Luckily, in county Zala there are several more-or-less excavated sites from the final period of the Lengyel culture and the early phase of the Balaton-Lasinja culture. Their detailed analysis may help to clarify the relation of the two cultures.

I must add now, that during the last few years there are accumulating signs suggesting that the life of the Lengyel culture did not cease after the unpainted period but enriched with new, Copper Age elements of way of life, new innovations and perhaps with smaller populational groups infiltrated from the south, it became the basis of the Balaton-Lasinja culture. Several phenomena seem to support this theory.

So, it can be stated that the Lengyel and the Balaton-Lasinja culture settlements often lie side by side in the hilly region of Zala county. In Zalaszentbalázs-Pusztatető site, on the elongated, flat hillside they are 200 metres from each other, while at Balatonmagyaród-Homoki dűlő they are 900 m from each other on an elongated flat hillside rising above the marsh area.

The site of Hídvégpuszta at Balatonmagyaród is somewhat east of the Zala Microregion area. A part of it belongs to the very late Lengyel culture with a circular ditch system. Not far from it, at site Balatonmagyaród-Homoki dülő the settlement of the Balaton-Lasinja culture is known. Similar phenomena are descibed by K. H. Simon from the collecting area of the

[33] *Kalicz 1969.*

Göcsej Museum at Zalaegerszeg,[34] and the same could be observed in the description of the sites in Veszprém county.[35]

Cultic practices of the period are also easy to compare. I have analysed this problem in several publications,[36] so, I just mention here that the ritual child burial at Balatonmagyaród-Homoki dűlő, which, I think, is a building sacrifice, has a closest analogue in the Veszprém-Felszabadulás út find material belonging to the late, unpainted phase of the Lengyel culture (child buried in the foundation ditch).

Regrettably, very little is known of the burial rites of the two cultures, so neither the analysis of the burial rites nor their comparison are possible. From the western circle of the Lengyel culture e.g. no archaeological traces of burial could be observed. We do not know what they did with their dead. From the Balaton-Lasinja culture, there are only a few scattered graves. The cremation burials ranged here earlier are the finds of the Balaton II-III., i.e. the Furchenstich culture.[37]

The state of research of settlements structures is not a bit better. As related to the large settlements of the late Lengyel culture, the population of the Balaton-Lasinja culture lived in smaller settlements. A similar process could be observed in the Great Plain during the period of the Tiszapolgár culture. There, this change was probably caused by the increasing share of animal keeping and the attached, mobile way of life. If the smaller settlements of the Balaton-Lasinja culture can be understood as the archaeological appearance of the same process, this way of life, usually accepted as typical of the Copper Age, became characteristic in Transdanubia with some delay.

As it has already been mentioned, there are significant differences in the pottery material. The jug with one or two handles carinated under the inverted rim, the barrel-shaped pot with slightly constricted mouth, the fluted ornament and the rarely appearing black polished ware are undoubtedly of Balkan origin. As it was rightly observed by Kalicz, their appearance in Transdanubia can be explained by the influence of the Salcuta III. circle, more exactly by cultural movements around the dissolution of Vinča D2. The metal finds of the period also attest to South Eastern influence.[38]

It was clarified already from the Veszprém-Felszabadulás út type material that beside the new forms, there are many surviving Lengyel forms in the Balaton-Lasinja culture, not to mention the similarities in the pottery technique and tempering with sand.

For the real understanding of the relation of the two cultures, however, a material that would be even younger than the mentioned late unpainted Lengyel, still older than the Balaton-Lasinja, i.e. the remains of a possible transitional period still lacked.

[34] *H. Simon 1990.*
[35] *MRT* (The Archaeological Topography of Hungary) Vol 2.
[36] *Bánffy 1985, 1986, in print.*
[37] *Kalicz 1973.*
[38] *Kalicz 1980, idem 1982.*

Luckily, there are already several materials known from the very late unpainted Lengyel phase (Lengyel IIIb), and some older materials were re-groupped here. Beside the earlier mentioned Hídvégpuszta and Szőlőhegyi mező materials we may mention Nagykanizsa-Inkey kápolna from the wider surroundings of the examined region, where L. Horváth has been excavating.[39] Recently, A. Figler found a similar site during the rescue excavation of the M1 highway near Hanság.[40] Following the analysis of these new finds there opens a possibility to observe the differences and the joint features and to bridge the white spot between the two cultures.

The so-called Furchenstich-culture (earlier Balaton II-III.) from the end of the Copper Age, which is parallel to the more eastern Hunyadihalom-Salcuta IV, i.e. the final phase of the Bodrogkeresztúr culture, is not yet represented in the area of the Zala Microregion. Not far away, however, at village Bak, László András Horváth unearthed such a settlement.[41]

There are no data if the changes of the end of the Middle Copper Age, the southeastern influences would have had any effect on the life in the region. Nor are there data from the beginning of the last great chalcolithic period, i.e. the Boleráz and the early Baden culture. The Baden settlement found at Hahót-Szartóri I., as described earlier, belonged to the classical period of the culture. Field walkings did not yield any material from the late Baden and the Kosztolác -Vučedol periods either.

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[39] the late Lengyel material will be analysed by N. Kalicz.
[40] kind oral comm. by A. Figler and N. Kalicz.
[41] *Horváth op. cit 1990.*

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THE SETTLEMENT OF THE LENGYEL CULTURE AT ZALASZENTBALÁZS

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1. The site

Between 1987 and 1989 I conducted an excavation at Zalaszentbalázs-Szőlőhegyi mező, a site that had originally been identified in the course of a field survey conducted in the former Nagykanizsa district.[1] As part of the microregional research project, the excavation was funded by the National Scientific Research Fund (OTKA).

The site lies roughly 1 km to north of the community, in an area called Szőlőhegyi mező (*Pl. 48*). In the course of the field survey preceding the excavation we identified a hilltop settlement of the Lengyel culture, indicated by sherds and burnt daub fragments scattered over a roughly 150 m by 100 m area, on the top of the ca. 220-230 m high hill.

The site is cut in two by a regularly levelled dirt track, with the greater part of the prehistoric settlement lying to the north of this dirt track. I investigated the site together with Eszter Bánffy: between 1987-1989 I excavated the settlement remains on the north side of the dirt track covered with pottery sherds and burnt daub fragments, while in 1992-1993 E. Bánffy excavated other features of this extensive settlement lying on the southern side of the dirt track and to the west of the area I had previously investigated.

The area to be excavated lay on the NE slope of the hill that was most densely covered with sherds and burnt daub fragments. In 1987 I opened three trenches: trench I was E-W oriented, trench II was basically the continuation of trench I, while trench III ran parallel to trenches I and II, to their N. In 1987 we uncovered eight settlement features. Our work was made difficult by the drought and the heat wave, the soil was extremely hard and compact, and it was often difficult to distinguish the patches indicating various settlement features. Most settlement features

[1] The survey was conducted by L. Horváth in 1978.

were indicated by large concentrations of pottery sherds (*Pls. 49.a-b; 50.b*).

In 1988 I had the humus removed from the area to be excavated, and opened a new N-S oriented trench that was roughly perpendicular to trench II of 1987. Four settlement features were excavated in this trench. The drought again made the observation of minute details impossible, and excavation work was more difficult in the levelled area than in the previous year since the prehistoric occupation layer had been compressed to a concrete-like hardness.

In 1989 I opened two new trenches that were perpendicular to the trenches of the 1988 season (trench 1989/I and 1989/II, running parallel to it). The two trenches contained four settlement features. The weather was again unfavourable: a prolonged drought that was hardly ever tempered by rains.

A total of seventeen settlement features were uncovered during the three seasons, and the excavated area totalled 610 m^2. We uncovered the remains of seven buildings, indicated by daub fragments representing the walls of the collapsed structures (features 1-2, 4-5, 9, 13-14), two hearths (features 6 and 8) (*Pl. 50.a*) and eight smaller pits (features 3, 7, 10-12, 15-17). Two of the buildings (features 1 and 9) were residential structures, the others had had a different function. The excavated house remains allow the reconstruction of above-ground structures: small houses erected around a framework of upright posts connected with a wattling of intertwined twigs that was subsequently daubed with clay. However, few traces of the original posts survived. The remains of the flooring could be observed in feature 1. The floors were generally indicated by a large cluster of finds under the collapsed walls. The presence of houses was indicated by daub fragments with impressions of the wattling and the burnt daub fragments from the collapsed walls. The surviving remains of these houses which were undamaged by ploughing measured 5-6 m x 2.5-3 m. Most buildings were N-S oriented. The debris of reddish burnt daub fragments could be especially well observed in two houses (features 1 and 9). After clearing the debris away we found the furnishings of the house – vessels, stone implements, querns and grinding stones -- still lying in their original position (*Pls. 49.b, 50.b*). It would appear that the conflagration that destroyed the houses had been so sudden that their occupants had no time to salvage their contents. Similarly to other Lengyel sites, the destroyed houses were not rebuilt, the debris was not levelled and the new houses were constructed in another, unoccupied part of the hill. This custom might explain why we found no refuse pits filled with household refuse that generally contain a rich archaeological material. Our observations would suggest that the Lengyel settlement at Zalaszentbalázs was either occupied for a brief period of time only, or that the lifeways of its occupants did not call for sturdy, well-built structures with periodically renewed floors. These structures with their basketwork walls daubed with clay did not take much time or effort to construct and unless these structures were renewed, no traces remained

of the periodically replastered, lightly pounded clay floor or of the pits of the posts that supported the roof.

Traces of various activities could be observed in features 13 and 14, structures that were not residential buildings. In these two features the differences in the colour and the texture of the infill, as well as the various categories of artefacts allowed the reconstruction of various activities: the grinding of cereals, the manufacture of stone tools and the manufacture of pottery.

The pits of the settlement were either used for storage (feature 11) or for the extraction of clay.

The life of the settlement can be reconstructed from the furnishings of the buildings, from the stone tools and implements, as well as from the animal bones. The loom weights found in feature 1 reflect spinning and weaving activities. The stone finds indicate that stone tools and implements were manufactured on the site from raw materials collected locally or acquired from more distant regions.[2] Local manufacture is indicated by chips, cores, pounding stones and stone polishers. The raw material for stone tools was procured from the uplands in the Balaton region, from the volcanic 'stone fields' of present-day Uzsabánya. Raw material from Szentgál and Sümeg-Mogyorósdomb was also found, reflecting perhaps trade links extending over a wider area. Aside from a number of querns and grindstones, crop cultivation is also indicated by a stone blade that had originally been fitted into a sickle.

The animal bone remains that were surprisingly few compared to the pottery finds include sheep/goat, pig, cattle, dog, wild boar, aurochs bones, as well as snails, pike and carp.[3]

2. The finds

A total of 5140 objects were inventoried following the selection of the finds.[4] The overwhelming majority was pottery: vessels and various other clay finds. The number of complete or reconstructable vessels was fairly low *(152, 170, 174-175, 177-179)*, similarly to other find categories, such as stone axes, silexes and animal bones.

The pottery sherds that were brought to light all come from characteristic Lengyel ceramic wares. I followed the typological system elaborated by Nándor Kalicz,[5] that does not always correspond to the terminology used by E. Bánffy.[6] I have not quoted all possible analogies to individual vessel types since E. Bánffy offers a detailed overview of

[2] The stone finds were examined by Erzsébet Bácskay and Katalin Bíró.

[3] The animal bones were examined by László Bartosiewicz.

[4] The finds are currently housed in the Göcsej Museum of Zalaegerszeg, inv.nos 91.1.1 - 91.15.25; 92.5.1 - 92.14.8; 92.32.1 - 92.42.6.

[5] *Kalicz 1985* 41-47 and the type charts.

[6] See in this volume.

Lengyel pottery types in her study. In the following I shall only discuss individual vessel forms at greater length if they are unique from some point of view or offer entirely new information on the late Lengyel period.

2.1. Pottery

By far the most abundant category of clay finds was *pottery*. Most vessels were tempered with mica, chaff or, less frequently, small pebbles, or their combination. Significant differences can be noted between coarse and fine wares as regards their surface finish. Fired in a well oxidizing atmosphere, *fine wares* have a careful finish and are light brown or reddish in colour. Vessels are thin-walled, often with an almost porcelain-like quality. Traces of painted decoration have often survived on fine wares. Painted patterns are generally red, with the occasional yellow, white and black painted motif. Painting most frequently adorns pedestalled bowls and cups. *Coarse wares* were fired in a reducing atmosphere, leading to shades of grey, and even shades of bluish grey in the case of pots and coarse bowls.

A wide variety of *knobs* and *lugs*, 688 in all, were found at the site. They come in all shapes and sizes, and are the single most common ornamental element on the pottery. They range from tiny knobs on fine, thin-walled vessels to the large, pointed beak-like lugs on large storage jars, including small, button-shaped knobs, lentil-shaped knobs, large rounded knobs, flat knobs, perforated knobs, upright beak-like lug handles, and slightly flattened lugs springing from the rim. Knobs and lugs were used to ornament all pottery types, as well as idols and altars. In some cases, the technique of applying the knob or the lug can also be observed: the wet clay of the vessel was pinched to form a small projection onto which the knob or lug was then applied before firing the vessel. These knobs and lugs did not adhere properly to the vessel wall, and very often broke or fell off, explaining the high number of knobs and lugs among the pottery finds. Lugs and knobs are the most common plastic decorative element in the Lengyel culture, and they often indicate subtle chronological differences.[7]

Handles are also quite frequent; 551 have been found altogether. They too come in a wide variety of shapes and sizes: stout or pointed, perforated lug handles and beak shaped handles on the bowls.[8] There are some transitional forms between lugs or knobs and handles, such as the handle-like unperforated lug, rounded lug handles[9] and smaller, perforated lug handles.[10] Small loop handles are often placed on the neck, while pots usually have the loop handle springing from the rim.

In comparison to the early Lengyel period with its abundance of *painted* patterns, only nineteen painted pottery sherds were recovered.

[7] *Raczky* 1974 200.
[8] Inv.no. 91.4.77.
[9] Inv.no. 91.4.135.
[10] Inv.no. 91.6.137.

Two vessel fragments had been ornamented with white painted patterns;[11] black-on-red painted motifs are more frequent *(104, 173, 203)*, and one sherd bore a pattern of yellow combined with red painting.[12]

Incised ornamentation was found on three sherds only, one of these came from a clay spoon *(78, 83-85)*, the other was on the body fragment from a thick-walled vessel *(191)*, whilst the third was in combination with white painting. Mat impressions could often be observed on the underside of several large-sized vessels *(100, 154)* probably when the vessels were dried.

Pottery forms

Most vessel fragments come from *bowls*. Two main varieties can be distinguished: simple bowls and pedestalled bowls. Most frequent are the bowls with rounded side *(90, 95, 141, 167, 175)*, and biconical bowls with either a rounded or a more pronounced carination are also quite common *(4, 24, 43, 53-54, 65, 93, 103, 123, 137, 140, 142-143, 147-148, 159)*. Conical bowls, coming in various sizes, were also popular *(57, 67, 114)*. A small, flowerpot-shaped bowl ornamented with six pointed knobs under its rim represents a more unusual form *(152)*. Bowl rims are generally cut straight *(13, 161-162, 165-166)*; also common are slightly swollen *(67, 121)*, inturned *(46, 58)* and scalloped rims *(155-156, 160)*, as well as spouted rims *(2, 30)*.

Pedestalled bowls usually have thin- or thick-walled pedestals, depending on the function of the vessel. Pedestals can be cylindrical *(73, 173)* or conical *(74, 172, 178)*, and are occasionally fenestrated *(80, 180)*. Only one single fragment of a bell-shaped pedestal was found.[13] An almost intact pedestalled bowl has also come to light (*178*). The remains of black on red painting were noted on the inner side of a large pedestalled bowl *(203)*, the chequerboard pattern that was still visible at the time of its finding has since, unfortunately, become almost obliterated. The bowls supported by the pedestals come in the shapes described in the above.

Seventeen fragments of strainers have been found. Most of them were reddish in colour, conical in form, with perforations on their side and base *(70)*. One of these had perhaps functioned as a vessel lid *(201)*.

Fragments of thick-walled *storage jars* were also quite frequent. These were globular with slightly incurving neck, with round-sectioned handles positioned under the rim or on the neck *(18-19, 28, 64, 106, 129-133)*. In some cases the handle was drawn from the rim to the shoulder (*26-27, 45, 66, 81, 86)*.

Another common form, as shown by the high number of fragments, was the *pot* that comes in various forms and sizes. Most pots have an ovoid body and a slightly outturned rim *(170)*, with the occasional large

[11] Inv.no. 91.5.79.
[12] Inv.no. 91.6.3.
[13] Inv.no. 91.4.21.

knob or flattened lug handle *(6, 17, 25, 39, 61-63. 113)*. Some varieties have a row of punctates running under the rim *(82)*.

A more unusual form among the large, thick-walled vessels is the so-called *pannier-shaped vessel*, with its symmetrically placed handles that enabled suspension or carrying on the back. The handles are upright, pointed lug handles *(20, 60, 72, 94, 96, 102, 149-150)* or, more often, perforated lug handles in pairs of two *(105)*. Textile or mat impressions occur frequently on the underside *(100, 154)*.

Three fragments of *flowerpot-shaped vessels*, a popular and common pottery form of the Tisza culture, were found.[14] All three fragments came from thin-walled vessels whose angular form was emphasized with a pronounced edge, as well as a thin rib and a round knob *(29)*.

Thin-walled biconical *cups*, of almost porcelain-like quality, were also quite common, occurring in various sizes *(3, 5, 32-34, 36-38, 40-42, 47, 49, 76-77, 79, 104, 112, 118-120, 122, 124-126)*. The neck is cylindrical or slightly arched, the body is biconical with a pronounced carination onto which are applied *knobs (14, 23, 55, 177, 199)*. These cups often have a reddish-yellow slip,[15] and white[16] or red-and-black painting.[17] Fragments of handled cups and of cups with pinched lug handles[18] also came to light *(53)*. One specimen had both lugs and handles *(174)*.

The fragments from biconical *flasks* allow the reconstruction of thin-walled, wide-mouthed vessels with a pronounced carination line. The large round knobs under the rim or on the carination line *(15, 56, 107, 145, 179)* tend to emphasize the marked carination of the vessel form. These knobs are occasionally perforated *(16, 22)*, or just simply pinched, and are reminiscent of the beak-shaped lugs of the Tiszapolgár culture. In some cases these vessels have handles perched on the shoulder. An overridingly common form on this site is the vessel with *beaked or spouted rim* that appears in several variants in the late Lengyel period. Most fragments come from biconical bowls that have a perforation under the rim and the rim pinched into a beak or spout *(2, 30)*. (This vessel should not be confused with real spouted vessels.) This type of rim occurs both on thin-walled small vessels and thick-walled large vessels. These 'beaks' come in a number of varieties, ranging from pointed beaks,[19] to button-shaped[20] and rounded beaks;[21] on some vessels knobs were placed on either side of the beak.[22]

[14] Inv.nos 91.4.66, 91.4.139 and 91.5.84.
[15] Inv.no. 91.6.21.
[16] Inv.no. 91.5.79.
[17] Inv.no. 91.6.84.
[18] Inv.no. 91.9.29.
[19] Inv.no. 91.6.18.
[20] Inv.no. 91.5.34.
[21] Inv.nos 91.10.28 and 92.32.5.
[22] Inv.no. 91.6.14.

Seven *miniature vessels* came to light. The term 'miniature' can be taken to imply either vessels that are smaller than the usual kitchenware, i.e. 'small' vessels *(117)*, or unusual types that only occur in a given form and in a small size. The Zalaszentbalázs site yielded miniature vessels in the latter sense of the word: a small bowl,[23] four small conical cups that ending in handles *(11)* or have a perforation for suspension (*7-8, 10*), as well as a similar, small cylindrical cup whose handle and lower third are missing *(9)*. These unusual vessels that are known also from other Lengyel sites such as Aszód,[24] are generally regarded as toys or cult objects.

Very few fragments of *vessel lids* were recovered. They allow the reconstruction of a thick-walled, conical lid provided with a handle *(99)* or a lug handle. A knob taking the form of some animal, probably a dog head *(12)*, has also come to light. The head is small and triangular, the nose is pointed, and the ears are indicated by two small incisions. These knobs generally have two symmetrical animal heads;[25] in contrast, the knob from Zalaszentbalázs has a single animal whose entire body is depicted.

2.2. Other clay finds

A surprisingly high number of fragmentary and intact *clay ladles* with perforated handle of varying size were found. This artefact is fairly common in the Lengyel culture; the Zalaszentbalázs site yielded 121 clay ladles and their fragments, ranging from quite small ones *(1.8 cm)* to larger ones with a diameter of 10 cm *(68, 71, 98, 181-192)*. These ladles with perforated handle had a wooden haft attached to them; they include round and oval forms, thin- and thick-walled specimens with a coarse or, alternately, a more careful finish. One of these ladles is ornamented with an incised pattern reminiscent of the Tisza culture;[26] however, the pattern itself cannot be reconstructed for the surviving fragment is too small *(191)*. Some of these ladles are also ornamented with knobs *(192)*.

2.3. Altars

Two altar fragments[27] and an almost intact altar was found in the course of the excavations. The latter piece *(101)* was found during surface collection near the excavated area. Its analogies are generally identified, wrongly, as "quadrangular vessels" or "oil lamps". A body fragment found in feature 1 from a straight sided object, ornamented with a small knob, preserving part of the deeper, bowl-like part, probably comes from a similar small altar.[28]

[23] Inv.no. 91.6.210.
[24] *Kalicz 1985* Fig. 52. 1-3.
[25] *Kalicz 1985* Fig. 77. 5, 7; *Kalicz — Kalicz-Schreiber 1983-1984* Pl. 4; *Pavúk 1994* Fig. 4. 4.
[26] Inv.no. 91.11.67.
[27] Inv.nos 91.6.20 and 92.38.70.
[28] Inv.no. 91.6.20. for a detailed discussion of these altars see also E. Bánffy's study in this volume.

Another fragment comes from an altar reminiscent in shape of a small table or a throne. Its upper part is concave, its lower part terminates in two rounded feet *(1)*. The reconstruction of this fragment as an altar is based on analogous finds from other sites. Similar quadrangular altars first appeared in the Körös culture. Contemporaneous finds are primarily known from the Tisza culture,[29] but similar cult objects are also known from a Lengyel context.[30] Analogous finds allow the reconstruction of two types of altars: one type, found at the Komjatice site,[31] is quadrangular, standing on rounded feet, and was perhaps covered; another, more plausible reconstruction is based on the piece from Bina,[32] i.e. a quadrangular altar with peaked rim standing on rounded feet.

2.4. Idols

Human representations, in painted, incised and sculpted form, abound on sites of the Lengyel culture. Most often depicted are females, with particular emphasis on those indications of the female character that can be associated with fertility.

Six idols came to light at the Zalaszentbalázs site.[33] One fragment comes from the mid-part of the statuette, the rest are feet. Two of these are right feet *(193-194)*, one is a left foot,[34] while in the case of the remaining two feet, it can no longer be defined *(196-197)*. These feet have a slightly arched heel, with the toes and the fingers broken off from the foot itself. On the single intact specimen the toe and the fingers are not indicated *(193)*. The knees and the ankles are emphasized by small knobs, and one of these knobs is perforated *(194)*. The form of the foot, the fact that the sole is slightly arched and the perforated knob would suggest that this small statuette had been suspended or that some object, such as a small ring had been passed through the knob, similarly to a statuette from Szombathely as reconstructed by M. Károlyi.[35] Another foot comes from a statuette that had been in a sitting position *(193)*.

One fragment comes from an idol carrying a pannier on its back *(195)*. Its fabric and finish is identical with that of the pottery from the site. Seated and standing figurines carrying a pannier are known from both the Tisza and Herpály cultures.[36] The body proportions, the thighs that are pressed closely together, and the analogies would suggest a standing figure carrying a pannier that can be reconstructed on the basis of a comparable idol from the Herpály culture.[37] The sex of the statuette

[29] *Kalicz 1985* 47, 73.
[30] *Kalicz 1985* Fig. 70. 2; *Točik 1986* Fig. 5. 4, 13, 16; *Zalai-Gaál 1993.*
[31] *Točik 1978* Pl. 150. 2; *Točik 1986* Fig. 5. 4.
[32] *Pavúk 1969* 355 and Fig. 3. 11.
[33] Inv.nos 91.1.7, 91.11.63, 92.7.14, 92.7.38, 92.36.88 and 92.38.74.
[34] Inv.no. 91.1.7.
[35] *Károlyi 1992* Pl. 36.a-b.
[36] *Korek 1987a* 21; *Korek 1987b* Fig. 16
[37] *Kalicz — Raczky 1987a* 37; *Kalicz — Raczky 1987b* Fig. 43.

cannot be ascertained from this fragment, but it had probably portrayed a male figure. Female statuettes are generally steatopygous,[38] or portray pregnant women.[39] The simultaneous portrayal of these female traits and of the pannier is hardly feasible owing to the pronounced curves of the female body; the figurine, with its heavy burden, can only have portrayed a male.

One distinctive trait of the idol fragments found at the Zalaszentbalázs site is the presence of knobs on the feet. In his typology of the idols of the Moravian Painted Pottery culture that is closely related to the Lengyel culture, V. Podborský quoted relatively few 'knobbed' idols from the phase corresponding to the early Lengyel period: a headless female idol from Tešetice-Kyjovice that has a knob on its ankle,[40] a similarly headless idol from Stepanovice that features a small knob on the knee and on the ankle,[41] and the foot of an idol from Kramolin that also has a knob on the ankle.[42] A small knob can be seen on the ankle of the enthroned female statuette from the Nitriansky Hrádok site of the Lengyel culture[43] and the knees of the female statuette from Wetzleinsdorf are also indicated by knobs.[44]

A number of striking differences can be noted between these early idols and the later statuettes from Zalaszentbalázs; this in spite of the fact that most publications tend to focus on the head and the body of idols more often than their feet, yielding less scope for comparison. Female figurines, portrayed in a standing position, with the feet pressed closely together and strongly emphasized buttocks, are the general type in the early period. Dress and coiffure are sometimes indicated with incised patterns.[45] The few idols known from the late phase of the Lengyel culture are usually fragmentary and the original can, at the best, only be reconstructed. The lack of incised ornamentation and the presence of knobs on both seated and standing statuettes seems to be general in this period.

A better understanding of the beliefs and cults of this period can only be expected from new finds; these will probably yield new evidence for the existence of a fertility cult and will promote a better knowledge of the beliefs concerning male and female deities.

[38] *Ruttkay 1983-84* Pls. 8-9; *Slov. v mladsej ...* 128; *Kalicz — Károlyi 1979* Pl. 127; *Regenye 1994* Fig. 2.
[39] *Pavúk 1994* Fig. 6.
[40] *Podborský 1983* Pl. 10. 2
[41] *Podborský 1983* Pl. 23. 1.
[42] *Podborský 1983* Pl. 24. 1.
[43] *Točík 1969* Fig. 5.
[44] *Ruttkay 1983-84* Pl. 9. 2.
[45] *Skutil 1940; Kalicz 1983-1984* Pl. 5. 2a-b, 4; *Farkas 1986* Fig. 2. 6; Fig. 3. 5, 9; *Neugebauer-Maresch 1986* Fig. 1. 4; *Vávra 1986* Fig. 1, *Szathmári 1993* Fig. 3.1.

3. Evaluation

The Zalaszentbalázs site yielded the remains of a late Lengyel settlement. The late phase of the Lengyel culture in Transdanubia was first identified by Pál Raczky.[46] A number of studies have been devoted to the development and to the periodization of the Lengyel culture; in a recent study, István Zalai-Gaál has reviewed the chronological systems and the periodization schemes that have been proposed by different scholars.[47]

The Lengyel culture has not been equally investigated in all areas of its distribution; the same holds true for Transdanubia, too. With the exception of the Sé site that has been extensively investigated,[48] other Lengyel sites in Northwestern Transdanubia are known only from field surveys. The northeastern[49] and southeastern areas[50] of Transdanubia can be said to be fairly well known, while the late Lengyel settlements in Southwestern Transdanubia were, until recently, only known from field surveys.[51] A number of late Lengyel settlements have been identified in the northern areas of Zala county.[52] In the southern areas of modern Zala county, late Lengyel settlements have been investigated at Becsehely,[53] at Nagykanizsa-Inkey kápolna,[54] and at Balatonmagyaród-Hídvégpuszta,[55] the latter being part of the rescue excavations conducted in the Little Balaton region. The Hídvégpuszta site featured a circular enclosure. The distribution of late Lengyel sites in the Hahót region, known so far only from field surveys, can now be better understood.[56]

The Zalaszentbalázs site yielded a late Lengyel assemblage that shares numerous similarities with the Balaton-Lasinja culture. These include beak-like spouts, bowls with a marked carination and thick rims, pointed lugs, which, as was repeatedly indicated by N. Kalicz,[57] can be regarded as characteristic for the Balaton-Lasinja culture. A unique vessel form: tall and wide-mouthed with curved sides, tapering towards its base *(35, 87, 134)* again foreshadows the Balaton-Lasinja culture. A comparable vessel has been published from Zbelovo.[58] The finds from this site that have been assigned to the so-called Alpine facies of the Lengyel culture repre-

[46] *Raczky 1974.*
[47] *Zalai-Gaál 1992.*
[48] Excavated by Nándor Kalicz and Mária Károlyi.
[49] *Makkay 1969; Makkay 1978; Antoni 1982; MRT 5.*
[50] *Dombay 1960; Zalai-Gaál 1982.*
[51] *Horváth 1970; Müller 1971.*
[52] *Simon 1987; Simon 1990.*
[53] *Kalicz 1977; Kalicz 1978-1979; Kalicz 1991.*
[54] *Horváth 1984 9; Horváth 1994 90.*
[55] *Kis-Balaton 1989 21.*
[56] See Bánffy's studies in this volume.
[57] *Kalicz 1969; Kalicz 1969-1970; Kalicz 1982; Kalicz 1987-1988; Kalicz 1991.*
[58] *Pahić 1983* Pl. 4.1.

sent a late phase of the culture which has many affinities with the Balaton-Lasinja culture.[59]

The excavations at Zalaszentbalázs have shown that, similarly to adjacent areas, the Hahót basin too was occupied during the late Lengyel period, and thus the ethnic and cultural basis for the emergence of the Balaton-Lasinja culture was present also in this area.

4. Catalogue of settlement features

1 (1987)

Lying roughly in the middle of trench I, the longitudinal axis of the originally rectangular house was northwest-southeast oriented. A roughly 4.30 m x 3.50 m area was uncovered, its deepest point lay at 164 cm. Its presence was indicated by a concentration of burnt daub fragments that were probably the remains of the collapsed roof. The remains of the house were outlined at a depth of 60 cm. Its infill was loose, greyish-black mixed with burnt daub fragments. Sherds and animal bones abounded at a depth of 110 cm. A part of the floor, made of yellowish-green, hard-packed clay, was uncovered in the western part of the house. Three smaller depressions were noted inside the house. A posthole was found on the S side of the house.

Finds

Large storage jars *(18-19, 26-28, 45, 64, 66)*; pots *(6, 17, 21, 25, 31, 39, 48, 50-51, 61-63)*; fragments of a pannier-shaped vessel *(20, 60)*; fragments of different bowls *(4, 13, 24, 43-44, 46, 53-54, 57-59, 65, 67)*; fragments of pedestalled bowls and pedestals, one with traces of a black-on-red painted chequerboard pattern (*203*); fragments of vessels with beaked rim *(2, 30)*; fragments from a flask *(15-16, 22, 56)*; fragments of thin-walled cups *(3, 5, 14, 23, 32-34, 36-38, 40-42, 47, 49, 52, 55, 62, 204)* including painted ones; fragments of biconical and globular vessels; miniature vessels *(7-11)*; various clay ladles *(184, 188-190)*; fragments of callender and callender lid; fragments of a quadrangular small vessel *(29)*; fragment of an altar *(1)*; idol with pannier *(195)* broken stone axes; stone blades and chips, stone chisel; clay loom weights and spindle whorls fashioned from broken pottery sherds.

Inv. nos 91.5.1-93, 91.6.1-217, 91.11.30, 40-66.

2 (1987)

Lying in the western part of trench I and in the eastern part of trench II, some 3 to 4 m from feature 1, it measured 5.50 m x 2-2.5 m, its deepest point lying at a depth of 150 cm. Its infill corresponded to that of feature 1. It was roughly E-W oriented. A hearth constructed of burnt daub frag-

[59] *Bánffy 1994a; Bánffy 1994b.*

ments that yielded a handful of Lengyel sherds lay at a depth of 70-90 cm in its eastern part, beside the S wall of the trench. The hearth is described under feature 6.

Finds

Large storage jars *(72);* fragments of various pots; fragments of various bowls; fragments of pedestalled bowls and pedestals *(73-74);* fragments of thin-walled jugs and cups *(69);* fragments of ladles *(68, 71, 183);* fragment of a strainer *(70);* broken stone axes; stone blades, chips, broken cores.
Inv. nos 91.9.9-58.

3 (1987)

Lying in the eastern part of trench I, it was first noted as a cluster of sherds. Only one half of this elongated elliptical pit with slightly stepped floor fell into the excavated area. Dimensions: 2.30 m x 2.40 m, depth: 100 cm. Infill: greyish-yellow, clayey, mixed with burnt daub fragments and a few sherds.

Finds

Fragments of large storage jars, some with mat impressions on their underside; fragments of various bowls; fragments of pedestals; fragments of various jars and cups; fragments of various ladles; an almost intact perforated stone axe; animal head-shaped lid knob *(12).*
Inv. nos 91.9.59-62 and 91.10.1-34.

4 (1987)

A roughly rectangular building with a round, 90 cm deep pit beside its N side, lying in trenches II and III. Dimensions: 4.20 m x 1.50-2.0 m, deepest point: 120 cm. An elliptical posthole, measuring 40 cm by 20 cm and 100 cm deep, was found in the southeastern corner, and a similar posthole, 40 cm by 40 cm, surrounded by burnt daub fragments, lay in the southwestern corner.

Finds

Large storage jars *(75, 81);* fragments of pots; fragments of pedestals *(80);* fragments of various jugs and thin-walled cups *(76-77, 79)* including fragments with painted patterns; fragment of a vessel with incised ornamentation *(78);* fragments of various ladles; broken pounder.
Inv. nos 91.12.12-32.

5 (1987)

Lying in the western corner of trench II, some 30 m from feature 1, this rectangular building was indicated by a patch of darker earth intermixed with burnt daub fragments. Dimensions: 6.0 m x 5.20 m, depth: 60-95 cm. A 110 cm deep round pit was found inside the house, as well as the remains of a fireplace. An 80 cm deep posthole having a diameter of 70 cm, encircled by small white pieces of sandstone, lay in its southwestern corner.

Finds
Large storage jars *(86, 89);* fragments of pot *(82);* fragments of pannier-shaped vessels *(94, 96);* fragments of various bowls *(90, 93, 95, 97);* fragments of pedestalled bowls and pedestals; fragments of thin-walled cups *(88, 91-92);* fragments of biconical cups; body fragment of a vessel with incised pattern (83-85); fragment of a lid; fragments of various thick-walled vessel *(98, 192);* stone blades, various stone chips, scrapers, broken core; spindle whorl fashioned from broken pottery sherds.
Inv. nos 91.13.15-86.

6 (1987)
Found in feature 2, the roughly circular firing platform of a hearth lay beside the S wall of trench I at a depth of 70-90 cm. Diameter: 1 m. The infill under the hearth corresponded to the greyish-yellow ashy infill of feature 2.
Finds
Fragments of thin-walled vessels above the hearth; body and base fragments from various thick-walled vessels were found in the plastering, together with pebbles and a burnt daub fragment with the impression of a twig.
Inv. nos 91.14.1-12.

7 (1987)
Lying beside the N wall of trench III, a small section of a pit with straight walls and flat floor, containing the characteristic greyish-yellow infill of the Lengyel culture, was found on the very last day of the excavation. Dimensions: 2 m x 1 m, depth: 130 cm. The excavated section did not contain any finds.

8 (1987)
Lying beside the S wall of trench III, a 10 cm thick firing platform constructed of burnt daub fragments was uncovered that contained no finds.

9 (= feature 1988/1)
The patch of this building was first noted at a depth of 15 cm under the levelled ground surface in trench, a roughly 7 m long and 0.80-1.50 m wide patch intermixed with burnt daub fragments and numerous sherds. This roughly 10 cm thick layer probably represented the floor level that was only indicated by these sherds, for no actual remains of the hard-packed floor survived. A 20-30 cm thick greyish-yellow infill intermixed with burnt daub fragments and flecks of charcoal lay underneath, under which lay a yellowish layer with pebbles. The floor of two pits, perhaps postholes, were noted in this yellowish layer at a depth of 150 cm and 120 cm. Mostly thin-walled vessels were found in the eastern part, and the fragments of large, thick-walled vessels with two or four handles lay in the western half, together with a number of sherds from thin-walled pottery.

Finds
Large storage jars *(106)*; pots *(113)*; fragments of pannier-shaped vessels *(102, 105)*, some with twig impressions on their underside *(100)*; fragments of various bowls *(103, 110-111, 114)*; fragments of pedestalled bowls and pedestals; fragments of spouted vessels; fragments of jugs (*107*) and thin-walled cups *(109, 112)*, including some with painted motifs *(104)*; miniature vessel; fragment of a lid *(99)*; fragments of various ladles; fragments of two idols (193-194); small trapezoidal axe of green serpentine; stone blades; chips; quernstone.
Inv. nos 92.7.1-64, 92.8.1 92.10.19.

10 (= feature 1988/2)
Lying in the northwestern end of trench. A pit of irregular, elliptical form with straight walls and slightly stepped floor. Dimensions: 2.20 m x 2.50 m, depth: 130 cm. The infill was intermixed with burnt daub fragments and flecks of charcoal, and at a depth of 80 cm lay a smaller cluster of sherds, as well as the base fragment of a large vessel and sherds from smaller vessels.
Finds
Fragments of thick-walled storage jars; fragments of pedestals and thin-walled cups; fragment of an altar (?); stone chips; loom weight.
Inv. nos 92.11.1-18.

11 (= feature 1988/3)
Lying beside the eastern wall of the trench, this pit of rounded rectangular form was first noted as a large concentration of burnt daub fragments. Dimensions: 2.0 m x 1.60 m, depth: 50 cm. The pit was lined with burnt daub fragments and had possibly functioned as a storage pit, into which a handful of sherds and a burnt bone had fallen accidentally.
Finds
Fragments of thick-walled storage jars; fragments of a bowl; fragments of jugs and thin-walled cups; fragment of a large spouted vessel; fragments of various ladles; burnt daub fragment with a twig impression.
Inv. nos 92.12.1-26.

12 (= feature 1988/4)
Lying in the middle of the trench, beside its western wall, a pit of rounded triangular form filled with blackish and brownish earth intermixed with burnt daub fragments and flecks of charcoal. Dimensions: 2.80 m x 2.50 m, depth: 80 cm. A cluster of burnt daub fragments lay at a depth of 60 cm, and a smaller, 90 cm deep pit with a diameter of roughly 50 cm was noted in its middle.
Finds
Fragments of a pannier-shaped vessel; conical bowl with a short neck, a marked carination and a ring base *(202)*; fragments of pedestalled bowls and pedestals; fragments of various thin-walled cups; an almost intact

ladle *(185)* and fragments of various ladles; stone chips; broken quernstones.
Inv. nos 92.13.1-45.

13 (= feature 1989/1)
Lying in trench II, this structure of rounded quadrangular groundplan, measuring 3.50 m by 3.20 m, was first noted as a cluster of sherds. Infill: a layer intermixed with burned daub fragments and pottery sherds, under which lay a reddish layer of rich texture, followed by a blackish layer mixed with ash and flecks of charcoal, under which lay a layer of yellowish-brownish-blackish colour. Three distinct patches were noted at a depth of 100 cm: a dark black, ashy patch in the northwestern part, a reddish clayey patch mixed with burnt daub fragments under which lay a burnt black layer in the NE part, and a yellowish patch intermixed with flecks of charcoal and small burnt daub fragments in the S part. The dark black ashy patch was found to contain a quernstone, stone chips, pebbles used for tempering, clay ladles and numerous pottery fragments. A 140 cm deep pit of irregular shape was found underneath.
Finds
Fragments of large storage jars *(129-133)*; fragments of pots *(127-128, 170)*; fragments of various pannier-shaped vessels; fragments of various bowls *(121, 123, 135, 137, 140-143, 146-148, 175)*; fragments of pedestalled bowls *(172-173, 178, 200)* and of pedestals *(180)*; fragments of spouted vessels; fragments of various jugs *(145, 179)*; various thin-walled cups *(171, 177, 199)* and their fragments (115-*116, 118-120, 122, 124-126, 144)*; fragments of miniature vessels *(117, 136)*; various ladles and their fragments *(181-182, 187)*; fragments of strainers *(201)*; fragment of a lid and of a lid knob; fragment of an idol *(197)*; quernstone; pebbles.
Inv. nos 92.36.1-95 and 92.37.1-35.

14 (= feature 1989/2)
Lying in the NE part of trench I, this structure was first noted as a large concentration of burnt daub fragments and pottery sherds over a 4.20 m x 1.80 m large area. This debris contained several large burnt daub fragment preserving the impression of the wattling that probably came from the collapsed walls and roof of the building. Three distinct patches were noted inside the building: a dark blackish patch in the NE corner, a reddish clayey patch intermixed with burnt daub fragments in the southeastern part, and a third one encircled by burnt daub fragments in the western part. The dark blackish patch was found to contain an abundance of stone chips, several cores and a quernstone. The third patch was found to contain a reddish infill mixed with burnt daub fragments and the colour of the soil was basically identical with that of the reddish pottery that had been found in this area, suggesting that clay for pottery manufacture had perhaps been prepared here. A 135 cm deep pit was found in the middle of the building.

Finds
Fragments of large storage jars; fragments of pots *(153, 169)*; fragments of pannier-shaped vessels *(149-150, 154)*; fragments of various bowls *(152, 155-168)*; fragments of pedestalled bowls and pedestals; fragments of spouted vessels; fragments of various jugs and cups *(151, 174, 176)*; fragments of ladles; fragments of strainers; spindle whorl fashioned from a broken pottery sherd; fragment of an altar; fragment of an idol *(196)*; fragment of a lid knob; stone chips and pebbles used for tempering.
Inv. nos 92.38.1-82.

15 (= feature 1989/3)
Large circular pit, with slightly sloping walls and flat floor one half of which fell into the trench. Infill: layer of burnt daub fragments with flecks of charcoal and a handful of sherds, underneath which lay a yellowish-red layer mixed with flecks of charcoal, followed by a yellowish layer with flecks of charcoal. Diameter: 170 cm, depth: 105 cm.
Finds
Fragments of large pots; fragments of pedestals; fragments of thin-walled cups; intact ladles *(192)*.
Inv. nos 92.39.1-17.

16 (= feature 1989/4)
Round shallow pit with slightly sloping walls and flat floor, only one half of which fell into the trench. First noted as a cluster of sherds. Infill: yellowish-blackish-brownish layer, under which lay a dark blackish layer. Diameter: ca 150 cm, depth: 60 cm.
Finds
Fragments of large storage jars; fragment of a spouted vessel; fragments of various cups; fragment of a clay ladle.
Inv. nos 92.40.1-13.

17 (= feature 1989/5)
Lying in trench II, directly adjacent to feature 13, a stepped pit. Infill: blackish, intermixed with burnt daub fragments. Dimensions: 80 cm x ca 30 cm, depth: 76 cm. Since its depth corresponds to the depth of feature 13, it may have been the posthole for a beam or post supporting the roof structure or reinforcing the wall.
Finds
Body fragments of large vessels; fragments of a thin-walled cup.
Inv. nos 92.41.1-5.

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EARLY CHALCOLITHIC SETTLEMENT AT ZALASZENTBALÁZS-SZŐLŐ-HEGYI MEZŐ

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1. The settlement

1.1. Description of settlement features

An extensive settlement dating from the late phase of the Lengyel culture was discovered on the ridge of a hill to the west of the village of Zalaszentbalázs during the field surveys that preceded the micro-regional excavations in the Hahót valley (Zala county). The settlement, stretching across the ridge and the western slope of the hill, is believed to have had several cores, all of which can be dated to the late, unpainted phase of the Lengyel culture.

In 1989 and 1990, one of the cores of this settlement, lying to the east of the Szőlőhegyi mező path, was explored by Mária Bondár (cf. previous article).

In April 1992, four clearly discernible burnt patches were identified on the other side of the dirt road, near the press-houses. The patches have yielded large quantities of burnt daub, late-period unpainted Lengyel

sherds, stone blades and grindstones. The excavations conducted at the site in the summer of 1992 revealed that the area had been disturbed by construction work, in the course of which the ditch of an old dirt road was filled in with soil that had covered Lengyel-period objects. As a result, the layer of earth overlying the Lengyel objects got reduced to 20-30 cms. Object No. 5 became exposed to the extent that approximately half of it got destroyed *(Pl. 76)*.

Three of the four burnt patches identified in the spring we could successfully explore later in the year. In addition, we also unearthed two associated pits.

1992

Feature No. 1

We identified as Feature No. 1 the remnants of a burnt-down house measuring approximately 7 m x 3 m. The house had NW-SE orientation, and was built parallel with the hillside. Although the debris was discovered relatively close to the surface, its thickness was still considerable (90 cm at points). At certain spots, the impact marks of the large red-burnt daub slabs were clearly discernible. Apart from the few charred ashy spots discovered in the debris of broken mortar and roof, only a few charred parts have survived from the original wooden structure. At the same time, the mortar pieces exhibited several imprints of burnt wattle. Since the floor under the debris was not burnt through, only a 25 cm x 20 cm patch could be identified from the original greenish-yellow clay floor. That stretch of the rammed clay floor had once been renewed. The floor level was marked by a relative density of objects, and also by a shallow round pit (or depression) approximately 1 m in diameter, which was located in the middle of the house and the surface of which consisted of several lined and rammed layers (Feature 1/b - *Pl. 77/b*). These layers were stone-hard, albeit not burnt.

Comparable lined depressions inside houses are known from other sites in Hungary dating from the transition period from Neolithic to Chalcolithic. Similar shallow, lined depressions were discovered in the floor of both the ground-floor and first-floor rooms of building No. 11 at Herpály. Two of these depressions contained vessels as well. The depressions at both the Herpály and the Szőlőhegyi mező site were located in the centre of the buildings and rooms.[1] Feature 1/b has yielded considerably more sherds than the rest of the building. However, it was not possible to reconstruct complete vessels from these sherds.

In the proximity of Feature 1/b, a strikingly intense red and black patch was discovered. This horizontal patch, covering an approximately 1.5 square metre area, was surrounded by large slabs of burnt-through plaster and a few sherds.

[1] *Kalicz – Raczky 1987* 110, Fig. 7.

The post-holes under the building belonged to a system of uneven pits. On one side of the building, we could identify a long and wide foundation-trench-like pit that included three large post-holes. In the middle of the narrow ends of the building we found two relatively deep post-holes.

Feature No. 2

The second building was discovered some 220 m from Feature No. 1. Its orientation was similar to that of the first building, and it was also built parallel with the hillside, although a bit further down the slope. Feature No. 2 was slightly bigger than Feature No. 1, measuring 3.60-4 m by appr. 8.5 m *(Pl. 77/a,c)*.

Here the debris was again discovered very close to the surface: the first spit brought to light a large patch of red, hard-burnt daub. The cross-sections of the site show that a thick (70-90 cm) layer of burnt debris covered the rammed dark-brown floor *(Pl. 33/c, 78/a)*. Since the floor was not burnt through, only a relatively small (appr. 40 cm by 25 cm) patch has survived. At the same time, the direction of the mud wall's collapse could be clearly established *(Pl. 78/c)*. A row of larger slabs of daub flanked the presumed wall of the building.

The above-mentioned debris of daub was surrounded by a layer of loose, brownish-black soil mixed with greasy ash. Unlike the red debris of daub, this layer of loose black soil was rather rich in finds. Alongside large quantities of sherds from vessels, pouring lips and spouted handles, a few intact or reconstructible wares were also found lying on the floor. These "household wares" included surprisingly large numbers of small vessels with thin wall.

Inside the building, slightly toward its SW end, a semicircular burnt spot was discovered on the floor level *(Pl. 77/d, 78/a)*. This spot was surrounded in a U-shape by larger slabs of burnt clay. This markedly burnt-through, horizontal spot was most probably the site of a fireplace. Sherds from larger vessels, including half vessels and fragments from a larger pot, and eight stone tools were discovered in the proximity of this fireplace. A few bones of small ruminants and larger animals were also found there. However, they crumbled as soon as the excavators attempted to pick them up.

The layer of mixed soil overlying the fireplace yielded a 3 cm high rectangular "lamp" measuring 9.8 cm by 9.9 cm *(Pl. 77/d, 270)*. All four corners of the lamp were pierced vertically. Accordingly, it appears justified to infer that the lamp was originally hanging above the fireplace. A similar "lamp," complete with the borings, was discovered in the debris some 80 cms from the previous find *(271)*.

While the debris was rich in objects, the number of finds was significantly smaller under the (partly presumed) floor level. The foundation of this building consisted of large amorphous pits, whose mixed filling was almost completely lacking in finds. These circumstances have led us to conclude that these buildings were originally erected in previously

uninhabited plots, and when they were gutted by fire, their dwellers deserted them and built new homes for themselves in another part of the settlement.

It was a rather common feature of the Late Neolithic buildings that the foundations consisted of an irregular network of larger pits, with only a few post-holes perceptible here and there. Researchers generally identify these pits as foundations for buildings with gabled roof, with walls sometimes partly dug into the ground. Comparable foundations were discovered under several late neolithic buildings at Herpály.[2] In his study, Dombay devoted a whole chapter to discussing the problems of reconstructing these buildings.[3] He started out from the foundations at Zengővárkony, but widened his scope to include several international parallels.

Building No. 3 (Feature No. 5) was situated some 15 metres from the second building, further down the slope leading to the damp valley. Here the layer of soil overlying the debris was so thin that only parts of the building have survived. In fact, it was not until the full exploration of the foundations that the excavators could establish that the debris came from a building and not from a pit filled with burnt daub. In an approximately 2.80 m by 2.60 m area, the debris was discernible on the surface as well: here the clayey-sandy soil was fiery red, and contained pottery sherds. At a depth of 20-25 cms, the layer of burnt-through clay appeared to form a horizontal "sheet" as if it was the site of a fireplace. However, underneath this sheet we discovered large quantities of huge daub flakes, which led us to conclude that the surface of this layer had been worn away by the weather and by agricultural activities in the area. At a depth of 30 cm, we identified a few slabs of daub that had fallen into the debris slantwise. Some of these slabs measured 40 cm by 30 cm. Most of these slabs were 6-7 cm thick. They were floated on one side, and exhibited negative imprints of wattle on the other. This layer of masonry was 75-80 cm thick. At one point, we discovered a charred black horizontal patch, which was too small to be identified as the floor of the building.

Features No. 3 and 4

Features No. 3 and 4 were both amorphous pits discovered near building No. 2. The absence of finds in these pits has led us to conclude that they were used by the builders for extracting clay.

Features No. 5

Although the floor level of building No 3 (Feature No. 5) could not be identified either, here again we found a layer rich in finds overlying another layer which offered hardly any objects. The upper layer was most probably the one that marked the floor level *(Pl. 77/e,f,g,h)*.

The bottom layer of Feature No. 5 was discovered at a depth of 110 cm. It contained two parallel oval depressions, which most probably were

[2] *Kalicz — Raczky 1984* 105, Fig. 19.
[3] *Dombay 1960* Chapter V., 156-192.

dual post-holes. Regrettably, no other remnants have survived of the building, and so we could not establish further details about its foundation, size or orientation.

At this point, I feel obligated to spell out my grounds for considering Feature No. 5 a building. As we have seen, this feature has also been interpreted as a refuse pit containing debris from a gutted building. However, the following phenomena appear to contradict this interpretation:

1. The red-burnt daub slabs were so very hot that they even burned through the surrounding clayey soil. We have no reason to believe that the still glowing debris was disturbed in any form.
2. There were a few secondarily burnt and practically intact vessels lying scattered in the layer of daub. These vessels were obviously crushed by the falling masonry.
3. Refuse pits normally do not have regular oval depressions in their bottom. Here these depressions must have served as dual post-holes.
4. The debris was lying so very close to the surface that the eventual destruction of most (approximately half; cf. Buildings 1 and 2) of the remnants requires no further explanation.

During the 1993 excavations, we made an attempt to explore the last of the four burnt patches which were identified a year earlier. However, this patch turned out to be a mixed layer on the surface, which was either a deposit of sherds removed by ploughing and erosion from Building No. 3, or the completely destroyed remnants of a building or a pit.

1993

We continued our research on the other side of the road, some 100 metres to the North of the buildings explored in 1992. Earlier field surveys in this area had located several stray finds, mostly pottery but also stone implements, including a neolithic stone axe.

This 178 m^2 area contained five settlement features. All of them were refuse pits rich in finds.

Feature No. 1

This shallow, amorphous pit offered a few insignificant pottery sherds only.

Feature No. 2

This round, 127 cm deep storage pit contained large quantities of stone implements and pottery sherds in its upper layer. First we thought it contained debris from a building, especially since a long stretch of hard rammed clay, extending over several square metres, was discovered slightly below the "debris" level. This layer of clay was perceptibly different from the overlying layers, and it contained a few stamped-in sherds and charred bark. At first, it appeared justified to identify this layer as the floor of a building. However, the subsequent analysis of the shape of the pit, and the absence of stake-holes under the layer of clay, have led us to conclude that this stretch of clay was most probably a narrow path rammed hard by the feet of those who walked on it. At the same time, the dating

of this layer to the Chalcolithic is beyond dispute.

Features No. 3-4

Feature 3, situated next to Feature 1, was a shallow curving pit offering a few pottery sherds.

There were two other objects next to it. Object No. 4 was a small, round and deep pit, which contained exceptionally large quantities of animal bones (mostly cattle but also sheep and goat). The pit also offered several pottery sherds and fragments from painted tubular supports, some of which could be pieced together. The layout (or the lack of it) suggests that the object was a refuse pit, which was also used for burying animal remains.

Feature No. 5

This large, regular-shaped round pit was situated next to Features 3 and 4, as if they were parts of a larger system of pits. Based on the large number of finds discovered there, we have identified Feature No. 5 as a refuse pit. These four continuous pits were most probably used as village-side dumps by the inhabitants of a group of buildings. This conclusion is based on the absence of refuse pits in the neighbourhood of the buildings, and also on the absence of buildings next to these pits.

1.2. Stratigraphy

In all three buildings it was clearly perceptible that the burnt debris had crumbled onto the floor level, which was marked by small patches of rammed clay and scattered fragments from household implements lying on it. The stretches of floor that could be identified were all renewed once (Building No. 1). This renewal most probably took place within a year of the floor's completion. The filling underneath the floor level was practically devoid of finds. This means the builders of the houses did not disturb previous objects at the sites. The filling of the stake-pits was homogeneous down to virgin soil. Consequently, we can consider these buildings short-lived, single-layer structures, which were deserted by their dwellers after their destruction by fire.

The stratification of the pits was similar to that of the buildings. The filling of the pits was homogeneous, i.e., there were no divergent layers, let alone sterile layers, in it. These pits were most probably used simultaneously with the buildings, and for an equally brief period. The pits must have filled up almost completely during that brief while, as the finds were evenly dispersed in the filling.

A wide variety of pottery types were recovered from the buildings and the refuse pits. The excavators found traditional Lengyel ware lying next to considerably younger types, and the fine household pottery were likewise mixed with miniature vessels. Accordingly, the pottery types support the dating of the site to one specific phase.

1.3. Types of finds

The debris of the three buildings has yielded the following types of

finds:

- clay vessels and fragments
- miscellaneous clay objects
- daub
- stone blades
- grindstones
- animal bones
- vegetal and organic remnants

Of the finds listed above, the researchers could not subject the animal bones to scientific analyses, as most of them crumbled during their recovery. We could still identify a few scattered bones as belonging to small ruminants and larger animals. As opposed to the buildings, the pits and especially their bottom layers have offered more significant bone assemblages. On this basis, the main reason for the bones' bad state of preservation appears to be not so much the chemical composition of the soil as the bones' relative proximity to the present ground level.

The identifiable animal bones were analyzed by László Bartosiewicz, whose work I wish to recognize hereby (see Bartosiewicz's study in the present volume).

The stone implements, together with the neolithic objects discovered during the excavations in the micro-region of Zala County, were analyzed by E. Bácskay and K. T. Bíró (see their studies also in the present volume).

A summary of the grindstones' provenance (established on the basis of their base material) and morphological features was compiled by L. Bondor (see the Appendix).

F. Gyulai sums up his analyses of the vegetal remains and the organic matter accumulated on the inside of the vessels identified as wheat bran, a result of boiling (see his study in the present volume).

Finally, the results of carbon14 datings done by E. Hertelendi, Atomic Research Institute, Debrecen are also mentioned (See the Appendix).

2. Ceramic finds

2.1. Pottery techniques

The majority of the Late Lengyel clay vessels discovered at the Zalaszentbalázs-Szőlőhegyi mező site are sufficiently levigated, and their surface exhibits traces of burnishing and polishing. A blackish-grey sherd from a bowl has a glossy, almost metallic polish. Remarkably, this sherd is different from the typical Lengyel wares not only in its execution but also in terms of its form: it comes from a conical bowl whose rim was considerably thickened on the inside *(91)*.

The refuse pits have also yielded genuine black-burnished wares, which count as novelties in the region. These biconical wares had glossy black surface *(105, 107=251,252, 253, 108=254, 255, 257)*. One of them was graphitic and was decorated with parallel incisions under the rim. The two pieces of graphite discovered next to a vessel in pit No. 5 prove

that these were not imported wares (cf. point 10). It is worthy of note here that black pottery must be baked at a heat of at least 800-900 degrees Celsius.[4]

Most of the pottery discovered at Zalaszentbalázs-Szőlőhegyi mező were reddish-yellow or dark grey, with a bluish-black fracture. A few wares had yellowish-grey or blackish-grey stains on their body. The remaining vessels were yellowish-grey or drab, just like most of the Middle Chalcolithic wares associable with the Balaton-Lasinja culture.

The texture of the wares was levigated with crushed tiles, or sand, or a mixture of the two. A few wares were levigated with tiny pebbles.

The texture of some of the wares levigated with sand was micaceous, while the surface of others in this category had a slightly raspy feel. These latter features were characteristic not only of the Late Lengyel wares but also of the pottery of the subsequent Balaton-Lasinja Culture.

On the basis of the thickness of their wall, the wares can be classified into three categories:

– vessels with thick wall (over 8 mm). Mostly pots, larger storage vessels, vessels with pouring lip, vessels with horizontal and "beaked" handle, and "butt vessels" with several superimposed horizontal handles.

– vessels with thin wall (4-8 mm). Conical flat bowls (disregarding their thickened rim), tall bowls and mugs with slightly or sharply inverted rim, and jugs with (two) handles.

– vessels with very thin wall (1.5-4 mm). The last, unpainted phase of the Lengyel culture is characterized by the dominance of pottery with thick wall and rough execution.[5] However, a surprisingly large proportion of the Zalaszentbalázs-Szőlőhegyi mező wares have very thin wall. These are mostly miniature vessels (i.e. the diameter of their mouth and their height are less than 10 cm). These latter vessels are small-scale versions of other, normal-size vessels in the assemblage.

The thick-walled vessels coming from Zalaszentbalázs-Szőlőhegyi mező all exhibit traces of smoothing (with smoothing stick?) on the inside. The thin horizontal notches on the inside wall of the vessels whose texture was levigated with crushed pottery were produced by the smoothing stick.

2.2. Decoration

Practically all the vessels are unpainted. Only a few sherds exhibit traces of black paint. One of these sherds comes from an unusual vessel: it had a vertical, triangular knob on the rim, and another pointed knob on the protruding belly under the shoulder. The outside part of the rim of this vessel, and also the triangular knob on it, were decorated with black paint. The other painted sherds come from thin-walled vessels, whose rims were decorated with black stripes on the inside. Several sherds exhibit traces of impasto red paint. The original motif was most probably striped, but the decoration is too worn to be accurately identified. Remarkably,

[4] *Todorova 1991* 89-90.
[5] *Pavúk 1965.*

traces of red paint could be identified only on the foot of vessels with tubular support that had rather thick wall, on sherds coming from household wares (e.g. on the *inside* of a storage vessel!), and on a few miniature vessels. The latter wares were all fragments coming from miniature versions of vases with everted rim. Traces of red paint were also discernible in stripes on the inside and outside of the rim of small-size vessels. This painting technique, as well as the above-named types of painted pottery, were characteristic of the earlier phases of the Lengyel culture as well. Consequently, we can establish that the new pottery types that appeared during the Lengyel culture were as a rule unpainted.

None of the wares dating from this period exhibited traces of incised decoration. We have identified only one sherd from a vessel decorated with parallel incisions below the rim. This sherd came from a biconical vessel which had a sharp refraction under the shoulder. The texture of this vessel was black, and its surface had a glossy burnish. Each of these properties can be considered alien to the Lengyel traditions, and are characteristic of the Middle Chalcolithic Balaton-Lasinja culture.

The Lengyel wares were decorated almost exclusively with knobs of various size and shape. Protruding cylindrical knobs were identified on storage vessels, and their smaller versions decorated several bowls and jugs with inverted rim. These knobs were quite often applied on the sharp refraction under the rim. The majority of these knobs were unpierced. However, we have identified a few knobs with horizontal perforation, and on some vessels the semi-globular knob supported another smaller knob. The knobs on some of the biconical vessels with sharply refracted shoulder were slightly bent downwards. These can be considered archetypes of the Middle Chalcolithic drop-shaped knobs ("Schultergefäße").

The rims with chased decoration were also a new development that occurred during the Lengyel culture *(174=110, 175)*. This decoration was peculiar to a new vessel type the pots with cylindrical neck. The decoration of a cup with oval mouth was peculiar in that it had tiny pierced handles attached to the narrow ends of the mouth, with vertical ribs stretching from these handles to the bottom of the vessel *(159, 160, 168, 248)*. The wares with oval mouth were peculiar to the neighbouring chalcolithic cultures, and can therefore be considered a novelty among the traditional Lengyel types.

A sherd from the rim of a black burnished vessel decorated with parallel incisions can be considered an exceptional find, as this decoration had no known archetypes and was peculiar to the middle chalcolithic Balaton-Lasinja culture.

Some of the wares recovered at Zalaszentbalázs-Szőlőhegyi mező exhibit clearly reconstructible imprints of rushwork on their bottom.[6] A fragment from the bottom of a vessel with tubular support discovered at

[6] Comparable imprints were discovered on the bottom of a vessel at Zengővárkony – *Dombay 1960* Pl. 93, Fig. 1. Also, sherds with similar imprints are included in the Late Lengyel assemblage coming from Balatonmagyaród-Hídvégpuszta.

Szőlőhegyi mező shows that the upper part of the vessel was moulded separately on a rushwork mat, and the tubular support was attached to it subsequently *(179)*. Some sherds coming from the tick bottom of a larger pot exhibits the imprints of the same mat *(171, 181)*. However, this imprint was not discernible on the intact vessels since the surfaces of their bottom were subsequently "cased with plaster."

2.3. Statistical analysis of pottery fragments

The excavations conducted in 1992 recovered a total of 10,941 sherds from the three building sites and the two adjoining pits. Following restoration and sorting, 2,306 sherds were subjected to further analyses. The breakdown of these sherds according to buildings was as follows:

Building No. 1 (2,043 pottery fragments)
Bottom: 57 (30 of these came from larger pots or storage vessels)
Rim:
– everted: 46
– slightly inverted: 21 (pots: 16, mugs: 5)
– inverted, with sharp refraction: 24 (bowls: 15, mugs: 9)
Body:
– S-shaped: 11 (7 of these came from larger vessels)
– inverted: 38 (larger vessels with globular body: 11, jugs: 3, from smaller vessels: 16)
– with refracted belly contour: 7 (all smaller bowls and mugs)
– with knobbed globular belly: 36 (larger: 12, smaller mugs and cups: 24)
Sherds from vessels with handle
– vertical strap handle: 25 (pot: 23, jug: 2)
– horizontal strap handle: 7 (all from larger vessels)
– with horizontal "Beaker": 7 (all from larger vessels)
Sherds from vessels with tubular support: 30 (from bottom of tubular support: 30, junction of tubular support and body: 22)
Sherds from vessels with "China wall": 2
Spoons with shaft-hole: 5

Building No. 2 (7,462 pottery fragments)
Rim:
– everted: 62 (46 of these from larger vessels)
– inverted: 19 (pots: 7, mugs: 12)
– inverted, with sharp refraction under the rim: 23 (bowls: 10, mugs: 13)
Body:
– everted: 27 (16 of these came from larger vessels)
– inverted: 38 (12 of these came from larger vessels)
– with refracted belly contour: 13 (most probably from mugs)
Knobbed (with globular and fractured belly contour): 45 (32 of these came from larger vessels)
Sherd from vessel with vertical ribs: 1
Sherds from vessels with handle:
– vertical strap handle: 39 (pot: 36, jug: 3)

– horizontal strap handle: 5 (all from pots)
– with horizontal "Beaker": 28 (all from pots)
Bottom: 118 (77 of these came from larger pots and storage vessels)
Sherds from vessels with pouring spout: 3 (all rather large-sized)
Sherds from vessels with tubular support: 26 (bottom of support: 7, junction of support and body: 19)
Spoons with shaft-hole: 7
Sherds from strainers: 6 (miniature: 2)
Sherds from vessels with "China" wall: 83
Altarpieces: 2
Building No. 3 (1,436 pottery fragmnents)
Rim:
– everted: 69 (45 of these came from larger vessels)
– inverted, with sharp refraction: 20 (bowls: 9, mugs: 11)
Body:
– everted: 47 (40 of these came from larger vessels)
– inverted: 25 (14 of these came from larger vessels)
– with refracted belly contour: 13 (bowls: 4, mugs: 9)
Knobbed: 23 (10 of these came from larger vessels)
Sherds from vessels with handle:
– vertical strap handle: 24 (pot: 23, jug: 1)
– horizontal strap handle: 9 (all from larger vessels)
– with horizontal "Beaker": 12 (all from larger vessels)
Bottom: 36 (28 of these came from larger pots and storage vessels)
Sherds from vessels with tubular support: 9 (bottom: 3, junction of support and body: 6)
Sherds from vessels with "China" wall: 72
Sherds from spoons with shaft-hole: 12
Sherds from vessels with pouring spout: 2 (from large-sized vessels)
Sherds from strainers: 4

The excavations conducted in 1993 produced a total of 7,690 pottery sherds. Of these, 1,629 were entered in the inventory. They broke down as follows:
Pit No. 1 (11 sherds)
Rim:
– everted: 3
– inverted, with refraction under rim: 1
Sherds from vessels with vertical strap handle: 6 (2 of these came from pots)
Sherd from vessel with tubular support: 1 (short, conical)
Pit No. 2 (660 sherds)
Rim:
– everted: 89
– inverted: 41
– with refraction under rim: 11

Body:
– everted, S-shaped: 72 (18 of these came from larger vessels)
– with refracted belly contour: 20 (belly contour thickened on 1 sherd)
Knobbed: 55
Sherds from vessels with handle:
– vertical strap-handle: 55 (2? of these came from jugs)
– horizontal: 18
Sherd from vessel with ear: 1
Sherds from vessels with tubular support: 22
Bottom: 79
Spoons with shaft-hole: 10
Strainers: 2
Sherds from vessels with pouring spout: 7
Sherds from vessels with "China" wall:
– everted rim: 34, inverted rim: 11
– body fragments: 49
– knobbed: 26
– with ear: 4 (all with vertical strap-handle)
– bottom: 18
– miniature spoon: 6
– miniature tubular support: 2
Pit No. 3 (317 sherds)
Rim:
– everted: 64
– inverted: 18
– with refraction under rim: 19
Body:
– S-shaped: 41
– with refracted belly contour: 10
Bottom: 47 (18 of these came from larger storage vessels)
Sherds from vessels with handle:
– vertical strap-handle: 30
– horizontal: 7 (1 of these small-sized)
Sherds from vessels with ear: 2
Knobbed: 33
Sherds from vessels with tubular support: 15
Spoons with shaft-hole: 9
Sherds from vessels with pouring spout: 3
Sherds from vessels with "China" wall: 15
– miniature vessel: 1
Strainer: 1
Vessel with oval mouth: 1
Altarpiece: 1
Pit No. 4 (300 sherds)
Rim:
– everted: 55

– inverted: 15
– with refraction under rim: 15
Body:
– S-shaped: 20
– with refracted belly contour: 4
Bottom: 34
Sherds from vessels with handle:
– vertical strap handle: 34
– horizontal: 6
Knobbed: 30
Sherds from vessels with ear: 2
Spoons with shaft-hole: 11
Sherds from vessels with pouring spout: 5
Sherds from vessels with tubular support: 17
Strainer: 1
Sherds from vessels with "China" wall: 31
Lid: 1
Altarpiece: 2
Pit No. 5 (341 sherds)
Rim:
– everted: 75
– inverted: 21
– with refraction under rim: 25
Body:
– S-shaped: 25
– with refracted belly contour: 13
Sherds from vessels with handle:
– vertical strap handle: 25
– horizontal: 20
Sherd from vessel with ear: 1
Knobbed: 38
Sherds from vessels with tubular support: 12
Bottom: 46 (34 of these came from larger storage vessels)
Sherds from vessels with "China" wall: 41
Spoons with shaft-hole: 2
Sherd from vessel with pouring spout: 1
Lid: 1
"Clay cone": 1
Sherd from vessel with oval mouth: 1

I am fully aware of the fact that, considering the huge number of tiny indistinctive body fragments recovered at the sites, this brief statistical analysis cannot give a clear idea of the original proportions of the vessel types used in each building or discarded in each pit. However, I still believe that the above figures can be used for establishing certain tendencies.

These are the following:

1. The Lengyel-type wares abound in the assemblage: vessels with pouring spout and horizontal handle; "butt" vessels; vase-shaped wares with everted rim; vessels with tubular support (whose slightly Beaker-shaped versions are characteristic of the Late Lengyel culture); and clay spoons with shaft-hole.

2. Strongly represented in the assemblage are the cups with slightly inverted mouth, the tall bowls, and the barrel-shaped storage vessels. These types appeared first during the last phase of the Lengyel culture, and became prevalent in the Middle Chalcolithic.

3. There are several sherds from tall bowls with inverted mouth and sharp refraction under the rim. Quite often a protruding knob was applied to the refraction. Similarly to the bowls with slightly inverted mouth, these wares were also characteristic of the latest Lengyel phase.

4. The number of thin-walled vessels, often in miniature size, is remarkably large in the assemblage. This phenomenon would require separate investigations, since it appears to contradict our earlier conclusion that the household wares dating from the latest phase of the Lengyel culture are almost exclusively thick-walled and roughly executed types.

2.4. Vessel types

2.4.1. Bowls

The potters of the Lengyel Culture turned out a wide variety of bowls. However, compared with the previous periods, Phase III witnessed a decline in the production and use of bowls. At the same time, a new type occurred during this phase, which had no archetype in the known Late Lengyel assemblages. This was the conical bowl with horizontally slashed rim. The rime was thickened on the inside, and in some cases it had a sculptural ornament attached to it.

2.4.1.1. Conical bowls (9, 12, 14)

This type was known, albeit not widespread, throughout the Lengyel culture. In its most common form, it had a reversed cone-frustum shape, and occasionally it also had a knob attached to its body, or a small pierced knob handle applied to the rim. Such conical bowls were identified in the assemblage coming from Jánosháza-Fürdődomb in county Vas.[7] A geographically closer association of the Szőlőhegyi mező finds is known from the settlement excavated near Muraszombat (Murska Sobota) by I. Šavel-Horvat. A conical bowl from the latter site was published by the excavator.[8] This type is also known from other sites dating from the unpainted Phase III of the culture, and from other Early Chalcolithic cultures of Central Europe.[9] The type survived into the Ludanice Culture as well.[10]

[7] *Károlyi 1992* Pl. 11, Type 1.

[8] *Šavel 1992* Fig. 2. 3.

[9] e.g. Veszprém-Felszabadulás út: Type 1a *Raczky 1974* 189, and Fig. 10. 10.2; the Zlotniki Group *Koslowski 1986.*

[10] *Lichardus – Vladar 1964* 85.

These bowls can also be identified as upper parts of vessels with tubular support.

2.4.1.2 Profiled bowls with everted rim (2, 5, 12)

This type was prevalent throughout the Lengyel culture. Several such vessels were identified in late-period assemblages as well.[11]

2.4.1.3 Biconical or slightly globular bowls with rim thickened inside (79-91, 172, 234)

This type is rare in the early Lengyel painted assemblages. J. Lichardus considers it characteristic of Phase IV (Slovak classification) of the Lengyel culture, i.e., of the Nitra-Brodzany phase.[12]

At Szőlőhegyi mező, this type was rather strongly represented. The horizontally slashed rim of these bowls is thickened in a way that it meets the outer wall of the vessel at a right angle, and the inner wall at a sharp acute angle. Some of these bowls have a drop-shaped knob or a triangular sculpted ornament attached to the rim. The closest parallels of this type are to be found in the cultures of the Middle Chalcolithic, primarily in the assemblages of the Balaton-Lasinja culture. A sherd coming from the Veszprém-Felszabadulás út site may also belong here, albeit not in its published position but reversely, i.e. with the rim thickened inwards, and not outwards.[13] Close parallels of this type are known from Kisunyom-Nádas[14] and Bukovnica.[15]

2.4.1.4. Bowls with semi-spherical body and slightly inverted rim (11, 98-102, 105-107, 124, 211-215, 221, 222, 237)

The above description (1.3) applies to this type as well, i.e. these wares also became common during the late phase of the Lengyel culture. The type discovered at Szőlőhegyi mező can be identified with type No. 8 at Jánosháza-Fürdődomb,[16] and with some of the sherds discovered at Kisunyom.[17] This type also has associations at Bukovnica in Slovenia.[18]

2.4.1.5 Biconical bowls (96, 108-111, 117, 122, 235, 236, 246, 253, 255, 257)

Although a significant part of the sherds discovered at Szőlőhegyi mező could be identified as belonging to this category, I ranked here only the vessels with a relatively wide mouth. (The more common types, whose mouth was narrower, I identified as mugs. The basis for this distinction was a comparison of the presumed diameter of the mouth with the presumed height of the vessel.)

N. Kalicz's typological chart of the Late Lengyel wares[19] features two comparable biconical vessels. They have refraction under the rim and a

[11] *Raczky 1974* Fig. 11, 3,5; *H. Simon 1987*, Fig. 16, 1,2; *Šavel 1992* Fig. 2, 2.
[12] *Lichardus 1986* 33.
[13] *Raczky 1974* Fig. 12, 1.
[14] *Károlyi 1992* Table 13, 2,3,5,7, Table 21, 2,7, Table 22, 5.
[15] *Šavel 1992* Fig. 3, 8.
[16] *Károlyi 1992* Table 11, 8.
[17] *Károlyi 1992* Fig. 18, 10,11.
[18] *Šavel 1992* Fig. 1, 4, Fig. 2, 1.
[19] *Kalicz 1991* 351.

drop-shaped knob hanging from the refraction.[20]

Compared with these types, the biconical bowls coming from the Szőlőhegyi mező site are different in two respects: first, the part above the refraction is slightly more curved, i.e. the upper and lower parts of the Szőlőhegyi mező bowls meet at a sharper angle; and second, the latter bowls have hanging bosses in place of the tapering knobs.

Biconical bowls were already used at certain sites in Lower Austria and Moravia during the classical phase of the Lengyel culture (which is Phase II in Hungarian classification). However, these vessels (bowls as well as taller mugs with narrow mouth) were structurally different. The Lower Austrian and Moravian wares were usually straight or concave underneath the rim. This can be considered a traditional feature of the Lengyel-Moravian painted wares.[21] Many of the Western Transdanubian Late Lengyel biconical wares had a convex upper part, which was made more perceptible by the characteristically thickened rim.

Comparable wares are known from Bukovnica in Slovenia[22] from the early chalcolithic sites in county Vas,[23] and from the chalcolithic assemblages coming from Körmend-Várkert.[24] Let us note here that the author dates the Körmend assemblage to the early Lasinja period, i.e. she ascribes the relatively remote refuse pits at the site to the Middle Chalcolithic. Objects associable with the Lasinja culture were undeniably present at the site (cf. the jug and cup with one handle[25]). If we date the biconical bowls to an earlier period, i.e. to the transitional Lengyel-early Lasinja period, this specific biconical bowl would belong to those middle chalcolithic forms that already had archetypes in assemblages dating from the end of the Early Chalcolithic.

2.4.1.6. Bowls with handle (132, 133, 135, 141)

A few sherds with handle in our assemblage lead us to conclude that there was a short, thick-walled, hemispherical bowl type with horizontal or slightly raised thick and pointed handles on either side of the vessel. These handles were attached to the body a few millimeters below the thinned rim, and their shape resembled that of a large-sized spouted handle. The known parallels of this type point toward the north-west. I have identified two close parallels of these sherds in the "epi-Lengyel" Bisamberg-Oberpullendorf assemblage of the Naturhistorisches Museum in Vienna. One of them came from Bisamberg,[26] the other from Würnitz.[27]

[20] *Kalicz 1991* 351, Figs. 12, 21.
[21] e.g. *Neugebeuer-Maresch 1981* 1, 21. Figs. passim.
[22] *Šavel 1992* Fig. 2, 1.
[23] *Károlyi 1992* Fig. 5, 6, Fig. 11, Type 10, Fig. 25, Type 5, Fig. 26, Type 14.
[24] *Károlyi 1992* Fig. 47, 7.
[25] *Károlyi 1992* Fig. 69, 6.
[26] Inv. No. 78.920.
[27] Inv. No. 54.990. (I wish to thank E. Ruttkay for granting me access to the assemblage.)

2.4.2. Pots

Most of the larger storage vessels had thick, although at points uneven, wall and yellowish-red or yellowish-drab texture.

2.4.2.1. Pots with everted rim (8, 15-24, 164, 259)

The wares belonging here resemble the vases with wide mouth. These pots had two tiny strap handles attached symmetrically to the shoulder. This type was identified in the assemblages coming from Veszprém-Felszabadulás út,[28] Nagykanizsa-Inkey churchyard chapel and Tekenye-Öcse.[29] It also had parallels at the coeval sites in Austria and Poland e.g. in the Wolfsbach group.[30] Furthermore, this type is featured in Kalicz's typological chart of the late Lengyel finds.[31] Parallels are also known from Bukovnica.[32]

2.4.2.2. Pots with slightly inverted rim (35, 38, 39, 40, 169, 173)

Although the pots with inverted rim (and globular body) were also present in the assemblages dating from the early phase of the Butmir-Lengyel culture, we cannot but conclude that the large-sized pots with cylindrical neck and slightly inverted (reversed funnel-shaped) mouth appeared only during the very last phase of the Lengyel culture. The archetypes of these pots are known from the south-eastern Vinča D2–post-Vinča and Lasinja cultures. Parallels are known from Balatonmagyaród-Homoki dűlő in Balaton-Lasinja context,[33] and from the late Lengyel Tekenye-Öcse site.[34] Rather close parallels of a pot discovered in a pit at Szőlőhegyi mező are known from Bukovnica[35] and Nagyvázsony in county Veszprém.[36] This type is characterized by the two (often disproportionately small) vertical strap handles attached to the junction of the neck and the belly. Occasionally these handles were reduced to pierced or solid knob handles. The middle chalcolithic "egg-shaped" or "barrel-shaped" pots with relatively shorter neck are considered variants of this type (cf. the pot discovered at Hidegkút).[37]

2.4.2.3. Pots with cylindrical neck (36, 37, 123, 125, 135, 175, 260)

Only a few sherds from vessels of this type came to light at Szőlőhegyi mező. Still, they belong to a separate category on account of their decoration, which had no known precedents in the earlier Lengyel assemblages. These pots are decorated with linear patterns or punctured ribbons on or immediately below the rim. This type was identified by N.

[28] *Raczky 1974* Fig. 15, 1-5,8.
[29] *Horváth 1984* Pl. 1.; *H. Simon 1987* Fig. 10, 17/2, 24/6.
[30] *Ruttkay 1983-84* Pl. 5, 1; *Koslowski 1986* Pl. 1, 3,4, Pl. 8, 1,3,4.
[31] *Kalicz 1991* 351, Fig. 6.
[32] *Šavel 1992* Fig. 1, 1,2,7,9.
[33] *Bánffy 1994* Fig. 4/3,5; 6/7; 7/6, 8.
[34] *H. Simon 1987* Fig. 22, 2.
[35] *Šavel 1992* Fig. 15, 2.
[36] *MRT* (Archaeological Topography of Hungary) *2*, 1969, Pl. 3, 15; *Kamienska – Koslowski 1970; Lichardus 1974; Raczky 1974; H. Simon 1987.*
[37] *MRT 2* 1969, Pl. 3, 18; *Bánffy 1995.*

Kalicz,[38] and a comparable sherd discovered at Tekenye-Öcse was published by K. H. Simon.[39] Šavel published a sherd with undecorated rim from Bukovnica.[40]

2.4.2.4. "Butt" vessels (25-29, 217)

The Szőlőhegyi mező assemblage contains several sherds from the bottom of thick-walled vessels which had horizontal spouted handles attached to their body. Apart from a few such sherds demonstrably coming from bowls, these can be considered fragments from "butt" vessels. These were medium or large-sized vessels, with several horizontal (often superimposed) handles attached to their body. A few stray vessels of this type were also identified in assemblages dating from the early and classical phases of the Lengyel culture.[41] According to Dombay, the "layer above the pits" yielded sherds with "adjoining spouted handles." These sherds most probably dated from the early period of the Lengyel culture.[42] The few sherds from thick-walled vessels with spouted handle discovered at Kisunyom can also be considered parts of "butt" vessels.[43]

2.4.3. S-profiled, vase-shaped vessels (1, 3, 4, 6, 7, 16, 244, 245)

This thin-walled and S-profiled type, which often had refracted belly contour, was known throughout the Lengyel culture. Its early variants were painted. At Szőlőhegyi mező, this type was represented by a few rim fragments.

2.4.4. Mugs

The wares belonging here are identified as tall bowls by certain researchers. I prefer to call them mugs because in my understanding the vessels with inverted rim and a mouth diameter smaller than 15 cm do not qualify as bowls.

2.4.4.1. Mugs with slightly inverted mouth (42, 49, 93, 97, 11, 103, 118, 120, 121, 126, 127)

This is a predominantly chalcolithic type, and was not known during the earlier phases of the Lengyel culture. These mugs were common during the Middle Chalcolithic Balaton-Lasinja culture.[44]

2.4.4.2. Biconical mugs (112-116, 240-243)

Several such vessels were discovered at Szőlőhegyi mező, and also at other Lengyel sites dated to the latest phase of the culture. These mugs have no parallels in the assemblages coming from the Veszprém-Felszabadulás út, Veszprém-Nyúlkertek, Veszprémpinkóc and Tekenye sites. Although N. Kalicz identified a tall biconical vessel in a Lengyel assemblage,[45] he added that this type became common during the white-

[38] *Kalicz 1991* 251, Fig. 6.
[39] *H. Simon 1987 Fig.* 29, 15.
[40] *Šavel 1992* Fig. 1. 10.
[41] e.g. at Aszód and Zengővárkony *Kalicz 1985* Fig. 54, 1 *and Dombay 1960* Pl. 60, 3.
[42] *Dombay 1960* Pl. 12, 5.
[43] *Károlyi 1992* Fig. 17, 8,10,11,12, Fig. 18, 1.
[44] e.g. Körmend-Várkert, Early Lasinja culture, *Károlyi 1992* Fig. 55, Type 4, Fig. 56, Type 8.
[45] *Kalicz 1969* Fig. 13, 19.

painted, classical phase. However, on this vessel the refraction was on the belly and not below the rim.

It appears justified to presume that the type with biconical refraction below the rim eventually merged with the southern "Schultergefäss" type. As a result, the part above the rim became decorated with slightly hollowed or parallel stripes or flutes, the part below the rim became slightly concave, and the round knob attached to the rim became drop-shaped. This transformation is manifest on a series of "epi-Lengyel" finds discovered at the Lower Austrian sites of Würnitz and Oberpullendorf. This assemblage is marked by the simultaneous occurrence of the Szőlőhegyi mező biconical Lengyel type and the type characteristic of the Middle Chalcolithic.[46]

In spite of its appearance in a late-period assemblage, this type doubtlessly belongs to the Lengyel culture. A proof for this is provided by the protruding knobs attached to the refraction of the vessels. The wares in this category are roughly executed, thick-walled, and their height does not exceed 15-20 cm. Their texture is usually yellowish-drab in colour.

2.4.5. Vessels with tubular support (bell-shaped: 31, 33, 34, 165; conical: 161, 247; low: 31)

After the beginning of the Neolithic, a variety of vessels with tubular support were produced and used by cultures that had their roots in South Eastern Europe. While the early and middle chalcolithic vessels were characterized by short tubular supports, the classical phase of the Lengyel culture developed the tall version, which eventually became slightly Beaker-shaped.

At the same time, the stout tubular support with a round pierced hole also remained in use. This version had parallels in the Tiszapolgár and Bodrogkeresztúr cultures of Eastern Hungary. A comparable vessel with short, pierced tubular support came to light in an "epi-Lengyel" context,[47] and other parallels are also known in the Late Lengyel assemblage coming from Balatonmagyaród-Hídvégpuszta.

Regrettably, no intact vessel of this type has come to light to date, and therefore we do not know whether there were profiled wares among the Late Lengyel vessels with tubular support. Most of the sherds discovered at Szőlőhegyi mező come from the junction of the upper part and the support of these vessels. Some of these sherds are believed to come from short, conical bowls with wide rim provided that they were not profiled. At the same time, it is also possible that some of the sherds identified above as coming from narrow-mouthed mugs with refraction below the rim were in fact parts of bowls with tubular support. One such vessel, discovered at Zengővárkony, is featured in the typological chart.[48]

[46] *Ruttkay 1976* Fig. 5, 10,13, Fig. 6, 7,8, Fig. 5, 11, Fig. 7, 1,3, Fig. 8, 13,16.
[47] *Károlyi 1992* Fig. 19, 3.
[48] *Dombay 1960* Pl. 85, 5,9.

2.4.6. Jugs

We cannot but identify as jugs those small-sized vessels in the Szőlőhegyi mező assemblage which have distinctive globular belly and a refraction between the rim and the belly. This type is unprecedented in the Lengyel culture, and its South Eastern origin is beyond dispute.[49] Remarkably, vessels of this type cropped up in late Lengyel assemblages predating the Middle Chalcolithic. The absence of intact or reconstructible vessels of this type has so far prevented us from identifying them as jugs with absolute certainty.

2.4.6.1. Jugs with everted rim (69, 71-73, 75, 77, 78)

The difference between this type and the smaller pots lies in the former's narrower mouth. The jugs in this category all had a strap handle between the neck and the shoulder. Judging from the known parallels, we can presume that these jugs had two symmetric handles. In itself, the strap handle was characteristic of the latest Lengyel phase only.

2.4.6.2. Jugs with cylindrical neck (70, 74, 76)

Based on their dimensions, their yellowish-grey levigated texture, and their strap handle(s), we can liken these sherds to those coming from jugs with everted rim (6.1). However, they are different in that their neck is cylindrical.

2.4.7. Small-sized vessels

This category includes vessels whose height and mouth diameter do not exceed 10 cm. Some of them are genuine miniature wares. Almost all of these vessels have thin "China" wall. The few thick-walled miniature vessels in the assemblage included the fragments coming from a conical bucket and an incomplete cup. With the exception of the vase-shaped vessels (Type 3), the thin-walled wares all belong to this category.

As we have seen already, the Szőlőhegyi mező assemblage is exceptionally rich in small-sized, thin-walled vessels. This is especially remarkable if we consider that the late Lengyel assemblages are known to abound in roughly executed, coarse, unpainted and thick-walled wares.[50] We do not yet have an explanation for this phenomenon, especially since this abundance of miniature wares does not apply to any of the known classical Lengyel, Early Lengyel, or Post-Lengyel Balaton-Lasinja sites. Although a few such "China"-type wares were discovered at Bukovnica, we are inclined to conclude that the assemblage coming from that site postdates the Szőlőhegyi mező finds, i.e., that the former objects date from the transition period between the two cultures.

At the same time, we have every reason to establish that the objects discovered in southern Transdanubia and dated to Phase III of the Lengyel culture represent only a narrow spectrum of the total Lengyel assemblage. Consequently, we cannot support the widespread assumption that the

[49] *Kalicz 1973* 136.

[50] *MRT* (Archaeological Topography of Hungary) *1 and 2; Raczky 1974; H. Simon 1987; M. Virág 1989.*

late Lengyel period was characterized by the dominance of coarse and thick-walled wares. Recent excavations have furnished proof that the latest Lengyel phase was not different from the preceding phases as far as the use of several different types of exquisite pottery was concerned.

The small-sized vessels were discovered in layers of debris rich in tiles. Almost all the large-sized wares had their miniature equivalents among them. At the same time, the above-mentioned small-sized thick-walled cup proves that the miniature vessels constituted a separate type. After all, this cup has no "adult" equivalent in the assemblage.

2.4.7.1. S-profiled vessels (13, 44-46, 48, 52, 65, 66, 148, 149, 184, 186, 200)

2.4.7.2. Cups with straight wall and horizontal handle attached to the rim (62, 128, 154, 155, 198, 199)

2.4.7.3. Biconical vessels (55, 57-60, 63, 64)

2.4.7.4. Barrel-shaped vessels (41, 42, 47, 50, 53, 54, 56, 185, 191, 201, 203)

2.4.7.5. Vessels with tubular support (61, 67, 68)

2.4.7.6. Miniature spoons (157, 158)

2.4.7.7. Miniature strainers (150-152, 227)

2.4.7.8. Miniature spouted vessels (136, 139, 204)

2.4.8. Special "household" wares

I distinguish the household wares from the other pottery because I wish to call attention to the difference between the vessels with a clearly identified function and those whose function is still in dispute.

2.4.8.1. Vessels with oval mouth (159, 160, 168, 248)

Although the assemblage includes several sherds from pottery decorated with vertical ribs, the partially restored vessel of *168* counts as a unique find. Only three such sherds have been discovered during the past two seasons. Earlier, a comparable fragment was discovered by M. Bondár at Szőlőhegyi mező. Accordingly, these wares cannot be considered accidental products or rejects turned out by a moody potter. Instead, they represent a separate pottery type, even though they have no known parallels elsewhere.

These wares are unique on account of their two tiny handles on the rim, the vertical ribs on their body stretching from the handles to the bottom, and their oval mouth. Only a few chalcolithic vessels are known to have had oval mouth. I know of no comparable vessels dating from the Early or Middle Chalcolithic and coming from Transdanubia or the neighbouring regions. Remarkably, an assemblage of similar oval-mouthed vessels was published by H.–J. Weisshaar from the lower Rachmani layer of the Thessalian Pevkakia-Magula site. Weisshaar considers these vessels contemporaneous with the Bodrogkeresztúr A – Balaton-Lasinja cultures.[51] However, to my knowledge this horizon was contemporaneous with the Tiszapolgár culture, and therefore the vessels can be considered coeval

[51] *Weisshaar 1989* Pl. 21, 3,7, and Pl. 50, 4,7,8 the latter from the middle Rachmani layer.

with the Szőlőhegyi mező finds.[52] One such sherd recovered in 1993 shows that the vertical rib on its side began below the rim. Accordingly, Weisshaar's Thessalian parallel appears to be yet more questionable. While it seems reasonable to originate this type from the south-eastern part of Europe, we have not yet identified finds that could furnish proof for this transition.

2.4.8.2.Clay spoon (144, 145)

The late Lengyel sites have all yielded numerous clay spoons with shaft-hole. These utensils survived unchanged into the Balaton-Lasinja culture. A series of smaller or larger clay spoons have been brought to light at the Lengyel and Balaton-Lasinja sites of the Hahót micro-regional project. The only exceptions to this were the early Lengyel objects at Zalaszentbalázs-Pusztatető.[53]

2.4.8.3. Strainers (142, 143, 146, 153, 226, 228, 229)

The Szőlőhegyi mező site has yielded several sherds from strainers. One of these could be fully restored. It turned out to be a plain, slightly conical ware (although we could not establish whether it had a handle). Remarkably, only the bottom and the lower part of the body of this strainer were perforated. Similar strainers (with only a few perforated holes in their bottom) are known from Kisunyom-Nádasi tábla[54] and Balatonmagyaród-Hídvégpuszta. Several perforated body fragments have also been discovered, which indicate that the Late Lengyel people used other types of strainers as well. At the same time, there are a few sherds coming from larger pots which have only one perforation in them. It would be stretching things to suggest that these were also fragments from strainers.

2.4.8.4. Vessels with pouring spout (130, 131, 137, 138, 166, 180, 218, 220, 225, 231, 232)

The appearance of pouring spouts on vessels was a chalcolithic development. These vessels had no neolithic or early Lengyel archetypes. Comparable vessels have already been discovered during field surveys[55] and at other late Lengyel excavations.[56] N. Kalicz considers this type an innovation of the latest Lengyel phase.[57] In connection with the Szőlőhegyi mező finds, we have to make two comments here. Contrary to Kalicz's observation, the vessels with pouring spout were not as a rule biconical. In fact, pouring spouts were also applied to slightly hemispherical vessels with inverted rim.[58] The other comment has to do with the dimensions of these vessels. In one case the rim is so very straight that initially it was

[52] *Parzinger 1991* 360-388, especially: 386.
[53] see the study in the present volume.
[54] *Károlyi 1992* Pl. 19, 6.
[55] *MRT 2* 1969, Pl. 3, 8,14.
[56] *Károlyi 1992*,Fig. 14, 2,4,6, Fig. 35, 1.
[57] *Kalicz 1991*,355.
[58] Comparable sherds were published by D. Berciu from the early and classical phases of the Salcuta Culture *Berciu 1960* Fig. 85/15, 90/14, 108/9.

considered a fragment from a kind of small clay table. The vessel's calculated mouth diameter was at least 45-55 cm! The sherds with pouring spout found at Kisunyom-Nádasi tábla most probably came from vessels of comparable size.[59]

2.4.8.5. Funnel (258)

Based on prolonged deliberations, we have identified as a funnel an approximately 30 cm tall hollow clay cone with a hole in its apex. It could not be considered a lid or a baking utensil on account of this hole, which would have let the heat or steam escape. If we agree to consider this object a funnel, we appear to have a reason to associate this item, along with the strainers and the vessels with pouring spout, with such activities as the secondary exploitation of domestic animals, or more specifically with the production and processing of milk.[60] The strainers could be used for producing curd, while ethnographical analogies suggest that the funnel could serve as a vessel for maturing cheese they could trickle out through the hole in the apex.

Although this is mere guesswork, the above conclusions appear to chime in with our general understanding that the Early Chalcolithic witnessed a gradual shift of emphasis from agriculture to animal breeding. This can be considered the result of certain ecological-climatic changes, and also the spark behind a series of social transformations.

2.4.8.6. Lids (256, 265)

In the assemblage of finds discovered in 1992 and 1993, only three sherds could be identified as coming from lids.

One of these is an approximately 7 cm tall restorable conical lid. It used to have a handle attached to it at two points.

The other sherd is a handle which most probably belonged to a lid. It depicts a double-headed ram, which was attached to the lid at two points with its fore and hind legs. The lid at issue could not be the one which was discovered in an adjoining pit, since the fractures on it are bigger and the distance between them is larger than that of the ram's limbs.

The third lid represents a different type. The handle of this conical lid was a flat knob resembling a round button.

2.4.8.7. "Clay cone" (134)

We do not know the function of this 1.5 cm thick cone, with a diameter of approximately 6 cm. Judging from the traces of wear on its surface, it could be used for rubbing or polishing.

2.4.8.8. Spindle-whorl (140)

Only one piece, made from a pottery fragment belongs here. Its edges were snapped off, and a hole 0.5 cm in diameter was pierced in the middle of this disc-shaped object.

[59] *Károlyi 1992* Fig. 25, 9.

[60] *Sherratt 1980* 261-306; *idem 1982*, 90-104.

2.4.9. Special purpose pottery

This category includes a variety of clay objects: idol fragments, intact and fragmented altarpieces, pierced clay tablets with typological features comparable to those of the altars, an altar decorated with depictions of animal or human heads, a fragment from a miniature furniture, and a lid handle depicting a double-headed animal. Pottery of this kind were already discovered in unusually large quantities during the 1987-1989 excavations. In 1992, we lit upon two altarspieces in the debris of Building No. 2. The latter objects came to light from a layer of rubble overlying a rectangular burnt-through spot surrounded by lumps of clay. The spot was identified as a fireplace. The function of the objects called altarpieces is still subject to debate.

Earlier, M. Bondár also discovered a stray fragment from an altarpiece at the Szőlőhegyi mező site. Furthermore, I chose to include in this category the fragment from a small-sized square vessel decorated with incised parallel lines.

2.4.9.1. Figurines (268, 269)

One of the objects in this category is a stray foot of a figurine. The fragment comes from a reddish-grey, moderately levigated and burnt sculpture. As opposed to the other comparable finds discovered at Szőlőhegyi mező during earlier excavations, this sculpture did not have a knuckle on its ankle. The shape of the sculpture suggests that it originally depicted a (seated?) figure with feet apart. The fragment from a small table or stool described below appears to support this assumption.

The other figurine fragment is believed to be a schematic depiction of a human head. This 5 cm x 2.6 cm cylindrical fragment has a worn surface, and yet the incised horizontal eyes and the protruding beak-shaped nose are clearly discernible. A comparison of this item with the "butted" idol discovered earlier by M. Bondár sheds light on this figurine's schematic execution and also on the artistic qualities of the depiction. These are the first known figurines dating from the latest phase of the Lengyel culture in Southern Transdanubia. The fact that these fragments come from Szőlőhegyi mező suggests that for some reason the inhabitants of this settlement attached special significance to their cultic objects.

2.4.9.2. Animal depiction (264)

The only, and rather exceptional, animal depiction was discovered in 1993 in a deep cylindrical refuse pit (Feature No. 5). It depicts a double-headed animal with one body. The animal most probably represents a ram, although L. Bartosiewicz believes it can also be interpreted as a goat.[61] Despite the schematic depiction of the heads, the roots of the horns and the separately applied round ears are clearly discernible. The fore and hind legs of the double-headed ram or goat are made of one piece of clay each, and the animal's genital organs are emphatically

[61] kind oral communication by L. Bartosiewicz.

depicted in the middle of its belly. This object most probably served as a lid handle: indicative of this are its flattened shape, and also that the proportionately long feet terminate in fracture. Although a lid with traces of two round fractures on its top was discovered in the proximity of this item, the handle could not be fit on that. Possibly, this lid also had a similar handle in its original form.

2.4.9.3. Miniature furniture (267)

The only item belonging to this category came to light from a refuse pit at Szőlőhegyi mező. Although fragmented, it can clearly not be ranked in the above category. This 3 cm x 3 cm object appears to be part of a small table or stool. The surviving part depicts a solid leg and part of an attached horizontal leaf with a tiny round knob in its corner. Since the idol fragments suggest that the Late Lengyel sculptors could depict seated human figures, we have every reason to identify this object as a fragment from a seat or "throne." A comparable fragment has been published by M. Vasić from a Late Vinča layer.

2.4.9.4. Altarpieces (266, 270-273)

The two objects identified as altarpieces were discovered in 1992 in the debris of Building No. 2. They are similar in size, and both have a small hemispherical depression in the middle of their surface. Both altarpieces have four pierced holes in their corners, and four small knobs next to the holes. The altarpieces were most probably suspended through these four holes. Originally, both altarpieces had tubular supports attached to them, whose diameter was roughly the same as that of the depressions.

One tubular support has survived intact *(270)*. It is short and cylindrical, and therefore it differs from the other such supports discovered at Szőlőhegyi mező, which are tall and slightly bell-shaped, or short, pierced, and slightly conical.

Only the trace has survived of the other tubular support *(271)*. Remarkably, the trace clearly shows that it was broken off on purpose, prior to the baking of the object. The potter obviously made no effort to obliterate the trace of the removed support from the soft clay, which he could have done with a smoothing stick or a thin layer of clay. Instead, he produced two round concentric depressions in the place of the removed support. The imprints of his nails show his efforts to smooth away the surface. We do not know the reasons for this modification, and we have no explanation either for the need to apply tubular support to a suspended object. In any event, these altarpieces with tubular support could serve several different purposes.

In 1993, we discovered an intact altarpiece *(272)* and a fragment from another such object *(266)*. Furthermore, we lit upon a fragment from a larger altarpiece *(273)*, which can be considered unique both in terms of its style and dimensions. All three objects were discovered in a refuse pit.

The fragment referred to above comes from the corner of an altarpiece. The pierced vertical hole in its corner is clearly discernible. Although the altarpiece was broken along the edge of the small depression in its middle,

the similarity between this and the other two altarspieces could still be established on the strength of its thickness, the position of the round depression, the pierced hole, and the knobs applied to its corners. Regrettably, the absence of its middle part prevents us from determining whether it also had a tubular support attached to it.

The other altarpiece *(272)* is different in size and proportions, and yet its "canonical" properties are the same as those of the other two altarpieces. This object is 9 cm high. The height of the tubular support is 3 cm, while the cubiform altar is 6 cm x 5 cm in size. The round depression in its middle is approximately 2 cm in diameter, i.e. it meets the "canonized" standards. The altar also has the prescribed tiny round knobs applied to the edges of the cube. Only traces have survived of the red paint which originally covered the whole surface of this object. There were no reconstructible patterns on the altarpiece most probably the red-painted wares were all undecorated at Szőlőhegyi mező. Although the proportions of this altarpiece differ from those of the other analogous finds discovered at Szőlőhegyi mező, it can still be likened to the other similar Lengyel finds in terms of all its other features, including its tubular support.

The third altarpiece has several parallels at other, often remote, Lengyel sites. The early period altarpieces were suspendable, and had a small round depression in their middle. However, almost all of them were cubiform, and not brick-shaped as their successors.[62] These canonized finds prompted researchers to conclude that the altarpieces were used only in the early phases of the culture. Since then, a number of late-period altarpieces have been discovered, and they all tend to be brick-shaped rather than cubiform. A comparable object, accompanied by unpainted pottery sherds, came to light from a late Lengyel pit at Balatonmagyaród-Hídvégpuszta in the adjoining Little Balaton region.[63] The Hídvégpuszta site has yielded a number of other related objects as well: in 1981, a cubiform altarpiece was discovered in Feature No. 60, while Feature No. 11 offered a brick-shaped altarpiece which is different in several respects from the Szőlőhegyi mező find, although both have vertical holes and round knobs in their corners (Inv. No. 81.76.2). We have to make mention of three further brick-shaped altarpieces here. They were found in 1993 in a late Lengyel context at Kápolnapuszta between Balatonmagyaród and Zalakomár. One of them is believed to have terminated in an animal head in its original form.[64]

Several researchers identify these common Lengyel clay objects as oil lamps. Hereinafter I attempt to briefly disprove their approach in three points:

[62] A comparable cubiform object was discovered in an Early Lengyel context at the Hahót-Szartóri I site in the Hahót microregion *Bánffy 1995.*

[63] 1984, Feature No. 131. The Lengyel finds from Hídvégpuszta will be published by E. Bánffy.

[64] These finds are being evaluated by J. Barna, a researcher at Keszthely's Balaton Museum. To my knowledge, none of these altarpieces had tubular support.

- The simplest argument against this identification is technical in nature. The depression in the middle of these objects is way too small and shallow to hold enough fat or oil to keep a flame alive for more than just a few minutes. Furthermore, none of these depressions contained microscopic traces of soot, burnt organic matter, or any other trace of combustion.[65]

- In absence of written sources, the functional analysis of prehistoric objects must be based primarily on the archeological context of the given finds, i.e. on the analysis of the geographical location and the accompanying finds. Regrettably, the large number of stray finds and the inaccurate excavation records often prevent us from using this information. The altarpiece discovered earlier at Szőlőhegyi mező was also a stray surface find. In 1992, we discovered two such altarpieces in satisfactorily documentable positions. As we have seen, these altarpieces come from debris overlying the open fireplace of a building. This fact in itself renders it highly improbable that these objects were used for lighting after all, why would anyone need an extra source of light next to an open fire?

- Finally, let us state that it is not worth discussing archeological finds in themselves. It is a fact beyond dispute that comparable objects i.e. relatively small, triangular or square objects with a depression in the middle and often with short legs were already in use by the Early Neolithic cultures of South East Europe. Parallels for these objects abound in the Karanovo Starčevo-Körös cultures; the Middle Neolithic Karanovo III-Vesselinovo and Vinča-Tordos cultures; the linear pattern cultures of Central Europe; the late Neolithic Tisza and Vinča-Pločnik cultures; and also in the Early Chalcolithic cultures throughout the Balkans, including the Tripolje-Cucuteni-Gumelnita-Karanovo VI horizons. The Lánycsók altarpiece of the Starčevo Culture is clearly the earliest such find in Transdanubia.[66] The knobs on the corners of this altarpiece depict human heads, and there is a small round hole in its middle.

It comes as no surprise that similar objects are also known from the Lengyel culture, which had its roots in the linear pattern and the other South-Eastern cultures. Although their stylistic marks unambiguously reveal their provenance, we can still trace the relationship between them and their remote parallels through their standard square shape, the round central depression, and the roundish knobs applied preferrebly on corners and edges of the objects.

Finally, in the course of the 1993 campaign also a fragment of a special altarpiece was found, staying without any known close parallels in the Lengyel culture so far, but resembling in many respects to altarpieces of neighbouring Late Neolithic-Early Chalcolithic cultures *(273)*. This find may affirm the cultic interpretation of the object type discussed here. Originally, the object may have been much larger than the geometric

[65] The microscopic analyses were conducted by F. Gyulai.

[66] *Kalicz 1977* Fig. 14, 8.

type: its size is 7 x 11.2 cm, height: 3.1 cm. This find can be ranged to other Lengyel altarpieces mostly because of its low, cylindrical tubular support. A vessel, most probably a flat bowl may have been attached on its upper part. This is indicated by the circular fracture and the inside of the circle having been formulated as a bottom of a bowl. The fragment had apparently four extensions, being so long that it was necessary to sprag each of them with a twig, in order to save them from breaking (in spite of these efforts all the extensions did break off). One of the negative twig imprints can be observed clearly as the object was broken along the perforation. The thickenings on the foots are also signs for longish extensions.

It remains an open question whether horns, animal or perhaps human heads were attached to the peaks of the extensions. From the beginning of Early Neolithic to the end of Chalcolithic there are plenty of examples for each version.[67] This type has been unknown only in the Lengyel culture so far.

In spite of the problems discussed above it seems perhaps most likely that the applications on the four peaks of the altarpiece were animal heads. Several similar finds with animal heads are known fom Slovakia,[68] where otherwise the same roundish depressions can be observed on the back of these animals, and the same small round knobs on the edges, as on geometric altarpieces. Animal representations have been known also from the area of the Hahót microregion: the lid handle representing a double headed ram was found exactly in a neighbouring pit. The Late Lengyel altarpiece of Kápolnapuszta also depicts an animal head.[69] However, this issue will not be settled before the discovery of further and hopefully intact such objects.

Although hundreds of such objects have been brought to light at sites remote from each other in terms of both space and time, none of them are considered "oil lamps" by researchers, who also tend to identify these as cult objects. Supporting this interpretation are the decorative patterns on the Lengyel finds[70] and the animal depiction from Kápolnapuszta, which is known to have had middle and late neolithic archetypes in Slovakia[71] and also in the Lengyel culture.[72] On the basis of these considerations, I prefer to identify these objects as altarpieces, notwithstanding that we are not yet able to determine their original function.

[67] *Bánffy in print* Chapter IV.2. with examples and literature.

[68] *Pavúk 1981* 61-62, Fig. 63.

[69] kind oral communication by L. Horváth and J. Barna.

[70] e.g. incised decorations on the altarpieces discovered at Lengyel, from Sárpilis-Újberekpuszta – *Mészáros 1962* Fig. 2; *Mészáros 1962* Fig. 14; and E. Bánffy's unpublished red-painted objects from Balatonmagyaród-Hídvégpuszta.

[71] e.g. Bina, *Pavúk 1980.*

[72] Mórágy-Tűzköves – *Zalai-Gaál 1986* 153, Fig 8.

Speaking of their function, certain hypotheses should be precluded with relative certainty, while others we consider tenable. Practically all the altarpieces coming from sites in South-East Europe have been brought to light from settlements, and most often from the proximity of fireplaces.[73] Only the publisher of the Sárpilis-Újberekpuszta find considers his object a grave-good.[74] The other altarpiece discovered as a grave-good belonged to the Cotofeni Culture, and was accompanied by a vessel filled with corn.[75] Consequently, we can presume that these altarpieces served some kind of cultic purpose. Most probably they belonged to the cultic furnishings of the households. The traces of wear and tear suggest that they were in permanent use during festive (and perhaps also other) occasions. These objects appear to support the assumption that the neolithic and early chalcolithic groups of peoples performed their cultic practices in their homes rather than in separate sanctuaries. Consequently, we can expect these cultic objects to occur together with other household items in the debris of the buildings, or near the fireplaces, as was the case at Szőlőhegyi mező.

Regarding their specific use, we can presume that the small round depression was used for holding some kind of liquid or a few grains of corn, which served as offerings to the ancestors or to some other supreme powers. The written and ethnographical sources provide several examples for these kinds of offerings, which were most probably known to the peoples of the Neolithic and Chalcolithic.[76] The object described below appears to highlight the significance of the round holes in these "altars."

2.4.9.5. Fired clay tablets (176, 223)

The excavations conducted in 1992 brought to light two small-sized, square and flat clay tablets. An intact one was discovered in Building No. 2, while a fragment was found in Building No. 3. Both tablets had holes pierced in their corners, which also had knobs similarly to the altarpieces. The pierced holes allow for two different interpretations: the tablets were either fastened on a string and worn as a necklace (a type of amulet), or they were parts of the altarpieces. The size of these tablets appears to support the latter interpretation, as they fit perfectly into the small round depressions in the altarpieces. The altarpieces and the tablets also share several stylistic marks.

2.4.9.6. Miscellaneous objects

The refuse pits located a bit farther away from the buildings have yielded a variety of small-sized clay objects and sherds, but only one piece of each type. These finds included the following:

2.4.9.6.1 Clay pendant (147=261)

An approximately 3.5 cm high fired hollow clay cone, with a small pierced hole in its apex. Most probably it was worn on a necklace. M.

[73] *Bánffy 1990-1991* 190-192, with further literature.
[74] *Mészáros 1962.*
[75] *Ciugudean 1983* 173, Fig. 82.
[76] *Bánffy 1990-1991* 223.

Bondár uses the term "liqueur glass" to identify these objects. A comparable pendant was published as a piece of jewelry by E. Ruttkay from Wetzleinsdorf.[77]

2.4.9.6.2 Pendant (with animal head?) (263)

This coarse, poorly baked (sun-dried?) object appears to be a schematic depiction of an animal head with two horns. The head has horizontal perforations under both horns. This pendant could be part of the "liqueur glass" described above. Only the 2.5 cm high upper part of the original pendant has survived.

3. Non-ceramic miscellaneous objects

3.1 Red ochre

Twelve smaller or larger lumps of red ochre were collected from the floor level of Building No. 2 and from some refuse pits. Although the chemical analysis of these lumps is still to be performed, it appears justified to presume that they provided the paint for the crusted monochrome red-painted wares.

3.2 Graphite

It was not until the discovery of two brick-shaped lumps of graphite next to a biconical rim sherd that we could establish with certainty that the black vessels coming from refuse pits Nos 4 and 5 are genuine graphitted wares. Consequently, it appears justified to reject arguments that the black burnished sherds come from imported wares. The practice of graphitizing pottery had earlier been unknown in this region, and was most probably adopted from the southern Vinča culture.

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Appendix: Analyses of non ceramic neolithic and early chalcolithic settlement finds

Lívia Bondor:

RAW MATERIALS OF GRINDING STONES AND POLISHED STONE MATERIAL

1. Fragment of a grinding stone, Feature 2 (1993)
Serpentinized and silicated magmatic stone. It proveniates from a metamorphic zone. The typically serpentinized net-like rock texture is apparent.
2. Grinding stone, Feature 5 (1993)
Pebble stone, consisting mainly of quartz and quartzite remains, with some glimmery rests. The quartzite elements are normally of 1-2 mm, but some can reach the size of 2 cm, too. The cement is painted with limonite, which gives a certain pinkish colour to the stone. Granules on the surface are fairly worn. Some parts also contains reddish, silicated and greyish green, decayed metamorphic debritus, with small magnetit elements.

As a provenience, the Transdanubian Permian sandstone is not to exclude, but more probably it comes from the upper, reddish quartzite layer of the Eastern Alpic shale formation. This reddish Permian quartzite can be connected with the Alpic orogenesis.
3. Grinding stone, Feature 2 (1993)
Arcosed sandstone with rough grains, coarsely cemented. It consists much muskovite but also some biotite elements. The cut quartzite structure and the diatomaceous pseudomorphoses indicate that the elements were cemented by an acid siliceous solution. Provenience: Alps.
4. Polished stone, Feature 3 (1993)
The stone was prepared from a black lidite pebble. Its provenience is a metamorph zone, the Eastern part of the Alps.
5. Grinding stone, Feature 7 (1993)
Reddish, rough-grained, pebbled sandstone.A part of the quartzite debris contains white, others red veins. Some dark red and grey quartzite debris also occurs, wearing magnetite spots. It most probably comes from the Eastern Alpic epimetamorphic succession, but the Permian sandstone region at the Balaton highland is not to exclude as well.
6. Grinding stones (2), Feature 5 (1993)
a) Greyish yellow, finely grained, medially hard sandstone, consisting many small pieces of mica. It originates from a hard bank or concretion of the Transdanubian hard sandstone.
b) Yellow and red, medially grained hard sandstone coloured with limonite and hematite. The debris elements mostly contain quartzite, which is white medially worn. Remarkable is a great amount of greenish black, crumbled granules, having longish incisions. This latter mineral ingredi-

ent is dissolved chain silicate: pyroxene or amphibol. Some entirely limonitized grains also occur. The stone most probably comes from the Alps, eventually from the Permian levels of the Balaton highland.

7. Grinding stones (2), Feature 2 (1993)

a) Yellowish, finely grained sandstone, coloured with limonite. The main quartzite mineral ingredient is sometimes together with magnetite. Many small mica are also to observe. The stone proveniates from Transdanubian Pannonian levels.

b) Pebbled, roughly grained sandstone. Besides milky white quartzite there is much red, quartzite debris. It also contains a little magnetite. As Permian and triassic debris occur together, the stone might be younger than those, i.e. it may have come from the Eastern Alpic foothills or from the Eastern Alps.

8. Polished stone, Feature 2 (1993)

Yellowish white dissolved granite, having besides milky white quartzite elements some rosette quartzite. It aslo contains many small elements of magnetite and amphibole. Based on its ingredients and texture, it most probably originates from the epimagmatic Eastern part of the Alps.

9. Grinding stone, Feature 2 (1993)

Grey, finely grained sandstone with many small mica. It might be a concretion of Pannonian sandstone, but because of the lack of limonite it is much more probably the its origin is the dinamometamorphic succession of the Eastern Alps.

10. Grinding stones (3), Feature 2 (1993)

Three pieces of yellowish grey, hard sandstone with red spots. The magnetite grains are to mention first, but there are also much pinkish metamorphic debris. Provenience: Eastern Alpic extensions.

11. Fragment of a grinding stone, Feature 5 (1993)

Reddish grey, quartzite sandstone, containing much mica. Some lidite pebbles, lilac quartzite and some sericite spots are also to observe. The stone shows a slight metamprphosis. Provenience: Eastern Alps.

12. Polished axe, Feature 5. (1993)

Green quartzite phillite with tiny pieces of sericite. A metamorphic stone. It comes from the Eastern Alps or the Kőszeg Mountains, from an epizonic, dinamometamorphic levels.

13. Grinding stone, House 2 (1992)

A large grey piece of sandstone. Besides the milky white translucent quartzite debris there is much light red metamorphic debris, too. It originates from the epizones of the dinamometamorphic stone of the Eastern Alps.

Summary of above: The petrographical province of Zalaszentbalázs-Szőlőhegyi mező evidently comes from the Eastern part of the Alps. As the settlement lays close to this area, stone material may have brought directly from the Easternmost extensions or it could also be picked from stream and river beds springing in the Alps and flowing to the East.

Ede Hertelendi:

14CARBON DATING OF ZALASZENTBALÁZS-SZŐLŐHEGYI MEZŐ 1992-1993

Code	sample name	δ13C(PDB)(%)	BP
deb-3365	29thJune1992 feature5/2, 45cm charcoal	-25.32	5728+-58
deb-3378	7thJuly1993 Feature 2, -80 cm charcoal	-25.78	5767+-70
deb-3385	7thJuly 1993 Feature 4/2, -90 -100 cm charcoal	-24.86	5720+-71
deb-3379	9thJuly1993 Feature 4, -85-90 cm animal bone	-21.83	5682+-57
deb-3380	9thJuly1993 Feature 4, -90 cm Animal bone	-20.81	5614+-70

deb-3365
Radiocarbon Age BP 5728+-58
Calibrated age(s) cal BC 4540
Reference(s)
(Stiver and Becker, 1993)
60 year moving average
cal AD/BC age ranges from intercepts (Method A):
one Sigma ** cal BC 4672-4481
two Sigma cal BC 4730-4443
Summary of above:
minimum of cal age ranges (cal ages) maximum of cal age ranges:
1δ cal BC 4672(4540)4481
2δ cal BC 4730(4540)4443

deb-3378
Radiocarbon Age BP 5767 +-70
Calibrated age(s) cal BC 4596

Reference(s)
(Stuiver and Becker, 1993)
60 year moving average
cal AD/BC age ranges obtained from intercepts (Method A):
one Sigma** cal BC 4716-4522
two Sigma** cal BC 4791-4456
Summary of above:
minimum of cal age ranges (cal ages) maximum of cal ages ranges:
1δ cal BC 4716(4596)4522
2δ cal BC 4791(4596)4456

deb-3385
Radiocarbon Age BP 5720 +-71
Calibrated age(s) cal BC 4536
Reference(s)
(Stuiver and Becker, 1993)
60 year moving average
cal AD/BC age ranges obtained from intercepts (Method A):
one Sigma** cal BC 4677-4469
two Sigma cal BC 4743-4431 4392-4390
Summary of above:
1δ cal BC 4677(4536)4469
2δ cal BC 4743(4536)4390

deb-3379
Radiocarbon Age BP 5682+-57
Calibrated age(s) cal BC 4511
Reference(s)
(Stiver and Becker, 1993)
60 year moving average
cal AD/BC age ranges obtained from intercepts (Method A):
one Sigma** cal BC 4551-4456
two Sigma** cal BC 4683-4378
Summary of above:
minimum of cal age ranges (cal ages) maximum of cal age ranges:
1δ cal BC 4551(4511)4456
2δ cal BC 4683(4511)4378

deb-3380
Radiocarbon Age BP 5614+-70
Calibrated age(s) cal BC 4449
Reference(s)
(Stiver and Becker, 1993)
60 year moving average
cal AD/BC age ranges obtained from intercepts (Method A):
one Sigma** cal BC 4514-4364
two Sigma** cal BC 4568-4333
Summary of above:
minimum od cal age ranges (cal ages) maximum of cal age ranges:
1δ cal BC 4514(4449)4364
2δ cal BC 4568(4449)4333

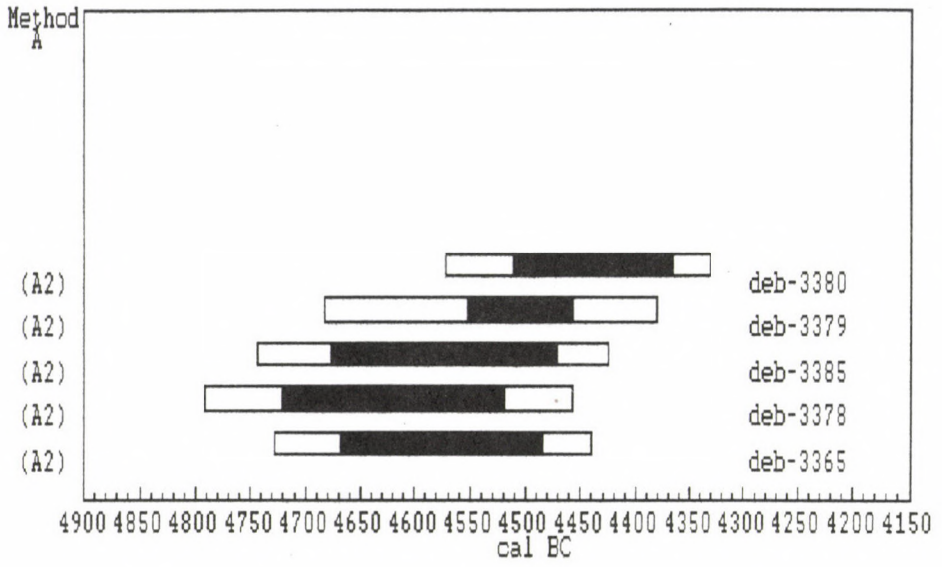

Fig. 1. BC cal ranges of the samples from Zalaszentbalázs-Szőlőhegyi mező.

Katalin T. Bíró

RAW MATERIAL ANALYSIS OF THE LITHIC MATERIALS OF THE MICROREGIONAL SURVEY PROJECT OF THE ARCHAEOLOGICAL INSTITUTE OF THE HAS

The intensive archaeological survey and excavations of the Archaeological Institute of the HAS resulted in important lithic assemblages from the SW parts of Hungary, formerly poorly known from this respect. Recent studies of the Zala county museums (Göcsej, Thury György and Balaton Museums) also resulted in important new lithic materials from the Neolithic and Copper Age periods (excavations by L. Horváth, L. A. Horváth, H. K. Simon and Zs. Virág).

The investigation of the lithic material from the Microregional Survey was performed parallel to, but independent of, the studies of E. Bácskay, published in the same volume. Her examinations were focussed on chipped stone tool typology and function, with special attention to pieces made of Sümeg radiolarian flint.

This paper is primarily concentrated on raw material provenance of the assemblage and related problems of site economy. Typological investigation, however, is an indispensable part of the raw material analyses as well. For the typological study, categories applied since 1985 were used which make possible comparison over large areas and wide chronological periods (*Bíró 1987, Palágyi et al. 1989*). Though all efforts were made to avoid redundances, certain overlapping and inconsistencies necessarily arise due to the subjectivity of the analyses. The results are consistent on the main points and complementary in their character.

Also, it seemed necessary to involve further lithic assemblages for comparison, partly contemporary with the key site, i.e., Zalaszentbalázs and other sites from Zala county. The analysis of some of these sites is still in progress or the material is in press (*Bíró 1991, 1994*).

Zalaszentbalázs - Pusztatető

Minor lithic assemblage from the excavations of the Microregional research project, belonging practically to one pit of the Lengyel culture.

The amount of material is fairly modest, but appears to be consistent with general observations on the Lengyel culture lithic industry in the main lines. However, the assemblage seems to be older within the Lengyel culture. Forms and raw material composition are nearest to the assemblages of Becsehely, Sé and Ajka-Csók utca among the materials analysed so far. These features include the presence (dominance!) of Urkut-Eplény flint, associated with the Sopot and Early Lengyel cultures, microblade technology and the presence of a micro-flake scraper. The lack of Mecsek radiolarite is most significant. The absence of this material,

which is very important during the Lengyel I period can be explained possibly by chronological reasons or interior regional differentiation within the Early Lengyel culture. The small amount of material, however, prevents any finite conclusions.

The most significant piece of the material is a basalt axe which was spoilt during production.

Zalaszentbalázs - Szőlőhegyi mezők

The assemblage yielded the most significant amount of lithic material among the sites excavated in the frames of the microregional survey. In total, 364 items were analysed belonging to the Lengyel III period. This amount can be considered medium size among the Hungarian Late Neolithic - Early Copper Age sites.

The assemblage comprise chipped stone implements (284 pieces, 2.4 kg), polished stone implements (22 pieces, 0.69 kg) and other stone utensils (58 pieces, 5.7 kg) – all of them in considerable quantity. In fact, the ratio of polished stone tools, especially by number, is very high among the settlement materials known from Hungary.

Seemingly, working with stone tools was an important activity on the site, though the production of stone tools did not surpass local needs.

For the production of chipped stone tools, the raw material was transported in precore-core phase for most of the characteristic raw materials. Finish and resharpening took place on the site – especially, we can see several instances for the re-sharpening of the polished stone tools. The intensity of local tool production, however, did not reach the level of specialised workshops. The amount of cores corresponds to general settlement average (34 pieces, 9.34 %), most of them are fully exploited (B1/B2). The number and mass of flakes and chips, though largest by number, is fairly low compared to general settlement materials and their role in the technological chain. In general, the ratio of highly elaborate forms (blades, retouched tools) is very high demonstrating the typical 'habitation site' character of the material. Re-worked polished stone tools and utensils also support this character of the material.

Raw material supply of Zalaszentbalázs

Primary supply

Experiences on the Late Neolithic stone tools assemblages in Hungary allow us to separate among the lithic material the primary supply area and results on occasional contacts or goods transferred my middlemen. The primary supply area yielded the bulk of the raw materials used on the site which can be considered 'local' even in the case of major geographical distance. The primary supply zone indicates, at the same

time, strong and lasting ties between the source region and the site. The 'primary supply zone products' are present in large quantities and the local stone working production is based on them, too.

The primary supply region of Zalaszentbalázs is extremely interesting from both the geographical and cultural aspects. Geographically, the site is located between the two large source regions of Transdanubia, i.e. the Bakony and the Mecsek zones. Transferred to techno-cultural and chronological sphere, during the Lengyel I. phase an unespectedly large expansion of the Mecsek raw materials took place, with huge quantities of Mecsek radiolarite worked on the Tolna and Baranya county sites of the Lengyel culture and material spread to the East (Gorzsa). It is interesting to know the spatial and temporal limits of the advance of Mecsek radiolarite as primary supply of lithic raw materials. On the basis of the available data, the border-line between the primary suply zones of the Bakony and Mecsek areas, respectively, was determined along the Kapos river (*Bíró 1991*).

The material of Zalaszentbalázs (and other localities in Zala county) help us to draw this line with more confidence. The primary supply region for the site is undoubtedly the Bakony Mts., including its Northern - NorthWestern sources which were easily accessible from here.

The bulk of the raw materials (57.97% of chipped stone industry, 74.30% of total) comes from the Bakony Mts., adding the T3 hornstone of the Keszthelyi Mts. the contribution of the primary supply zone is 63.19% (80.99%). Sandstone, basalt and quartzite, as well as the mineral paint is possibly of local origin but it can equally come from wider regions (Bakony, Balaton highlands) as well.

We can allocate the following raw material types to these regions:

Transdanubian radiolarites		
9	Szentgál flint	101
10	Urkut-Eplény f.	17
11	Hárskut flint	12
13	J2R, reddish brown	8
14	Sümeg flint	6
15	J2R, others	20
909	Szentgál flint	3
910	Urkút-Eplény f.?	1
913	J2R reddish brown?	1
914	Sümeg flint?	10
915	J2R others?	3
Other Bakony silex materials		
22	Tevel flint	16
922	Tevel flint?	13
Hornstones of the Keszthelyi Mts. and the Balaton Highlands		
45	T3 hornstone	5
945	T3 hornstone?	4

Basalt, which is a typical local material found at other sites of the region (esp. Zalavár) is found in surprisingly low quantities in the material of Zalaszentbalázs. At the same time, a range of other materials can be tentatively classified as local, on the basis that they are all known to occur in the vicinity of the site and there would be not much sense in carrying them from large distances. However, no detailed provenance studies were made on these materials as yet. These 'potentially' local materials include

50	fine sandstone	11
51	medium sandstone	5
52	rough sandstone	6
53	quartzite	24
57	volcanic rocks, basalt tuff	3
59	mineral paints	2
951	Medium sandstone?	1

Accessory and long distance raw materials

Apart from the raw materials coming from the primary raw material supply zones, two components can be separated from the remainder of the lithic industry, i.e., raw materials coming from the 'neighbouring supply areas' in lesser quantities and long distance prestige goods which are almost void of cultural indications at such a distance from the source region.

Accessory materials coming from the neighbouring communities utilising other primary supply regions include, in the first place, Mecsek radiolarite (very low quantities!) and the associated 'Lengyel quartzite' (*Bíró 1990*). A special type of grey silex, found in major quantities at Becsehely, Sé and other localities and tentatively determined as of Southern origin is present here in considerable quantities. The material of polished stone tools in general belongs also to this group, supported by the fact that no local production of these implements apart from re-sharpening did actually take place on the site. The provenancing of these rocks is in a fairly premature state as yet, however a part of the assemblage (light green greenschist, serpentinite) can be associated with the Western Hungarian-Eastern Austrian sources around Felsőcsatár and the Austrian Bernstein.

There are other characteristic elements among the polished stone tools the exact sources of which, however, are still unknown.

Small hematite axes have more cultural implication than simple contact, though the source of these probably ritual object could not be ascertained as yet.

Long distance raw materials in the Zalaszentbalázs assemblage

There are some pieces in the assemblage which are altogether not very significant as elements of regular supply but more important as

contact indicators. They comprise 2.47 of the total number of lithics (9 pieces) and they are from very wide area of distribution (*Fig. 5*). These elements are listed according to place of origin in the followings:

Tokaj-Presov Mts.

1	Carpathian 1 obsidian (small flake)	1

Northern Mid-Mountain range (Tokaj?)

29	translucent yellow-brownish limnoquartzite (truncated microblade)	1
41	other, non-specified limnoquartzite (truncated blade)	1

Poland

23	Jurassic Craców flint (knife-blade, truncated)	2
926	Chocholate flint? (fragment of retouched blade)	1

Roumania

25	Banat flint (truncated microblade, retouched core remnant and retouched flake)	3

Almost all of the above pieces are elaborate forms which underline their more distant origin. The presence of Banat flint is especially meaningful here, denoting the existence of a migration route along the river Drava. Occasional pieces of Banat flint were already spotted in Zala county (*Biró 1988*).

Tables

Table 1. Type/raw material distribution of the Zalaszentbalázs-Pusztatető assemblage

	9	10	11	13	14	15	47	977	999	Total
B2	2		1							3
B4					1					1
B5/9								1	1	2
B5w		1								1
B8				1						1
G4		1								1
I3w						1				1
I7/9		1								1
P9							1			1
	2	3	1	1	1	1	1	1	1	12

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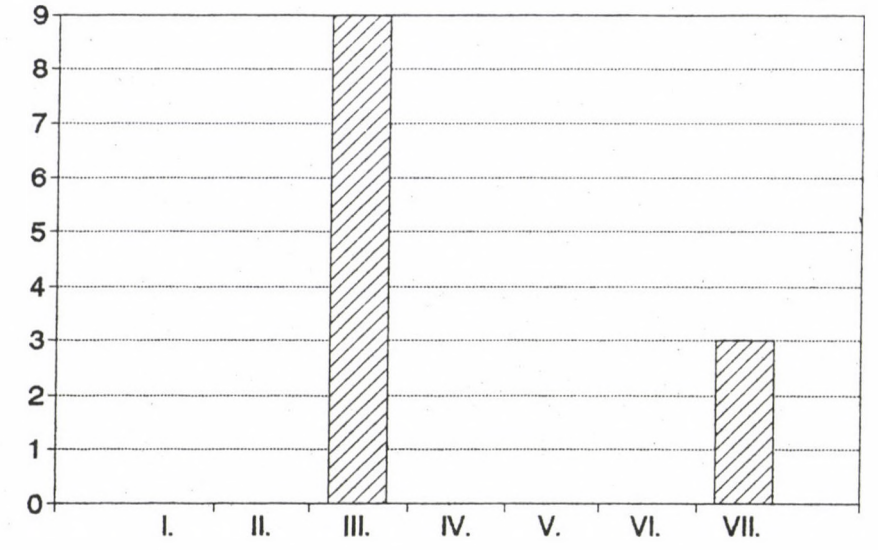
Table 2. Type/raw material distribution of the Zalaszentbalázs-Szőlőhegyi mezők assemblage

Type	raw material codes: 1	9	10	11	13	14	15	16	17	22	23	25	29	36	41	45	49	50	51	52	53	56	57	59	77	80	81	909	910	913	914	915	917	922	926	945	951	956	960	977	980	999	Total Pieces	Weight aver.	Weight total	Type
A1																											1															1	1091.7	1091.7	A1
A9																											1															1	39.997	39.997	A9
B1		1	1			2																			1																	1	6	30.185	181.11	B1
B1w		1																													1												2	10.56	21.12	B1w
B2		2			1		3									2									1							1							1			2	13	15.892	206.59	B2
B2/9		2	1	1			1																													1						6	7.9467	47.68	B2/9
B2w		4	1					1		1																																	7	4.3934	30.754	B2w
B3		8			1	1				5		1													5							3			1							2	27	13.078	353.11	B3
B3w		1																												1													2	1.512	3.024	B3w
B4		21	3	3		1	3			1															1							1	2	4								4	44	1.0074	44.327	B4
B4/9		4			1																								1													3	9	0.3068	2.761	B4/9
B4f		1																																									1	1.512	1.512	B4f
B4w	1	3	1				1			1																								1									8	0.2484	1.987	B4w
B5		4	1	1		1	1																		2																	1	13	0.8728	11.347	B5
B5/9		13	1	1		1	1																		2							1								2	1	4	27	0.5482	14.8	B5/9
B5f		1																																									1	2.58	2.58	B5f
B5w		8	3					1		1						1																											14	0.2416	4.783	B5w
B6		1					1					1																				2											5	4.662	23.31	B6
B6/9		1																																									1	0.99	0.99	B6/9
B6w		1	1		1					1																						2											6	0.9157	5.494	B6w
B7		2					1			2																																	1	6	6.5435	39.261	B7
B7/9				1		1	1																																				3	0.7277	2.183	B7/9
B7w		1					1																																				2	0.738	1.476	B7w
B8		6	1							1																																	8	0.3749	2.999	B8
B8/9																																		1									1	0.3	0.3	B8/9
B8w		1																																									1	0.112	0.112	B8w
B9		1																																	1							1	3	0.528	1.584	B9
C2												1																															1	7.26	7.26	C2
C3												1																	1													1	3	2.2653	6.796	C3
C4																1														1												1	3	1.461	4.383	C4
C4/9							1																																				1	0.24	0.24	C4/9
C5			1		1																																					1	3	0.637	1.911	C5
C5/9		1																																		1							2	0.589	1.178	C5/9
C5w		1																																			1						2	0.2678	0.5355	C5w
D/C6										1																																	1	10.944	10.944	D/C6
D3																									1																			1	3.087	3.087	D3
D5				1											1	1																											4	1.305	5.22	D5
D5/9										1																																	2	1.02	2.04	D5/9
D5w		2											1																														4	0.451	1.804	D5w
D6												1																															1	9.792	9.792	D6
D6w								1																																			1	0.741	0.741	D6w
D7		1																																									1	1.344	1.344	D7
D8					1																																						1	0.45	0.45	D8
F/C3																																										1	1	3.96	3.96	F/C3
F/C5					1																																						1	1.248	1.248	F/C5
F4																																		1									1	2.024	2.024	F4
F5w		1																																									1	0.418	0.418	F5w
F7						1																																					1	6.048	6.048	F7
G4																																											1	1.785	1.785	G4
G5																																									1	1	2	3.022	6.044	G5
G5w				1																																							1	0.408	0.408	G5w
G7																																											1	1	1.44	1.44	G7
I/D4		1																																									1	0.507	0.507	I/D4
I/D5							1		1																																		3	3.196	9.588	I/D5
I/D7			1				1			1																																	3	1.6633	4.99	I/D7
I2				1																																							1	4.32	4.32	I2
I2w							1																																				1	1.32	1.32	I2w
I3		3	1	1																														1								6	6.6863	40.118	I3
I4		1		1																																1							3	1.33	3.99	I4
I5/9																									1																			1	2.125	2.125	I5/9
I5w		1	1																																								2	1.132	2.264	I5w
I9																																		1									1	0.6	0.6	I9
J3																									1																			1	2	23.304	46.608	J3
M/C5		1																																									1	0.648	0.648	M/C5
P																		1				1	1			2						1											1	8	26.738	213.9	P
P9														2			1								2	6													1			1	1	14	33.774	472.83	P9
csi																		7	3	5	1		1			1																	1	19	166.8	3169.1	csi
csi9																		3	2	1																								6	104.22	625.32	csi9
fest														1										2																				3	0.9333	2.8	fest
kav																					14																								15	27.756	416.35	kav
kav9																					8					1																		9	61.296	551.67	kav9
ór19																					1																								2	304.94	609.88	ór19
ór1?																							1																					3	4	97.025	388.1	ór1?
Total (pie	1	101	17	12	8	6	20	2	1	16	2	3	1	3	1	5	1	11	5	6	24	1	3	2	13	3	11	3	1	1	10	3	4	13	1	4	1	1	2	5	1	35	364	24.135	8785	Tota
Weight (av	0.1	1.9	4.3	2.5	1.3	7	7.1	2.8	0.7	5.8	6.4	7.5	0.4	14	2	4.3	25	46	255	196	62.4	6.7	171	0	13	55	126	0.9	0.9	1.8	4.4	5	1.2	2.1	1.1	3.4	3.7	5.6	1.1	3.4	222	28.8	24.13			Weig
Weight (to	0.1	190	74	30	10	42	142	5.7	0.7	92	13	22	0.4	41	2	21	25	510	1277	1179	1497	6.7	513	0	171	166	1383	2.8	0.9	1.8	44	15	4.7	28	1.1	14	3.7	5.6	2.1	17	222	1007	8785			Weig



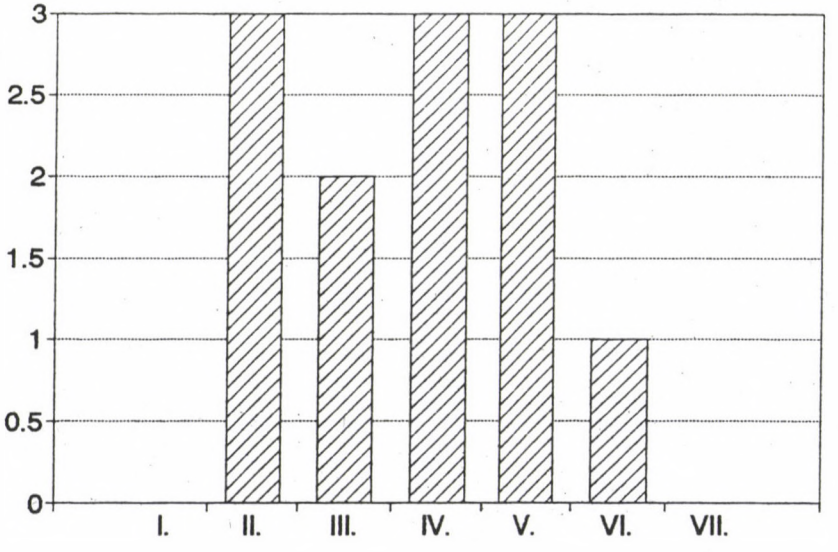


Fig. 2. Raw material (2a) and type group distribution (2b) by pieces of Zalaszentbalázs-Pusztatető assemblage.

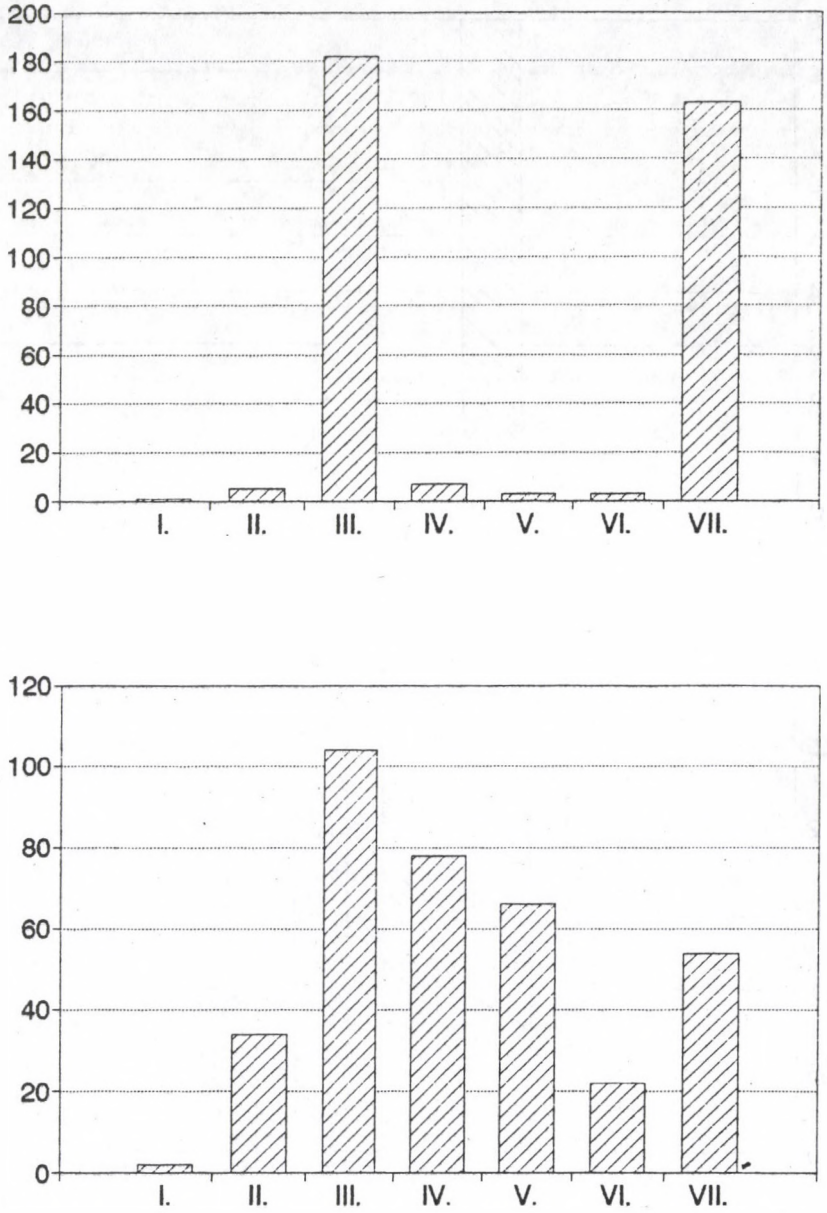


Fig. 3. Raw material (3a) and type group distribution (3b) by pices of Zalaszentbalázs-Szőlőhegyi mező assemblage.

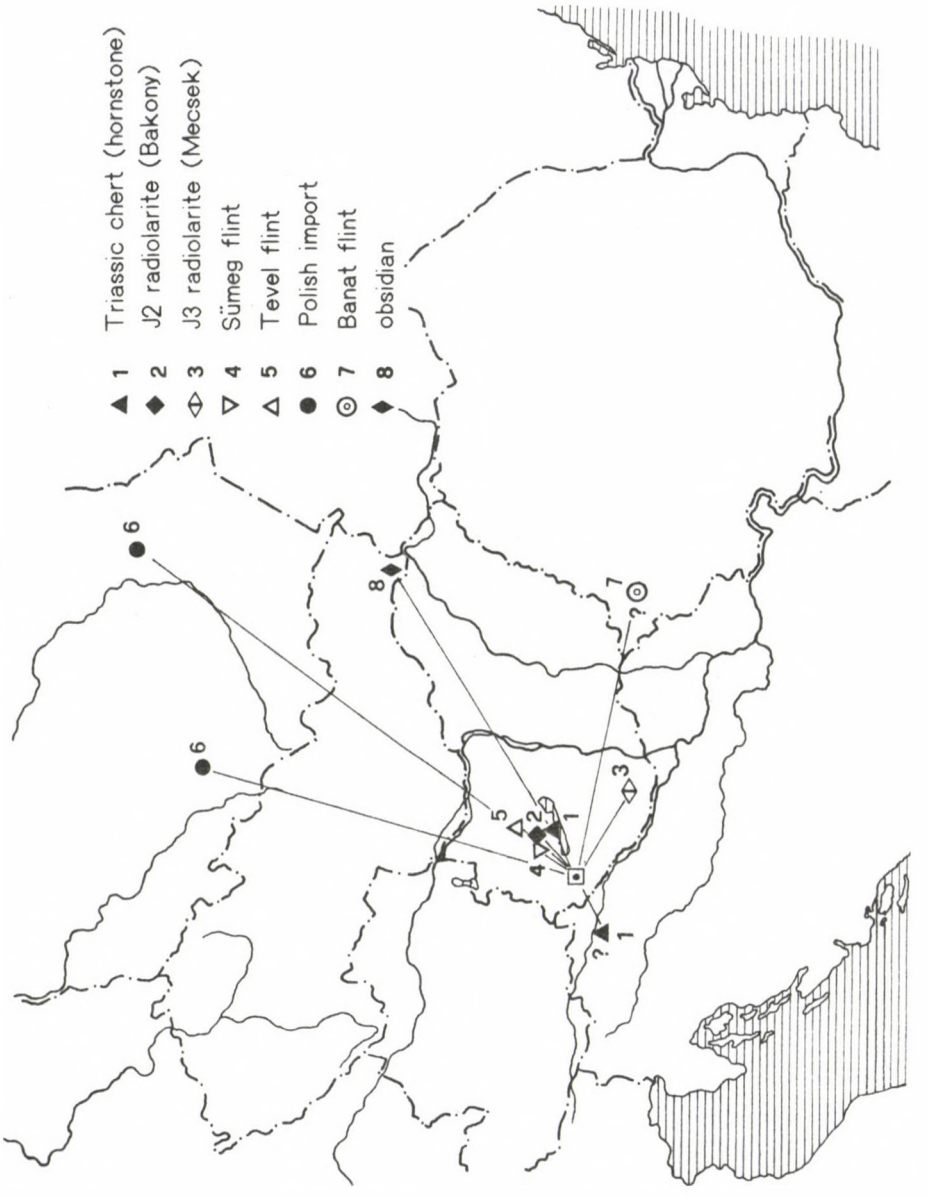


Fig. 4. Regular supply zone and long distance contacts of the Zalaszentbalázs-Szőlőhegyi mezők assemblage.

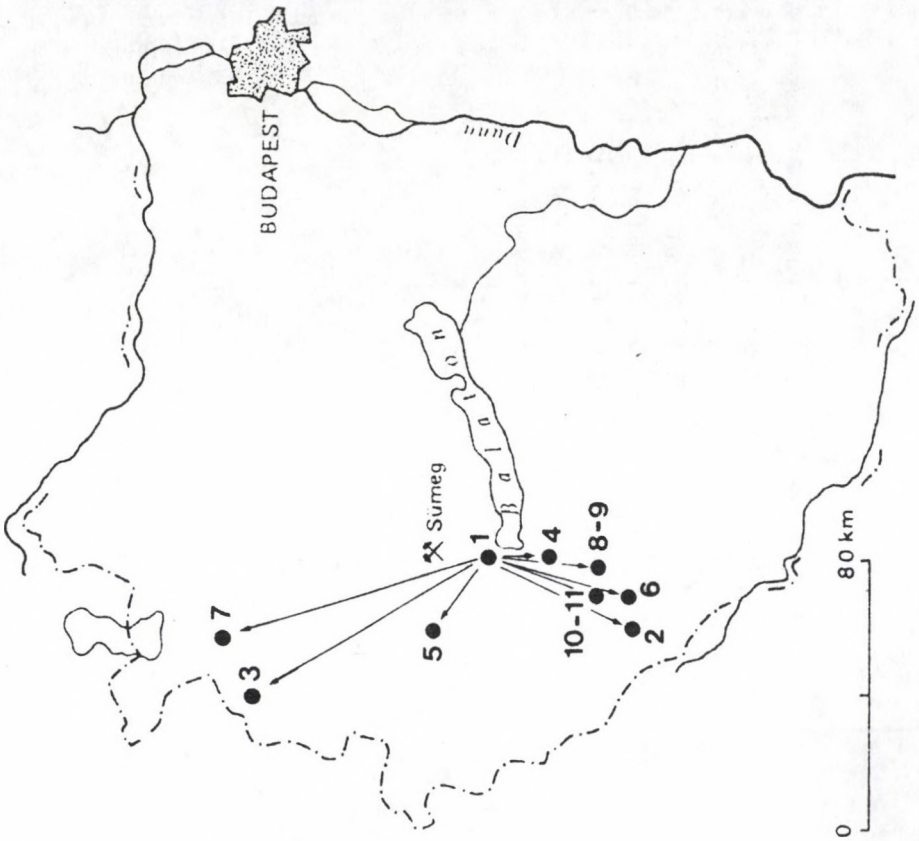


Fig. 5. The distribution of radiolarite mined in the prehistoric flint mine at Sümeg-Mogyorós -domb, given present data to the end of 1993.

1. Keszthely-Dobogó, 2. Becsehely, 3. Sé, 4. Balatonmagyaród-Hídvégpuszta, 5. Bagod, 6. Nagykanizsai-Inkey kápolna, 7. Gór, 8-9. Szartóri I-II, 10-11. Zalaszentbalázs-Pusztatető, Zalaszentbalázs-Szőlőhegyi mező

Erzsébet Bácskay

CHIPPED STONE IMPLEMENTS FOUND AT THE SITES OF HAHÓT-SZARTÓRI I-II., ZALASZENTBALÁZS-PUSZTATETŐ AND ZALASZENT-BALÁZS-SZŐLŐHEGYI MEZŐ

The following survey concerns the chipped stone implements found at the sites of:

Hahót-Szartóri I. - excavated by Eszter Bánffy in 1989. The excavations predominantly yielded material of the Lengyel and Baden cultures.

Hahót-Szartóri II. - excavated by Eszter Bánffy in 1989. The material of the Balaton-Lasinja culture was found here.

In the course of field surveys at Hahót-Szartóri, find material belonging to the Baden culture as well as some Bronze Age artefacts were collected from the surface as sporadic finds.

Zalaszentbalázs-Pusztatető - excavated by Eszter Bánffy in 1988. Here settlement feature Nr. 1. yielded Early Lengyel material while Balaton-Lasinja finds came to light from other site features.

Zalaszentbalázs-Szőlőhegyi mező - excavations carried out by Mária Bondár between 1987 and 1989 and by Eszter Bánffy between 1992 and 1993 resulted in a chipped stone tool assemblage belonging to the latest Lengyel culture.

At **Hahót-Szartóri I.** (Lengyel and Baden cultures) the following chipped stone objects were found:

Section B/5, settlement feature Nr. 4: core fragment
Section B/6, settlement feature Nr. 11: flake*
(Objects marked with * here and below are made of radiolarite from the prehistoric flint mine at Sümeg-Mogyorósdomb)
Section B/6: flake
Section B/7: core
Section B/7: core-remnant
blade-like flake*
Section B, settlement feature Nr. 3: piece of raw material
Section C, settlement feature Nr. 3: flake
Section C, settlement feature Nr. 4 : flake /2/; core-fragment*
Section D/4, settlement feature Nr. 7:
- blade-like flake
- a large, quadrangular piece of raw material. One of its edges is retouched with strong, large strokes. The retouched part is brighter in colour than the other parts of the surface. A microscopic analysis made by Brian Adams (Chicago University) under a 200 x magnification demonstrated that the shine on the retouched section was due to the following factors: strong weathering, the dulling of the surface of the piece. Retouch, by removing the weathered crust from the surface simply revealed the original surface of the raw material, which is "fresh". Though microwear analy-

sis did not find traces of use on this retouched edge, the morphology of the "tool" suggests that it was most probably an ad hoc implement used either for cutting or scraping, 63 x 42 mm (*Fig. 6.1*).
Section D/4, settlement feature Nr. 8: flake
Section D/5, settlement feature Nr. 12: unretouched blade, 40 x 12 mm
Section O/4: cutting tool. A, more or less, leaf-shaped tool with oval cross-section. It is retouched along the right edge of the dorsal face with regular, elongated strokes. Here there is also a slightly polished stripe along the left edge of the ventral face as well. The left edge of the dorsal face as well as the distal area have been retouched with large, irregular strokes, also covering a part of the surface. On the ventral face there is some sporadic, irregular retouch along the right edge. The faint polish on the tool was studied under a microscope (200 x magnification) by Brian Adams, who identified it as a use-wear characteristic of cutting parts of plants, 45 x 20 x 5 mm (*Fig. 6.2*).
Section O/5, settlement feature Nr. 2.: flake /4/
Section O: flake core-fragment blade, with an atypical, burin-like edge on its dorsal left side, 23 x 12 mm.

List of chipped stone finds from Hahót-Szartóri I.:
piece of raw material: 1
core (fragments, remnants): 4
flake: 12
unretouched blade: 2
blade with an atypical, burinlike edge: 1
leaf-shaped cutting tool: 1
cutting or scraping tool on a piece of raw material: 1
Total: 22

The material is scanty and unremarkable, containing mostly cores, flakes and a few blades. Of interest is the leaf-shaped tool most probably for cutting plants. Tools with a similar retouch, and sometimes also having a similar shape and gloss, visible even to naked eye, are known so far from Hungary from Late Copper Age and even younger contexts. Rather similar tools to mention are only known from neighbouring sites, for example from the Pécel culture component (settlement feature Nr. 5) and from the Zók culture component (settlement feature Nr. 19) of the site Nagykanizsa-Inkey churchyard chapel *(Horváth L. 1980a, 1982a)*. Therefore, the tool type most probably belongs to the Baden component of the site Hahót-Szartóri I. The other chipped stone objects may belong to any period and/or cultures. As for the fragment of raw material, similarly shaped, most probably ad hoc, tools – that is different kinds of blanks with roughly retouched edges – occur regularly at other sites from different periods as well. Here I refer only to analogous tools which came to light from one of the sites discussed in this paper – a flake tool from section III. and House 4. of Zalaszentbalázs-Szőlőhegyi mező (*Fig. 6.10 and 20*, respectively). These latter tools most probably had a similar function.

The following chipped stone objects were found at **Hahót-Szartóri II.** (Balaton-Lasinja culture):
Section A, settlement feature Nr. 4: flake
Section D/5, settlement feature Nr. 12: core-remnant*
blade fragment with a tip-like end, 14 x 19 mm
Total: 3

Scanty and unremarkable material, unsuitable for further analysis.

Field surveys in the site yielded finds belonging to the Baden culture and to some Late Bronze Age culture (possibly Tumulus culture), among them 7 flakes (2 of which were made of Sümeg radiolarite),a flake with borer-like tip, a triangular flake with some irregular surface retouch and a fine retouch along of its edges – most probably a cutting tool – all from the southern part of the site; furthermore 3 flakes (2 of them made of Sümeg radiolarite) and an unretouched blade fragment (22 x 20 mm), also from Sümeg radiolarite.

This material is rather unremarkable, too, except perhaps the retouched flake which has a "young" character, thus it most probably belongs to either the Copper Age or the Bronze Age material.

Unfortunately the small quantity of chipped stone tools found at Hahót-Szartóri I., and II. (altogether 55 pieces) and their typological poorness made them unsuitable for further analysis. At the same time, the raw material used by the inhabitants of the sites yields important information. There is a relatively great number of tools at both sites made of the characteristic Lower Cretaceous grey radiolarite mined in the Sümeg-Mogyorósdomb flint mine, some 60 km to the North-East from Hahót. Among the 22 chipped stone tools found at Hahót-Szartóri I. 3 were made of Sümeg radiolarite, as well as one of the 3 tools from Hahót-Szartóri II.

Field surveys yielded four additional pieces among 20 items. These 8 pieces from 55 are conspicuous, considering partly the small quantity of chipped stone tools found at Hahót and also the usually very small number of tools made from Sümeg mined radiolarite at different settlements. According to what is known at present, the Sümeg mine flourished from the Middle Neolithic until the end of the Copper Age (at least) and mining activity seems so far have been connected with the Transdanubian Linear Pottery culture, Zseliz(?), Sopot (?), Lengyel and Pécel cultures (*Bácskay 1986, 1989a, 1990a*). Tools made from Sümeg radiolarite found at Hahót-Szartóri I. confirms this, no matter whether they belong to either the Lengyel or the Baden component of the site. The same is true for the sporadic finds. At the same time, the presence of Sümeg radiolarite at Hahót-Szartóri II. in a Balaton-Lasinja cultural context is even more important, since before these materials were studied, no data existed on the occurrence of Sümeg raw material at Balaton-Lasinja sites, though its use by this culture would seem to be natural enough.

At **Zalaszentbalázs-Pusztatető** where the material with the exception of that from settlement feature Nr. 1. belongs to the Balaton-Lasinja culture, the following chipped stone objects were found:

Section A, settlement feature Nr. 1.:
- flake with a burin-like edge, 26 x 17 mm
- short end-scraper on a blade, 14 x 18 mm
- blade with sickle gloss which runs parallel to the right and left edges of the dorsal and ventral faces, respectively, 23 x 16 mm
- unretouched blade, 15 x 3 mm
- unretouched blade fragment, 20 x 25 mm*
- small, quadrangular flake scraper, with the scraping edges on the left, lateral and sital edges, 15 x 15 ; 15 x 16 x 3 mm
- core-fragment /2/
- flake /2/

List of chipped stone tool objects from the Lengyel culture component of the site:
core-fragments: 2
flake: 2
unretouched blade: 2
blade with sickle gloss: 1
flake with a burin-like edge: 1
angular scraper on a flake: 1

The assemblage is unfortunately too small and contains only very few tool types (altogether 9 pieces).

The material belonging to the Balaton-Lasinja culture is similarly poor, with only a core-remnant coming from Section C, - 20 cm.

A core-fragment and a blade-fragment were collected from the upper humus layer as stray finds. The latter, made of Sümeg radiolarite, together with the one from settlement feature Nr. 1., is another contribution to our knowledge on the distribution of Sümeg radiolarite, confirming our previous data.

From **Zalaszentbalázs-Szőlőhegyi mező**, the six campaigns yielded the following chipped stone material, all belonging to the Late Lengyel culture.

Excavation in 1987

Section I., settlement feature Nr. 1.
- flake /3/
- retouched flake
- unretouched blade /3/, 15 x 6; 14 x 8; 13 x 13 mm
- end scraper on a blade, 25 x 7 mm

from the middle part of Section I.
- core remnant /2/
- flake /3/
- unretouched blade, 20 x 14 mm
- obliquely truncated, notched, retouched blade, 37 x 15 mm
- straightly truncated blade, 32 x 15 mm (*Fig. 6.3*)
- blade with sickle gloss; the gloss is triangular, located on the right proximal corner of the doorsal face and on the left proximal corner of the ventral face, 19 x 10 mm

- end-scraper on a blade, 18 x 11 mm
- end-scraper/truncated blade transitional tool made on a high bulky blade, 18 x 10 mm
- flake scraper with rather steep working sections are found along the left edge of the dorsal face and on the slightly oval distal part, 27 x 23 x 10 mm (*Fig. 6.4*)
- borer on a flake, retouched slightly along the right edge of the "neck" of the borer, 33 x 24 mm (*Fig. 6.5*)

Section I. West end:
- flake /5/
- blade /4/, 16 x 19; 25 x 12; 17 x 10; 21 x 7 mm
- straight truncated balde 21 x 6 mm
- end-scraper made on a blade, with asymmetric, rather steep working edge, 17 x 12 mm
- flake with atypical burin-edge and borer-part 20 x 18 x 6 mm

Section I. Eastern end:
- flake /3/
- unretouched blade /2/, 7 x 5; 26 x 10 mm
- blade, straightly truncated at both ends, retouched at both edges from the dorsal face, 18 x 8 mm (*Fig.6.6*)

Southern pile pit beside settlement feature Nr. 1. in Section I.
- unretouched blade, 33 x 6 mm

Section I., settlement feature Nr. 2.
- core
- blade fragment, unretouched, 17 x 10 mm
- blade with sickle gloss. The gloss is triangular and it is in the left lower corner of the dorsal face and in the right lower corner of the ventral face, where it is retouched, 28 x 10 x 5 mm (*Fig. 6.7*)
- scraper made of a core fragment, somewhat similar to ungulate scrapers, asymmetrical, 18 x 12 x 7 mm

Section II. West end:
- core
- unretouched blade, 20 x 10 mm
- flake of a core-remnant, slightly truncated, hafted asymmetrically, 25 x 18 mm (*Fig. 6.8*)
- short end scraper, with a steep working edge, atypical, 20 x 14 mm*

Section III. Middle part, besides settlement feature Nr. 1.
- flake
- unretouched blade, 16 x 8 mm
- flake-like blade, the left edge of its dorsal face is retouched, 17 x 14 mm
- blade with sickle gloss, the gloss is triangular, it is in the right lower corner of the dorsal face and in the left lower corner of the ventral face, 19 x 20 mm

Section III, settlement feature Nr. 1.
- core
- flake /3/

- short end-scraper on a blade, 23 x 12 mm
- end-scraper with asymmetric working edge made on a core-rim blade, 20 x 13 mm
- big, retouched flake; the right edge of the dorsal face is steeply, strongly retouched with large strokes. Perhaps it was used as a scraper, 65 x 58 mm (*Fig. 6.10*)
- borer, made on a flake, 35 x 23 mm (*Fig.6.9*)

Section III., Western part
- unretouched blade, 28 x 7 mm
- blade retouched along the right edge of its dorsal face, 23 x 7 mm

Settlement feature Nr. 6., from the plastered part of a hearth:
- flake

Excavation in 1988

Section I., settlement feature Nr. 1.
- unretouched blade /4/; 32 x 10; 16 x 6, 27 x 5; 19 x 12 mm
- unretouched blade with double notches, 12 x 8 mm
- small, hafted blade, 16 x 12 mm
- flake /5/
- core-rim blade*
- core fragment /2/
- flake-like blade with a very small borer-like tip, 14 x 12 mm
- tablette scraper, 18 x 14 x 6 mm
- end scraper, made on a short blade, its working edge is so steep, that it is almost truncated, the truncation is concave at the left part of the working edge, 20 x 10 x 6 mm (*Fig. 6.11*)

Section I., settlement feature Nr. 2.
- flake
- unretouched blade, 11 x 3 mm
- Section I., settlement feature Nr. 4.
- small blade with borer-like tip, 14 x 10 mm
- unretouched blade with the left edge of its dorsal face slightly denticulated, 18 x 6 mm
- unretouched blade /2/, 17 x 5; 17 x 10 mm

Excavation in 1989

Settlement feature Nr. 4.
- small, unretouched blade with a notch on the left edge of its dorsal face, 17 x 10 mm

Excavation in 1991

Section 6., settlement feature Nr. 2. (2nd house)
- flake
- blade with sickle gloss. The triangular-shaped gloss is in the lower right corner of the dorsal face and in the lower left corner of the ventral face, 18 x 12 mm

Excavation in 1992

Section 1., settlement feature Nr. 1 *(House 1)*
- core plane, 27 x 20 x 15 mm

Section 3., settlement feature Nr. 2. (House 2)
- "hafted" flake
Section 4., settlement feature Nr. 2.
- core remnant
- retouched blade-like flake
- unretouched blade, 24 x 6 mm
Section 5., settlement feature Nr. 2.
- core-remnants /7/
- flake /3/
- blade-like core-fragment*
- unretouched blade /5/, 33 x 10; 18 x 10; 21 x 12; 13 x 17; 16 x 5 mm
- large, rough flake with a borer(?)-tip, 47 x 28 x 6 mm
- strighly truncated blade, 24 x 10 mm
- blade with sickle gloss*; the gloss is in the lower right corner of the dorsal face and in the lower left corner of the ventral face, it is more or less triangular, 19 x 11 mm (*Fig. 6.13*)
- blade with sickle gloss, the gloss is more or less triangular, and located in the upper left corner of the dorsal face and in the upper right corner of the ventral face, 25 x 10 mm
From the profile between sections 5. and 6., settlement feature Nr. 2.:
- blade with sickle gloss. An asymmetrically hafted blade, this part is retouched on the right side of the dorsal face.
The sickle gloss is along the right edge of the dorsal face and the left edge of the ventral face in the form of a narrow stripe. This glossy part is finely retouched from the ventral face. The edge is slightly file-like, 20 x 8 mm (*Fig. 6.14*)
- blade with sickle gloss, hafted, its edge is damaged, unretouched. There is a "double" sickle gloss on the blade, situated in the left upper and the right lower corners of the dorsal face and consequently also in the right upper and left lower corners of the ventral face. The shape of glossy areas is, more or less, triangular. It is also retouched along the hafted part of the dorsal face, that is, in the proximal third of the blade, 20 x 12 mm (*Fig. 6.15*)
- unretouched blade with fine file-like edges, 20 x 15 mm
- end-scraper on a blade, 34 x 10 mm (*Fig. 6.16*)
- blade with sickle gloss, unretouched. The triangular-shaped gloss, which is hardly visible to the naked eye, is in the upper left corner of the dorsal face and in the right upper corner of the ventral face, 15 x 9 mm.
Section 6., Eastern part, settlement feature Nr. 2.
- flake /2/
- unretouched blade /3/, 15 x 8; 28 x 4; 12 x 5 mm
- blade with sickle gloss on its proximal part with a long haft and shouldered distally. It is slightly notched in the middle of the left edge of the dorsal face. It is rounded proximally. Sickle gloss can be found in the right lower corner of the dorsal face and also in the left lower corner of the ventral face, 24 x 10 mm (*Fig 6.17*)

- flake scraper on a highly bulky flake. The working edge is steep; slightly oval, asymmetric, 10 x 12 x 7 mm
Section 6., settlement feature Nr. 2.
- unretouched blade /3/ 22 x 13; 38 x 20; 8 x 6 mm
Section 7., settlement feature Nr. 1.
- large flake with a burin-like section along one of its edges
- segmentoid tool with sickle gloss: a more or less crescent-shaped fragment (it is broken along the straight edge), the arched side is truncated. There is a sickle gloss on the whole of the truncated part, hardly visible to the naked eye, 12 x 17 mm (*Fig. 6.18*)
Section 8. settlement feature Nr. 3.
- unretouched blade, 18 x 8 mm
- core fragment
- flake /2/
- straightly truncated blade fragment, 22 x 10 mm
Section 8. Southern part, settlement feature nr. 4.
- unretouched blade, 19 x 9 cm
Section 8. Northern part, settlement feature nr. 3.
- unretouched blade, 27 x 13 mm
Section 9. settlement feature nr. 1.
- core rim fragment
Section 9. House 3
- obliquely truncated blade-like flake with sickle gloss. It is notched in the middle of the left edge of the dorsal face. The sickle gloss is roughly semicircular and located on the left side of its dorsal and on the right side of its ventral face, 20 x 20 mm (*Fig. 6.19*)
Section 10. settlement feature Nr. 5.
- core remnant
- flake

Excavation in 1993

Section 1.
- fragment of a small, unretouched blade, 11 x 5 mm
- fragment of a small, unretouched blade. The right edge of the proximal face is slightly denticulated, 10 x 6 mm
Section 1. - 70 cm
- small, unretouched blade-fragment, 13 x 4 mm
Section 2., Southern part
- core-remnant
Section 3., settlement feature Nr. 2. -55 cm
- flake, the right edge of its "dorsal" face is retouched. It was most probably used as a scraper, 27 x 30 x 5 mm (*Fig. 6.20*)
- nosed scraper or borer(?) on a bulky blade the distal part of which is steeply retouched. The nose-like section is located in the middle of the distal part. It is asymmetric and bulky. It could have been an obtuse, a borer or point as well, 25 x 18 x 5 mm
Section III. - 20 cm

- fragment of a core
Section 4., settlement feature Nr. 2., -45-50 cm
- flake, one of its edge is retouched
- unretouched blade, hafted at the right proximal section of its dorsal face, 45 x 10 mm
- blade with sickle gloss, the gloss is triangular, in the upper left corner of the dorsal face and the upper right corner of the ventral face, 22 x 9 cm
Section 4., settlement feature Nr. 2., -45-50 cm
- unretouched blade, 36 x 11 mm
- flakes /3/
- blade-like flake with tip-like right distal corner, 27 x 15 cm
- scraper on a relatively high, circular flake. Its steep working edge is almost circular as well, 27 x 29 x 11 mm (*Fig. 7.21*)
- blade, retouched slightly along the distal part of the left edge of its dorsal face. There is also a faint sickle gloss, barely visible to the naked eye, which is also in the right upper corner of the ventral face. On the proximal third of the left edge of the dorsal face there is a small tip, the blade is slightly retouched in the middle part of the right edge of the dorsal face, 26 x 10 mm
Section 4., settlement feature Nr. 2., 90-95 cm
- core-remnant
-core rim flake
- flake-like blade, slightly notched, 24 x 11 mm
- unretouched blade-fragment, 10 x 7 mm
- fragment of an unretouched micro-blade, 7 x 5 mm
- blade fragment, 20 x 12 mm
- blade-like flake. There is a tiny borer(?)-like tip in the distal part of the tool. Its proximal end is truncated, 32 x 16 mm
- blade, slightly notched on the right edge of the dorsal face. The left edge of the dorsal face is hafted and has a very fine denticulated section, 20 x 6 mm
Section 4., settlement feature Nr. 2., -60 cm
- core-remnant /2/
flake /2/
- borer on a blade, carefully manufactured, at the end of an unretouched blade with a long "neck" which is backed on both sides and also on the distal end, 20 x 10 mm (blade); 8 x 2 mm (neck), height of the neck: 2 mm (*Fig. 7.22*).
- blade with sickle gloss. The gloss is in the left lower corner of the dorsal face and in the right lower corner of the ventral face. The gloss is triangular, extending somewhat to the proximal section as well, 21 x 9 mm
Section 4., settlement feature Nr. 2., -45-50 cm
- core fragment /2/
- unretouched blade-fragment, 6 x 5 mm
- unretouched small blade, 17 x 6 mm

- blade, hafted from the right edge of the dorsal face, 23 x 20 mm
Section 4., settlement feature Nr. 2., -40-50-cm
- small, unretouched blade, 12 x 7 cm
Section 4., -20 cm
- small blade, the right edge of its dorsal face is very finely retouched, 19 x 7 mm
- flake
- core-flake
- unretouched blade, 25 x 8 mm
- borer of an unretouched blade, the borer-part is backed on both sides. The right edge of the ventral face is also retouched. The tip is backed as well. 24 x 11 mm (blade), 10 x 3 x 2 mm (borer-part) (*Fig. 7.23*).
Section 4., Northern part, -35-40-cm
- flake
- unretouched blade /2/, 26 x 9 mm; 15 x 10 mm
- blade, finely retouched along the right edge of the dorsal face, 20 x 10 mm
- blade, finely retouched along the right edge of the dorsal face, 21 x 6 mm
Section 4., Northern part, -15-35 cm
- core-remnant
- flake
- finely shaped small borer on a rhomboid flake. It is finely retouched on its dorsal face at both edges below the tip while on the ventral face it is retouched along the left edge, 15 x 10 x 2 mm
Section 4., Middle part, -35 cm
- flake /5/
- core-fragment /2/
- core-rim blade
- proximal fragment of an unretouched blade, 12 x 15 mm
- blade, the left edge of its dorsal face is file-like, 22 x 9 mm
- blade with sickle gloss. The gloss is barely visible to the naked eye. It is triangular, though elongated, following the upper third of the left edge of the dorsal face, and extends a bit over the upper left corner. It is along the right edge of the ventral face and on its right upper corner, 20 x 12 mm
- scraper, made on a high, angular flake, steeply retouched along all sides, though the scraping edges are along the distal and right edges of the dorsal face, 12 x 18 x 13 x 19 x 10 mm (*Fig. 7.24*)
Section 4., from the Middle part, -15-35 cm
- core remnant
- flake /4/
- blade-like flake, destroyed distally
- blade fragment, 8 x 7 mm
- unretouched blade /2/, 17 x 20 mm; 14 x 13 mm
- slightly curved scraper with oval working edge made on a fragment of a

core rim, 14 x 15 x 5 mm
- fragment of a flat wide, flake-like blade, both edges are retouched, 16 x 18 mm
- scraper made on a core fragment – there are three blade-negatives on its dorsal face. One of the edges is steeply retouched from the ventral face, 25 x 10 x 20 mm
Section 4., Southern part, -40 cm
- core remnant
- fragments of unretouched blades, /2/, 9 x 6, 12 x 6 mm
Section 4., Southern part, -15-35 cm
- high, quadrangular flake, steeply retouched at its edges, used most probably as a scraper, 17 x 13 mm
- end-scraper on a short, unretouched blade, the left edge of the dorsal face of the blade is slightly file-like, 17 x 14 mm (*Fig. 7.25*)
- scraper made on a circular, bulky flake. The working edge is on the right part of the dorsal face, so it is in fact a side scraper. The retouch is strong. The flake seems to be that of a core-remnant, 35 x 34 x 10 mm (*Fig. 7.26*)
Section 4., feature Nr. 2., -90-95 cm
- blade, finely denticulated along the right edge of its dorsal face, 30 x 11 mm
- asymmetrical blade point, the pointed part is on the right side of the distal end, 21 x 5 mm
- blade with sickle gloss. The triangular gloss is in the right lower corner of the dorsal face and in the left lower corner of the ventral face on a small surface. The gloss edges are retouched, 30 x 7 mm
- atypical, obtusely pointed borer or nosed scraper on a blade-like flake, finely retouched from the left edge of its dorsal and from the right edge of its ventral face, below the tip-part. Distally steep, 17 x 9 mm
- flake scraper on a blade-like flake. Its working edge is slightly oval. The proximal right edge was hafted, 17 x 15 mm
Section 4. feature Nr. 2., -45 cm
- bulky, atypical blade, unretouched, 34 x 14 mm
- unretouched blade /3/, 24 x 15; 8 x 5; 22 x 6 mm - this last is slightly notched in the distal part of the right edge of its dorsal face
- flake with a tiny borer-like tip, 20 x 15 mm
- flake with bulb, 19 x 16 mm
- flake /2/
- unretouched blade, slightly notched in the middle of the left edge of the dorsal face, 21 x 12 mm
- core-rim flake /2/, one of them retouched along its two edges, 23 x 7; 42 x 13 mm
Section 4., surface collection
- flake /2/
- fragment of a small bladelet with a tiny tip at one of its ends, 7 x 6 mm
- blade fragment, slightly retouched along the left edge of the ventral

face, 15 x 18 mm
Section 4 and its neighbourhood, surface collection
- flake /10/
- unretouched blade-fragments /8/; 10 x 6; 9 x 7; 11 x 10; 15 x 10; 28 x 7; 14 x 11; 5 x 2; 15 x 11 mm
- core /2/
- core-remnant /2/
- burin, lateral on the right edge of a blade, 30 x 14 mm (*Fig. 7.27*)
- core-remnant with a borer(?)-tip, 30 x 34 x 18 mm
Section 5., settlement feature Nr. 3., -40 cm
- flake /3/
- unretouched blade, 15 x 6 mm
Section 5., -25-50 cm
- blade-like flake
- unretouched blade, 26 x 8 mm
- core-rim blade, 24 x 6 mm
Section 5., Southern part, -40 cm
- nosed truncated blade/end-scraper with a steep working edge transitional tool on a angular, somewhat high flake-like blade. Part of the right edge of its dorsal face is backed. Proximally the tool ends in a borer-like "haft". It is probably a combined tool, used as a borer (?) and a scraper or plane, 25 x 14 mm (*Fig. 7.29*)
- blade with a sickle gloss. The gloss is triangular and located in the proximal right corner of the dorsal face and in the left proximal corner of the ventral face. It is finely retouched along the right edge of the dorsal face over the sickle gloss while it is retouched all along the right edge of the dorsal face, 17 x 8 mm (*Fig. 7.30*)
Section 7., settlement feature Nr. 3., -70-80 cm
- flake
- blade fragment
- high, rectangular flake, steeply retouched or rather backed along one of its long and short edges. It was most probably used a a scraper, 22 x 15 mm
- blade with sickle gloss. The gloss is in the left distal corner of the dorsal face and in the right distal corner of the ventral face, triangular, 28 x 16 mm
Section 7., settlement feature Nr. 5., -90 cm
- flake, notched
- high, triangular flake with a borer-tip. The proximal part is shaped from the ventral face, where there is also a tiny tip, 30 x 24 x 5 mm
Section 7., settlement feature Nr. 5., -90-100 cm
- blade with a burin-like edge along the right side of its dorsal face, over the proximal part, 24 x 10 mm
- trapezoid flake, 18 x 14 x 13 12 mm
- carefully manufactured end-scraper with a slightly manufactured working edge. There is a somewhat angular notch below the working edge along

the right edge of the dorsal face, 38 x 14 mm
From the supporting wall between sections 4. and 7., -40 cm
- fragment of a small unretouched blade, 8 x 5 mm
- core-fragment
- end-scraper on a blade with not very steep working edge. It is slightly asymmetric. Both edges of the blade are denticulated and rather worn. A faint gloss can be seen on the left edge of the dorsal face some 7-8 mm below the distal part. Microscopic analysis of this area (under 200 x magnification, carried out by the author) revealed use-wear originated from working on plant materials at this spot, 55 x 23 mm (*Fig. 7.31*).

A summarized list of the chipped stone objects which came to light from Zalaszentbalázs-Szőlőhegyi mező:
core (fragments, remnants): 44
flake : 82
truncated flake: 2
unretouched blade: 84
retouched blade: 7
truncated blade: 9
tool transitional between truncated blade and end-scraper: 1
blade with sickle gloss: 19
segmentoid tool with sickle gloss: 1
end-scraper on a blade: 10
side scrapers on flake: 2
fan-shaped scraper on flake: 1
end-scraper on flake with steep distal manufacture: 1
flake scraper with almost circular working edge: 1
flake scraper with oval working edge: 2
scraper on high angular flake: 1
scraper made on core-remnant: 46
tablette scraper: 1
blade-point: 1
borer made on a blade: 26
borer made on a flake: 9
atypical borer on blade: 2
core-remnant with borer-tip: 2
lateral burin on blade: 1
blade with burin-like edge: 1
flake with atypical burin-like edge: 1
nosed scraper or borer: 26
truncated blade/end-scraper (plane?) transitional tool or borer (?) combined tool: 1
core plane: 1
altogether: 296

Apart from tools of uncertain origin (19 pieces), only 3 belong to Balaton-Lasinja culture components at the sites discussed here. Two tools belong to the Baden culture and 326 implements belong to Lengyel culture

components, of which 9 tools come from early Lengyel and 296 from late Lengyel phase components. Unfortunately, the small number and typological irrelevance of Balaton-Lasinja tools which came to light prevent us from carrying out detailed analysis and comparative studies. For this reason any detailed discussion must be restricted to the Lengyel material. Because neither the Lengyel material from Hahót-Szartóri I. nor the Lengyel assemblage from Zalaszentbalázs-Pusztatető are sufficiently rich, we are compelled below to analyze only the late Lengyel tools from Zalaszentbalázs-Szőlőhegyi mező.

Comparing the late Lengyel tools from Zalaszentbalázs-Szőlőhegyi mező with those from other sites, the author primarily used all those Lengyel culture tool-assemblages which have already been published (from Zengővárkony, Pécsvárad, Villánykövesd, Lengyel, Mórágy, Csesztve – for references see below in the text). Other Lengyel materials still unpublished but which have been studied by her, are also included. The following references contain only basic information on these sites and/or they do not contain detailed analysis of the chipped stone tools coming from them. For this reason, during the comparative analysis below they are not mentioned again: – except having some special importance in the context given: Sé-Malomi dűlő (*Károlyi 1974, 1975, Károlyi – Kalicz 1976, 1977, 1981);* Aszód-Papi földek (*Kalicz 1985*); Csabdi-Télizöldes (*Antony 1982*); Balatonmagyaród-Hídvégpuszta (*Horváth 1981b, 1982b, Horváth – Szőke – Bánffy 1985);* Veszprém-Felszabadulás út (*Raczky 1974*). The same is true for the chipped stone tools from some sites of other cultures, also studied by the author. These sites are the following: Becsehely (*Kalicz 1976*), Öcsöd-Kováshalom *(Raczky – Seleanu – Rózsa et al. 1985*), Nagykanizsa-Sánc (*Kalicz 1971, 1973, 1974*). Comparisons also involved some minor materials in the Zalaegerszeg and Nagykanizsa museums excavated or collected during field surveys targeted at neolithic and chalcolithic sites.

The chipped stone tool assemblage found at Zalaszentbalázs-Szőlőhegyi mező seems to be typical for the Lengyel culture.

Cores (core-fragments, core remnants), blades (in part blanks) make up 70 per cent of the whole material which is not unusual. As for cores, there are relatively many rejuvenated and more totally exploited ones, though a few classical conic or prismatic types also appear. Small, "microlithic" cores are rather common; negatives reflect almost always short, very narrow bladelets. Some core-fragments and remnants were transformed into scrapers and borers. A core-plane is known from the 1992 material.

A great part of the flakes were most probably used as tools – most of them perhaps ad hoc implements – which is a view justified by the presence of some flakes with retouched or truncated edges or with some borer-like tips on them as well. Flakes served as blanks for many tools. It is conspicuous that scrapers made on blade and on flakes occur in almost equal proportions. Borers – though atypical ones – on flakes occur more frequently than "regular" types made on blades. This, however, does not

suggest "typological" differences, but rather seems to be the result of efficient exploitation of the lithic raw material stock available and its maximum adaptation to different tasks – reflected also by the relatively large number of non-standardized tool-variants.

It is probable that only a lesser part of unretouched blades were blank. The majority were used as actual tools – as the obviously worn, sometimes denticulated or file-like edges indicate.

Truncated tools make up a considerable part of the material. They appear mostly on blades, although they may also appear on flakes. Besides horizontally (straight) or obliquely truncated tools specimens with nosed or concave truncature also appear. In several cases it is not possible to distinguish between different types of truncated blades or flakes from end-scrapers with steep working edges either on blades or on flakes. The quantity of these "transitional" tools is relatively high at several other Lengyel sites, too.

Among scrapers the considerably high number of those made on flakes is interesting. Almost every piece represents a different "type", though it seems clear that basically flake scrapers with oval and steep working edges are the most common. Classical end scrapers, made mostly on blades, are well represented, too.

In addition to borer-like atypical, usually most probably reshaped, tools typically finely manufactured, "necked" borers are also present.

Pieces with atypical burin-like edges occur, though they are rather subordinated within the industry.

Though several types are represented in the material, their quantity is undoubtedly influenced by the restricted number of tools as well. Scrapers and borers have an important role – demonstrated by their relatively large number and typological variability. Their importance is emphasized by the fact that some flakes and core-remains or even blades, were transformed into atypical scraping and boring tools rather frequently. Partly that is why we usually do not find strict morpho-typological categories. Trends, however, could be detected fairly well.

At Zalaszentbalázs-Szőlőhegyi mező we do not find that technological pecularity which occurs e.g. at Zengővárkony, Lengyel, Mórágy-Tűzköves, and partly in Aszód, that is, the manufacture of tools on bulky, tabular pieces of core-fragments (*Bácskay 1989b, 1990b, Bácskay – T. Bíró 1984*).

Finely manufactured long blades, appearing at certain Lengyel sites, though always in a small number (e.g. at Zengővárkony cemetery, Lengyel, and to some extent at Aszód, too – *Bácskay 1989b, 1990b, Bácskay – T. Bíró 1984*) are absent from Zalaszentbalázs-Szőlőhegyi mező. Since at Zengővárkony they came to light in the cemetery, it is possible that their unusual dimensions and careful manufacture is due to the very fact that they served as grave-goods. Unfortunately at Lengyel it has not proved possible to separate cemetery and settlement material. As for Aszód the most beautiful blade of this kind came to light from a grave.

Steep retouch at the distal end of tools (several types of truncature,

steep scraper end and their transitional variants) is relatively common at Zalaszentbalázs-Szőlőhegyi mező, as at many other Lengyel sites (e.g. Zengővárkony, Lengyel, Mórágy, Pécsvárad, Aszód, Csabdi, Csesztve – *Bácskay 1989b, 1990b, Bácskay – T. Bíró 1984, T. Dobosi – Tárnoki 1987*).

Angular notches at the edges of certain tools, which is a conspicuous feature at some Lengyel culture sites in Transdanubia (they are present e.g. at Zengővárkony, Lengyel, Aszód – *Bácskay 1989b, 1990b, Bácskay – T. Bíró 1984*) are absent from the Zalaszentbalázs-Szőlőhegyi mező material, with the exception of one end-scraper from Section 7., settlement feature Nr. 5.

If a wider range of scraper types is not found at Zalaszentbalázs-Szőlőhegyi mező, it is most probably due to the relatively small quantity of tools. Other Lengyel sites which yield more implements may contain more types as well. It is interesting, however, that at one of the latest Lengyel culture sites, Veszprém-Felszabadulás út which is contemporaneous with Zalaszentbalázs-Szőlőhegyi mező, and which yielded about the same quantity of chipped stone tools (132 pieces), the ratio of scrapers is higher than at Zalaszentbalázs. It can be added, that the majority of scrapers at Veszprém are as "atypical" as they are at Zalaszentbalázs.

As for certain tool types, typical saws, which seem to appear "gradually" during the Late Neolithic (that is saw-like edge-shaping of blades is known from Sé, Aszód, Csabdi, Zengővárkony cemetery and appear in their fully developed classical form at Lengyel (*Bácskay – T. Bíró 1984*) are absent from Zalaszentbalázs-Szőlőhegyi mező.

Similarly, geometric tools are also absent from Zalaszentbalázs-Szőlőhegyi mező, while they are present at several sites of the Lengyel culture (e.g. Aszód, Csabdi, Mórágy – *Bácskay 1989b, 1990b*) and from Csesztve-Stalák *(T. Dobosi –Tárnoki 1987*).

The absence of "classical", mostly triangular, projectile points/arrowheads can be mentioned which have been found e.g. at Nemesvámos-Baláca, Pécsvárad-Aranyhegy, Mórágy, Aszód, Csesztve (*T. Bíró – Palágyi – Regenye 1989, Bácskay 1989b, 1990b,c, T. Dobosi – Tárnoki 1987*).

At the same time, the relatively large quantity of different types of borers and borer-like tools made on blades, flakes, core-flakes, core-remnants, together with those tools which have small tips, nose- or beak-like projections, sometimes located quite unusually on them, or some irregular flakes and blades used most probably as pointed tools which are characteristic of the Lengyel culture (to mention here only Aszód, Csabdi, Veszprém-Felszabadulás út and the sites in the South Eastern part of Transdanubia (*Bácskay 1989b, 1990b, Bácskay – T. Bíró 1984)* occur frequently at Zalaszentbalázs-Szőlőhegyi mező.

Typical borers, usually with a long "neck" and a careful fine retouch appearing in Transdanubia in the Middle Neolithic for the first time (that is at Zseliz or at the Transdanubian Linear Pottery culture-Zseliz culture transitional sites (*T. Bíró 1987*) and becoming more and more important during the Middle and Late Neolithic appear as to different types at

Zalaszentbalázs-Szőlőhegyi mező. Several variants of characteristic borers are known from other Lengyel sites as well.

Characteristic late neolithic features of the Zalaszentbalázs-Szőlőhegyi mező industry are the sickle blade with double sickle gloss, and – to some extent – also the segmentoid tool with sickle gloss.

At Zalaszentbalázs there are relatively many tools with sickle gloss. The majority of them are blades and with one exception they have a single glossy section on them. The gloss usually represents the most widespread triangular form, i.e. the gloss is in one of the corners of the blade, indicating that it was inserted into the socket slantwise. Until approximately the end of the Middle Neolithic another type of sickle blade with a gloss appears. Its edges are parallel to the tool, called a "reaping-knife type". Most probably it was not only the positioning of these inserts which was different from that of the others but also their function. More-or-less, synchronously with this type appears the sickle blade with "double gloss", which, like the previous one is present at several Lengyel sites and at some other late neolithic sites. Most probably it was becoming characteristic at middle/late neolithic transitional sites (since it is represented in fairly great numbers at Öcsöd-Kováshalom and it became quite widespread during the Late Neolithic (it is present at Aszód, Csabdi and Mórágy – *Bácskay 1990b*).

The segmentoid tool with a sickle gloss on its backed section has a fairly good analogy as regards its shape among the Balaton-Lasinja tools at Nagykanizs-Sánc, though the Copper Age tool has no sickle gloss on it. Therefore, it seems perhaps more reasonable to search for parallels to it e.g. in the Öcsöd-Kováshalom material where a relatively great quantity of irregular flakes and scrapers and segmentoid pieces with various sickle gloss surfaces on them are quite common. It seems that in some cultures of the Late Neolithic - and perhaps later, too, - not only were "regular" blades or blade-like flakes used as sickle inserts, which seems to have been a common practice previously, but also other "types" of tools, or rather "atypical" pieces. It is not, however, characteristic of the Lengyel culture at all.

Another possible explanation is suggested by, for example, the frequently occurring reshaped and reused tools at another late neolithic site, Gorzsa, where discarded sickle blades were "recycled" and made into scrapers – most probably due to the lack of good raw material available (B. Adams, pers. comm.)

While so far I have compared the Zalaszentbalázs material with other Lengyel culture assemblages known to me, below I should like to compare the material of the Zala county site more thoroughly with the materials from other late Lengyel sites, that is from Csesztve-Stalák (*T. Dobosi – Tárnoki 1987*) and from Veszprém-Felszabadulás út (*Raczky 1974*). The reason for this more thorough comparison is that both sites represent the Lengyel III. phase, that is, they are chronologically near to Zalaszentbalázs-Szőlőhegyi mező. Moreover, the Veszprém site in Transdanubia is in an

area not so far from the Zala county microregion and some lithic raw material types used here originate from the Transdanubian Mid-Mountains, suggesting contacts between the two regions.

On the other hand, comparison with the material of Csesztve-Stalák in Nógrád county could also be interesting because it represents a site in a milieu considerably different from Zalaszentbalázs.

The chipped stone tools from Csesztve-Stalák are known to me only from literature (*T. Dobosi – Tárnoki 1987*). On the basis of their analysis, the material from Csesztve seems to differ considerably from that of Zalaszentbalázs. Partly, this is due to quantitative differences - Csesztve yielded 409 chipped stone objects - and also to some differences necessarily caused by the use of different lithic raw materials. Typological differences include the absence of arrow-heads, and the trapeze-form. A relatively large group of characteristic standard end scrapers at Zalaszentbalázs are, however, present at Csesztve-Stalák. As for the different types of flake scrapers and the well represented group of end scrapers on flakes we find much more in common with Zalaszentbalázs. At the same time, the finely retouched "classical" borers known from Zalaszentbalázs, seem to be absent from Csesztve.

At Veszprém-Felszabadulás út, where the chipped stone assemblages consist of 132 pieces, we find an industry characterized by the minor role of blades and blade-derivatives (primarily, there is a lower ratio of end-scrapers on blades). The high percent of scrapers as a group (about 1/4 of the whole material), the presence of atypical borers and tools used most probably as borers, made on flakes, core-flakes, core-remnants are also characteristics of the assemblage. Steep distal manufacture is present, though, not very common.

The presence of atypical borers is a common feature at both sites, though at Zalaszentbalázs there are typical borers, as well. Some differences as regards the ratio of scrapers as a group in the sites was already mentioned above.

I also compared the chipped stone material of Zalaszentbalázs-Szőlőhegyi mező with the industries found at certain sites geographically near to it. The comparison encompassed the following sites:

Becsehely (*Kalicz 1976*). The site yielded material belonging to the Transdanubian Linear Pottery culture, Zseliz and Sopot cultures, though in most parts of the site they were found mixed with each other and it is impossible to separate lithic assemblages on typological grounds. The site was chosen for comparison partly because it is near to Zalaszentbalázs (some 20 km to the South West), partly because it yielded a relatively large material (308 pieces) and also because regardless of its mixed character it is a highly suitable representative of some territorial and cultural predecessor(s) of the Lengyel culture in South West Hungary.

Balatonmagyaród-Hídvégpuszta (*Horváth 1981b, 1982b, Horváth – Szőke – Bánffy 1985*) is the only Lengyel culture site nearby (some 17 km to the East of Zalaszentbalázs) which yielded a chipped stone assemblage

consisting of more than a few atypical pieces. In addition, the site is contemporaneous with Zalaszentbalázs, belonging to a very late phase of the Lengyel culture. Still, the material from the site is rather small (60 pieces). Other larger Lengyel culture sites yielding considerable amount of chipped stone tools are known only from areas further away.

Nagykanizsa-Sánc (*Kalicz 1971, 1973, 1974*). The Balaton-Lasinja culture material from this site (90 lithic objects) is very important, because according to the excavators, Zalaszentbalázs-Szőlőhegyi mező represents a very late phase of the Lengyel culture with several features suggestive of the Balaton-Lasinja culture. Unfortunately those Balaton-Lasinja tool assemblages which are available for comparisons contain only very few chipped stone tools. Therefore, on the basis of these tools it is very difficult to trace these contacts. At the same time, Nagykanizs-Sánc provide some useful information because it yielded almost one hundred lithic objects and the site itself is very close to Zalaszentbalázs - some 15 km to the South-South East.

It is interesting that Becsehely with its rich scraper assemblage, consisting of several types of flake scrapers and classical end-scrapers on blades, with its finely manufactured typical borers (at least three distinct types – which are very close to the Zalaszentbalázs borers) – as well as the presence of truncated blade/steeply distally retouched scraper transitional pieces might be fit quite well into the material of any given Lengyel culture site.

It can be said that the contribution of the Transdanubian Linear Pottery culture as local predecessors is manifested also be a certain similarity of their chipped stone industries to that of the Lengyel culture. Naturally, more data would be necessary to trace the exact nature and degree of this similarity.

Comparison with the material of Balatonmagyaród-Hídvégpuszta and with the finds collected from some other nearby Lengyel localities during field surveys or which came to light from excavations yielded the following results. The small groups of chipped stone tools from Kilimán, Nagybakónak, Zalaszentjakab, Nagykanizsa-Inkey churchyard chapel and Nagykanizsa-Palin consisting of only a few cores, flakes, retouched and truncated blades and a few flake scrapers, do not alter what is known to date, so that, they have practically no influence on this comparison. Unfortunately the finds from Balatonmagyaród-Hídvégpuszta, too, are rather indifferent, as there were only a few typical tools at the site. Some characteristic features are: several types of scrapers (mostly on flakes) and borers made on flakes. So, these localities, over geographically attached areas, are unsuitable for use in detecting possible regional differences within the Lengyel culture on the basis of their chipped stone material.

The Balaton-Lasinja culture material of Nagykanizsa-Sánc consists of 90 pieces. Apart from cores, flakes and unretouched blades (altogether 75 pieces) the other finds are: two unretouched blades, three truncated blades,

a sickle blade, a segmentoid tool, six flake scrapers – each representing a different type – two typical borers and a core-remnant with a borer-like tip. The whole assemblage may belong to the Lengyel culture as well, though obviously it is unsuitable to draw further conclusions from such a small quantity of tools.

The above comparisons suggest that Zalaszentbalázs-Szőlőhegyi mező has a chipped stone tool assemblage representing some general features of Lengyel culture (such as the rather high proportion of different types of truncated tools as well as truncated/steeply distally retouched tools and their transitional varieties, a high percent of various types of scrapers along with a variability of non-standardized pieces made of flakes, the presence of finely shaped classical borers, the importance of scraping tools and atypical borers occurring also on reshaped pieces from flakes and, finally, core fragments. The presence of a sickle blade with double sickle gloss is important, too. At the same time, there are some tool types which appear at some Lengyel culture sites, such as trapezes and typical saws, projectile points, which appear within the Lengyel culture, as far as we know, regardless of regional or chronological differences, but which are absent at Zalaszentbalázs. Nevertheless, the relatively small quantity of chipped stone tools from Zalaszentbalázs, in the microregion under discussion and in adjoining areas as well as from other sites of the same culture and/or time period do not permit hypotheses to be based on it regarding regional or perhaps chronological differences. Recognition and a real estimation of these differences would be possible only after the analysis of chipped stone industries from many more Lengyel culture sites over a wide area of the country and abroad.

The paucity of finds prevents us from judging whether there is continuity between the Late Lengyel and Balaton-Lasinja cultures as regards their chipped stone industries, although other archaeological data from the microregion suggest this. At any rate, the results of the comparison between the chipped stone materials from Zalaszentbalázs-Szőlőhegyi mező and the Balaton-Lasinja material from Nagykanizsa-Sánc may suggest a continuous development – at least there are no marked differences between the general character of these industries.

Research in the microregion has also given rise to some new and interesting information on the use and distribution of the characteristic radiolarite extracted from the prehistoric flint mine at Sümeg-Mogyorós-domb – already partly hinted at above. As far as is known, Sümeg radiolarite has been found at the following sites, although, usually in rather small quantities: Gór-Kápolnadomb, Transdanubian Linear Pottery culture (*Dénes – Ilon 1992, 1993* – here I should like to express my many thanks to K. T. Bíró, who was kind enough to give me the information); Sé-Malomi dűlő, early Lengyel culture (*Károlyi 1974, 1975, Károlyi – Kalicz 1976, 1977, 1981*), Bagod (field survey collection material in the Zalaegerszeg Museum, from a period between Middle Neolithic and Middle Copper

Ages, it is impossible to decide which material the chipped stone finds belong to), Keszthely-Dobogó, Transdanubian Linear Pottery culture (*Bakay – Kalicz – Sági 1966*, site MRT I. 21.6.), Becsehely, Transdanubian linear Pottery culture, Zseliz culture, Sopot culture (*Kalicz 1976*); Nagykanizs-Inkey churchyard chapel, Baden culture (*Horváth 1980, 1981, 1982*); Balatonmagyaród-Hídvégpuszta *(Horváth 1981b, 1982b, Horváth – Szőke – Bánffy 1985*), Lengyel culture; Zalaszentbalázs-Pusztatető, Lengyel culture and Balaton-Lasinja culture; Zalaszentbalázs-Szőlőhegyi mező, late Lengyel culture (*Fig. 7.32*).

Apart from a westward transport of the Sümeg rediolarite indicated by Gór and Sé, and partly by Bagod, these data clearly suggest strong contacts between the microregion discussed here, together with neighbouring areas, and the mine at Sümeg. These new data from the microregion both confirm earlier data on the distribution of Sümeg radiolarite and that we know concerning the date of mining activity and its connection to different cultures (although there is no positive information on the exact nature of this connection). At any rate, it seems that lithic raw materials from the Transdanubian Mid-Mountains, including Sümeg radiolarite which was a less important material in this latter area, were transported towards those regions which are today part of Zala county, to the South West of the lake Balaton.

Archaeozoological considerations (*Vörös 1985, Bácskay -- Vörös 1980*) and radiocarbon data from the mine (A-246 4250 +- 160 BP; Hv- 11610 5960 +-95 BP; and Hv-11611 4840+-110 BP -Damon-Long 1964 in *Vértes 1964, Bácskay 1986)* suggest that mining activity – either continuous or interrupted – especially flourished in the time interval between the Transdanubian Linear Pottery culture and the Balaton-Lasinja culture. (A, most probably, small scale activity in the mine during later times is demonstrated by the presence of Sümeg radiolarite in a Pécel context).

The most interesting information yielded by recent research carried out in the present microregion and somewhat earlier in the Little Balaton area, as well – taking into consideration the chronology and culture of sites discussed here – is that there is some continuity (tradition?) in the use of Sümeg radiolarite. This seems especially important since here this raw material appears at seven (!) sites within an area of cca 25 x 20 km and the sites in question represent three cultures which succeed each other.

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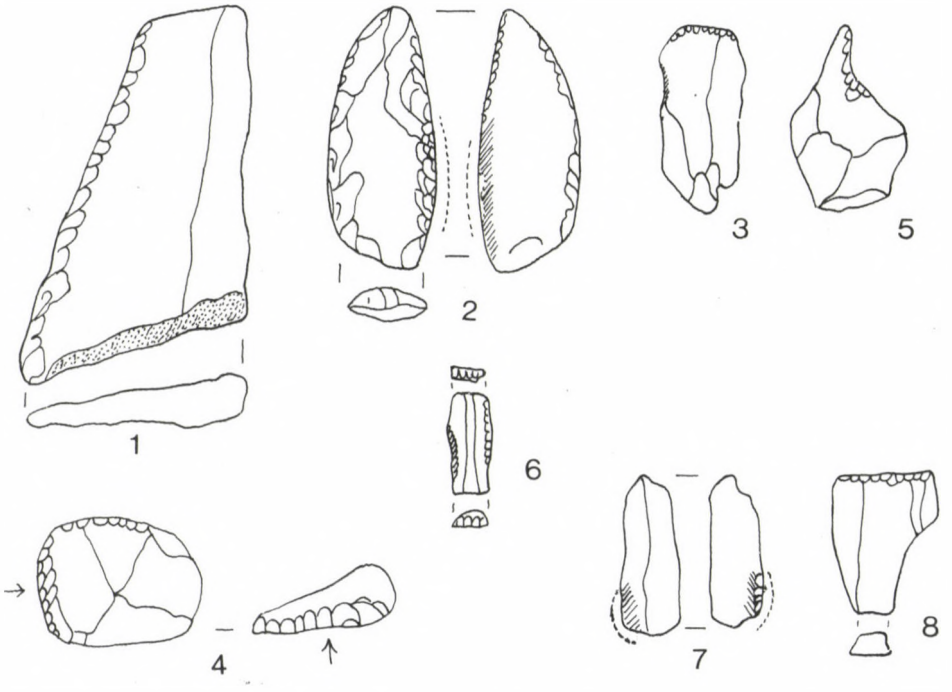
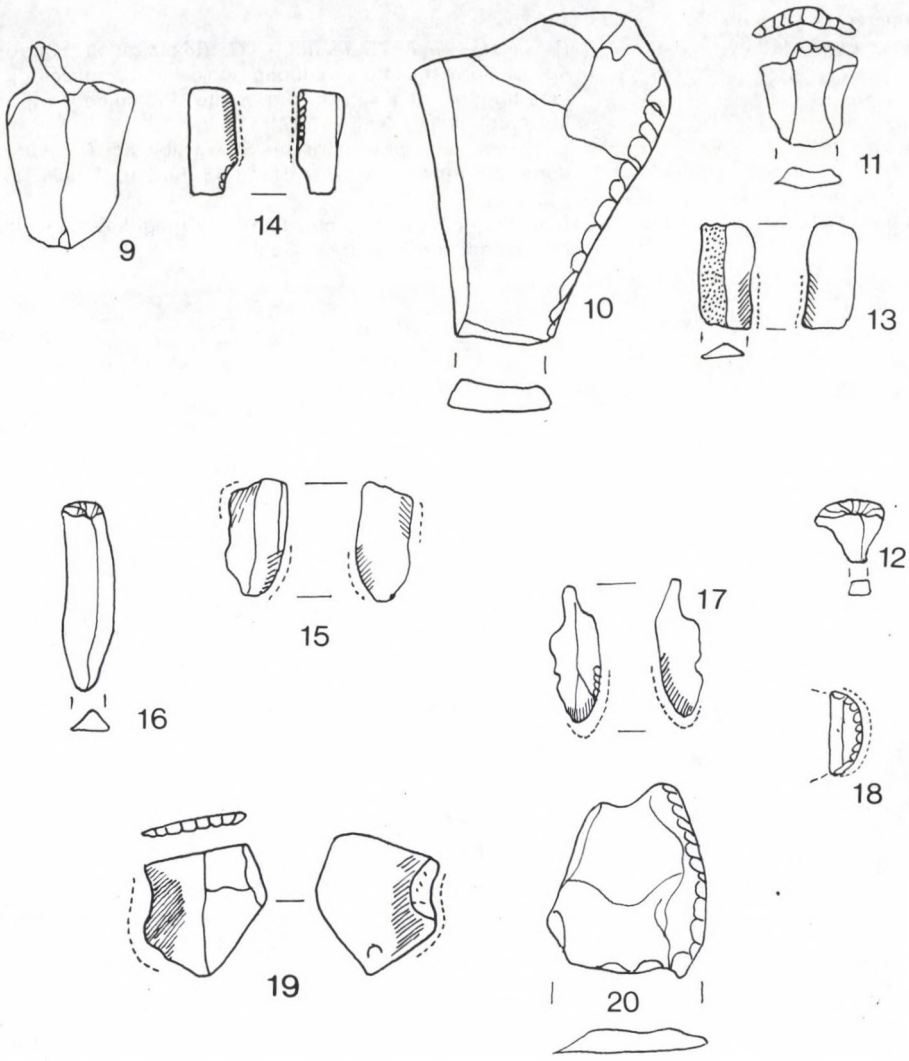


Fig. 6. Chipped stone implements — various sites.

1. Cutting or scraping tool (retouched piece of raw material). Hahót-Szartóri I.
2. Cutting tool used on plant materials. Hahót-Szartóri I. Most probably Baden culture.
3. Truncated blade. Zalaszentbalázs-Szőlőhegyi mező, 1987, late Lengyel culture.
4. Flake scraper, same as above.
5. Borer on a flake, same as above.
6. Blade truncated at both ends, same as above.
7. Blade with sickle gloss, same as above.
8. Truncated flake, same as above.



9. Borer on a flake, same as above.
10. Retouched flake, same as above.
11. End-scraper/truncated piece, excavation in 1992.
12. Fan-shaped scraper, same as above.
13. Blade with sickle gloss, excavation in 1992.
14. Blade with sickle gloss, same as above.
15. Blade with "double" sickle gloss, same as above.
16. End scraper on a blade, same as above.
17. Blade with sickle gloss, same as above.
18. Segmentoid tool with sickle gloss, same as above.
19. Blade with sickle gloss, same as above.
20. Retouched flake, excavation in 1993.

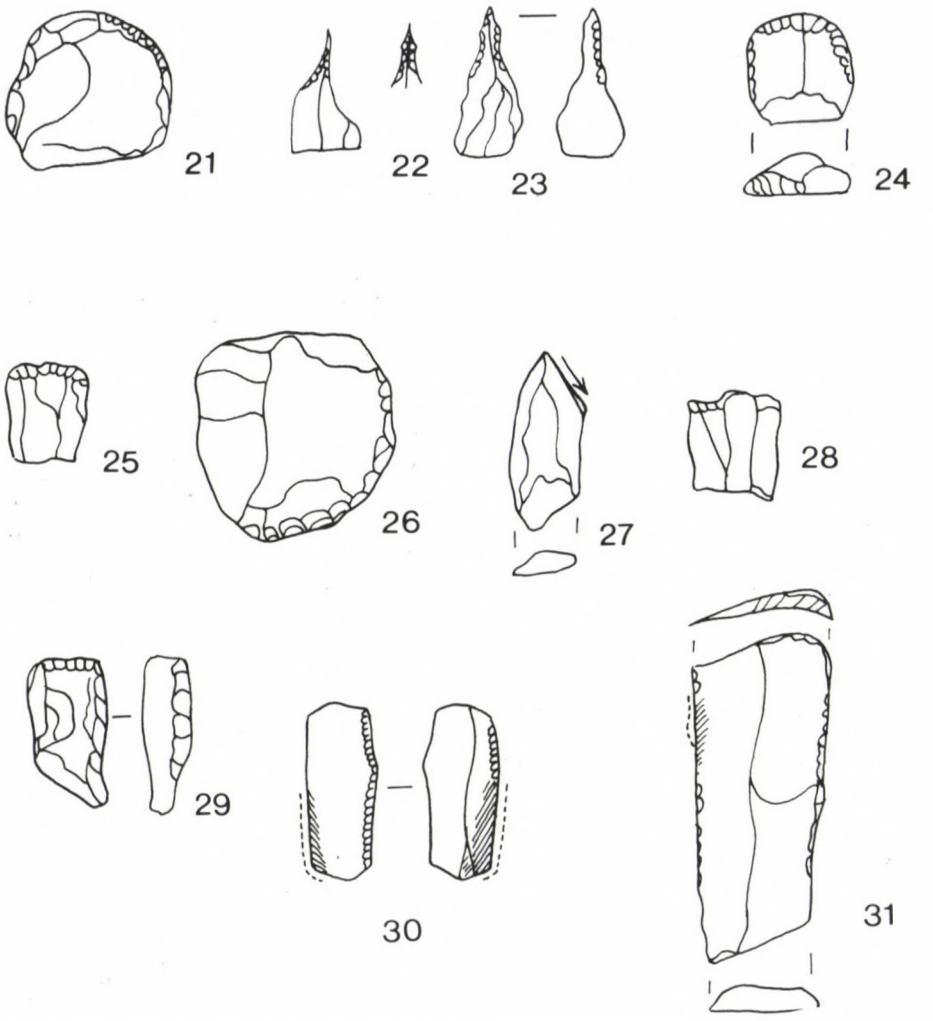


Fig. 7. Chipped stone implements — various sites.

21. Circular flake scraper, same as above.
22. Borer on a blade, same as above.
23. Borer on a blade, same as above.
24. Flake scraper, same as above.
25. End-scraper on a blade, same as above.
26. Scraper on a core-flake, same as above.
27. Burin on a blade, same as above.
28. Tool transitional between truncated blade and end scraper, same as above.
29. Combined tool: truncated blade/end scraper or plane and borer? - same as above.
30. Blade with sickle gloss, same as above.
31. End scraper on a blade, same as above.

Ferenc Gyulai

THE PLANT AND FOOD REMAINS FROM THE COPPER AGE SETTLEMENT AT ZALASZENTBALÁZS-SZŐLŐHEGYI MEZŐ

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1. Introduction

Plant and food remains are seldom recovered in the course of archaeological excavations, and even more rare is their joint occurrence on a given site. These organic substances tend to be highly unstable, and under natural circumstances they rapidly come under attack from putrefactive microbes. Under exceptional circumstances, however, such as carbonization, a waterlogged environment or an extremely dry microclimate, the chances for their preservation and survival are higher. Also, some experience is needed for the recognition of plant and food remains, as well as for systematic sampling and the flotation of the collected samples.[1]

Following Willerding, archaeobotanical finds are generally divided into genuine or direct, and indirect finds.[2] Direct plant finds include the actual remains of plant cultigens which, in spite of having undergone chemical (e.g. burning) or biochemical (e.g. turfication) changes, nonetheless tend to retain their diagnostic morphological traits and, albeit more rarely, their tissue structure, enabling comparative analyses. Cytological-microchemical or cytological-physical procedures are sometimes employed in the identification, for example, of fibrous remains.

Most archaeobotanical finds tend to be direct plant remains: grains, seeds, fruits and nuts. These are most often deposited in part through day-to-day activities (such as storage, settlement debris, levelling following a conflagration destroying the settlement) or ritual activity (such as a burial), or accidentally. The effects of environmental factors and elements (the activity of wind and water) can also lead to the deposition of plant

[1] *Währen 1989a.*
[2] *Willerding 1970.*

remains. Seeds, grains and nuts are the most resistant parts of plants; they can survive in consequence of edaphic, climatic and biotic factors: they are sometimes turfified or, more rarely, they are conserved by the activity of heavy metal ions; conversely, plant remains are occasionally trapped in mortar or they are passivated as a result of an extremely dry environment (such as encountered in burial chambers) – but, more often than not, they are carbonized.[3] Differences in the state of conservation can thus be seen to be caused by the different structure of the one-time plants, by edaphic and climatic factors, by human activity, and the age of the finds can also influence the state of preservation. The preparation, the examination and the identification thus needs to be carried out using different procedures and techniques. In Hungary the overwhelming majority of archaeobotanical finds were preserved by carbonization and, to a lesser extent, by the accumulation of humic substances (humification or turfication).

The single most abundant category of finds from archaeological excavations is pottery. Owing to its form and ornamentation, pottery – often recovered in tons – is the single most important, if not *the* most important dating tool available to archaeologists. Nonetheless, the actual function of individual pots is often difficult to determine. The analysis of food remains from pottery finds can contribute to the definition of the function of individual pottery wares. It is therefore vital that pottery and pottery fragments be carefully examined while still *in situ*, and prior to their cleaning. The recognition of plant remains does require some experience and practice, but it should be borne in mind that if this is omitted this information is irrevocably lost.

As a result of archaeological investigations that have increasingly matured into areas of interdisciplinary cooperation, there has been a welcome growth in analytical results concerning food remains that have in part been recovered from Hungarian excavations and in part from investigations conducted elsewhere. The burnt remains adhering to pottery sherds from the Neolithic Corded Ware settlement uncovered at Zürich-Mozartstrasse have been identified as the remains of prehistoric soups and porridge or gruel. The remains of a porridge or gruel prepared from wheat meal were identified among the samples from the Early Neolithic site at Hornsadt, and the samples from the Neolithic site at Cognac were similarly defined as the remains of a porridge or gruel made of wheat meal. The flotation of samples from a burnt house uncovered at the Ottományi site of Túrkeve-Terehalom yielded carbonized bread remains. And even though the analysis of the contents of pottery from another Ottományi settlement at Bölcske are still underway, the preliminary findings definitely indicate that food remains are to be expected.[4]

[3] *Sági – Füzes 1966.*

[4] Analyses carried out by the author.

A number of plants could similarly be identified among the organic remains from a refuse pit of the Late Bronze Age Tumulus culture settlement at Balatonmagyaród-Hídvégpuszta: garden pea (*Pisum sativum*), bitter vetch (*Vicia ervilia*), grass pea seeds (*Lathyrus sativus*), and small chunks of gruel made from broomcorn millet (*Panicum miliaceum*). The sample also enabled the identification of various animal bones from fish and smaller birds that bore traces of roasting. The archaeobotanic analyses carried out by M. Währen, the macroscopic and microscopic analyses by B. Richter[5] and the analytical investigations of the Central Laboratory of the Pannon University for Agricultural Science (macro- and micro elements, amino-acids and fatty acids) clearly suggested the remains of a wild strawberry tart made using very finely ground wheat and millet flour with lard.[6] The remains from the Celtic settlement at Fenékpuszta could be identified as the remnants of a fish soup.[7]

2. Analytical technique

The macroscopic and microscopic examination of food remains obviously cannot be a substitute for carpologic analyses, but they can, and often do, yield important data as to the subsistence and dietary habits of prehistoric and other communities.

Food remains occur either independently (as flour, gruel, and/or bread remains) or are found adhering to other artefacts (on the surface of metal objects or on the wall of intact vessels or pottery fragments). The analysis of the stomach contents of bog and glacier corpses, as well as coprolites, can also be assigned here.[8]

Recent advances in microscopic analyses and analytical chemical examinations have enabled the satisfactory investigation of these isolated and stray finds. However, in spite of the fact that these finds can contribute valuable insights into the lifeways and the history of gastronomy, a uniform approach or technique for the complex analysis of food remains is still not forthcoming, in part owing to the often unique nature of these finds, and in part because of their great diversity. Aside from food remains, the presence of colouring agents, drugs and poisonous substances can also be expected.

Most of the archaeobotanical finds have survived in a carbonized form, either as a result of natural carbonization or owing to contact with fire. Sági and Füzes,[9] however, draw a distinction between natural carbonization (the joint effects of pressure, temperature and time-span)

[5] *Richter 1989.*

[6] *Gyulai 1991; Gyulai in print.*

[7] The investigations were carried out by F. Gyulai and I. Takács in 1991; the results are unpublished.

[8] *Richter 1988.*

[9] *Sági – Füzes 1966.*

and carbonization through fire (such as roasting). In the case of archaeobotanical finds, the latter is overwhelmingly more frequent.[10]

Under the climatic conditions of Hungary, food remains tend to be preserved in a carbonized condition that can be ascribed to a low heat effect under oxygen-poor conditions.

In spite of the structural destruction it causes in organic substances, burning at the same time also preserves part of the plant. Often only parts of the glumes rich in phytoliths survive and these remains can then be submitted to microscopic analyses.[11] If the sample to be examined has not been carbonized in its entirety, the carbonized parts can be removed using various chemical procedures, and certain plant tissue remains can be submitted to microscopic analyses. In order for the plant tissue remains rich in phytoliths to become visible in a light microscope, the use of a mount or embedding matter of high refraction index is necessary.[12]

As a result of microscopic analyses the plant and animal remains preserved in the samples (such as tissue remains, fibro-vascular bundles, phytoliths, pollens, spores, vegetable and animal hairs, fibres) can, even after several millennia, be clearly recognized. The microscopic investigation of cooked food remains – such as soups, vegetable dishes and various meat dishes – burnt onto the vessel wall can best be compared to criminalistic and forensic procedures.[13]

Netolitzky's microscopic investigation of food remains proved to be pioneering in this field of research.[14] Währen introduced a macroscopic technique for the investigation of prehistoric wheat, porridges and gruels, as well as bread and other food remains.[15] Similar investigations have also been carried out in Northern Europe,[16] Germany,[17] Switzerland,[18] and Czechoslovakia.[19] These investigations have greatly contributed to a better knowledge of how bread was baked and how various foods were prepared in prehistoric cultures.

3. The results

3.1. Carpological analyses

The 1992 campaign of the excavations at Zalaszentbalázs-Szőlőhegyi mezők yielded a high number of nuts – or, to be more precise, achenes –

[10] *Nováki 1983.*
[11] *Netolitzky 1926.*
[12] *Piperno 1987.*
[13] *Gassner 1989.*
[14] *Netolitzky 1927.*
[15] *Währen 1988; Währen 1989b.*
[16] *Hjelmqvist 1984; Hjelmqvist 1990.*
[17] *Schlichterle 1983.*
[18] *Richter 1987; Richter 1988; Währen 1984; Währen 1987; Währen 1988; Währen 1989b.*
[19] *Hajnalová 1989; Pieta – Plahá 1989.*

that were recovered from the burnt debris in the southern part of feature A in trench II. The find circumstances would suggest a reserve or a stock of these achenes. The mass of the achenes that had become cemented to the soil was 222 g. Since flotation did not yield the desirable result owing to this cementation, we cleaned an adequate sample using surgical needles and probes.

The achenes were identified on the basis of their morphological traits, using a stereo-binocular microscope. In our experience individual specimens recovered from the samples cannot always be identified on the basis of handbooks and various articles, and therefore we compared our samples with modern species. We found that some traits change not only areally, but also over time within the same area.

The achenes have been mostly preserved in an excellent, non-carbonized condition. All were in the state of turfication. They were, with the exception of a single *Chenopodium album L.* achene, identified as *Schoenoplectus lacustris (L.) Palla.*

The majority of achenes from *Schoenoplectus lacustris*, common bulrush, had dehisced, their surface was intact and smooth. Their former greyish-black colour had faded, and survived in traces only. Their form was oboval with a blunt apex and an elongated stem. The lodicule was missing from the achenes. Their average length was 3.55 mm, their average width being 2.26 mm.

Schoenoplectus lacustris is common in wetlands, marshes and bogs, occurring to a water depth of 3 m along streams and among sedges, with a flowering period between June and August.[20]

Schoenoplectus lacustris is common in continental and tropical Eurasia, in Africa, in Australia, in Polynesia, as well as in Northern and Meso-America.[21] In Holland and on the German coast it is used for land reclamation; being rich in vegetable nutrients, it had originally been grown as cattle fodder in the limnetic, transitional and saline areas. It is used as binding material in many places and in China it is cultivated for this purpose. In recent times it has been planted as a natural filter for cleaning water. Its achene is rich in nutrients and is thus suitable also for human consumption. This latter was perhaps the reason for its storage at this prehistoric site.

The achenes of *Chenopodium album*, fat-hen, were not carbonized. They are intact, shiny black in colour, and with a smooth surface. The perigonium is missing from the achenes. Their edge is blunt, and they have a shallow caruncular depression. Length 1.4 mm, width 1 mm. It would appear that the *Chenopodium* achenes became mixed up with the *Schoenoplectus* stock accidentally. This species occurs commonly near human settlements, and is a ruderal indicating nitrogen and phosphorus.

[20] *Soó – Kárpáti 1968.*
[21] *Mansfeld 1986.*

This weed can grow up to a height of 50 to 120 cm and prefers clayey and loamy humus soils, but it also thrives on floodplains and in alkali soils. It occurs frequently in ploughed land, and even more often in vegetable plots (this is especially true of the *Chenopodio-Scleranthea* species).[22] It tends to occur sporadically in the sample suggesting that it became mixed up with the *Schoenoplectus* achenes from the burnt debris.

3.2. The investigation of food remains

Eszter Bánffy, the excavator of the site examined the pottery fragments prior to their cleaning and found patches of carbonized organic substances on twelve sherds. However, only in five cases were we able to remove samples of these organic substances, whose weight was as follows:

Zalaszentbalázs, sherd 1: m = 0.03 g
Zalaszentbalázs, sherd 6: m = 0.02 g
Zalaszentbalázs, sherd 8: m = 0.05 g
Zalaszentbalázs, sherd 10: m = 0.05 g
Zalaszentbalázs, sherd 11: m = 0.03 g

A 2:1 solution of hydrogen-peroxide and ammonium hydroxide was added to the samples, in an Erlenmayer flask, and the samples were left there for 24 hours, under constant stirring, until yellow fragments became visible under the effect of the released oxygen. The samples were then rinsed, centrifuged and decanted with distilled water of neutral pH value, and subsequently dried. The samples were then mounted using an embedding matter of high refraction index.

In the course of the microscopic examination we found yellowish-brown coloured fragments in all samples, that were identified as cereal grist (flour, coarse meal) of high carbohydrate contents. The samples did not contain phytoliths, suggesting that great care been taken that the husks should not get mixed up with the cereal grains destined for grinding. The sample from sherd 1 yielded the diagnostic cell pattern of the pericarp of *Triticum* (wheat). The sample from sherd 6 also yielded the characteristic cell structure of a *Triticum* aleurone layer. All in all, the available evidence would suggest that these vessels had been used for cooking some kind of porridge or gruel.

4. Conclusion

4.1. The preparation of food

What kinds of food and beverages were made and consumed in prehistory? How and under what circumstances are foodstuffs and beverages preserved and where are such remains to be found? How can they be examined and analyzed? Can their composition be established with certainty and what can be learned as far as their preparation is concerned?

[22] *Schermann 1966; Hunyadi 1988.*

Prehistoric housewives devoted quite a lot of their time to preparing various dishes from a variety of cereals. Naturally, quite a lot depended on the choice of dish to be made. A number of questions remain to be answered. To what extent were cereals part of the staple diet and to what extent did they constitute the main meal? To what extent were vegetable dishes, meat, fruit and berries part of the dietary mainstay and to what extent were they independent of various dishes prepared from cereals?

Considering that the prehistoric housewife's chores also included the carrying of water, kindling and looking after the fire, leatherworking, spinning, weaving and sewing, as well as the gathering of medicinal and other herbs, cooking and baking, it seems a fair conclusion that no matter how much time the dehusking of prehistoric cereals might have required, she had relatively little time for this activity.

In the case of prehistoric wheat and other cereals, threshing basically involved beating the harvested cereals into spikes and spikelets. In order to obtain the naked grains the husks first had to be removed. This was done not by grinding, for ground husks make the flour inedible. The husk can be removed in one of two ways: either by roasting or by maceration in water. Experiments have shown that roasting in a roasting tray can be highly effective, but even so, some husks will remain. In contrast, following maceration in water and subsequent heating for several hours, the husks become soft and loose, making their removal by winnowing quite easy. If the cereal grains were heated at 50 °C for two hours, the removal of the husk required at least another hour.[23]

Grinding too was a time-consuming procedure. The preparation of 1 kg of good quality fine flour required at least two hours' grinding using quernstones.[24] If longish quernstones were used, requiring the use of both hands, the amount of time involved was somewhat less.[25] The form of two-part quernstones remained essentially unchanged until the Iron Age. Grinding was done in several steps, using a sieve that was most probably made of animal hair or bristles. Obviously, the ultimate aim was not necessarily the preparation of flour of very fine quality, for coarser grists were more suited to the preparation of soups and gruels or porridges. Experiments have shown that if cereal grains are first roasted at 200 °C, coarse grinding becomes considerably easier.[26]

Earlier assumptions that only coarse grists had been produced in the Neolithic can no longer be accepted. Heer had thought that the cereal grains and seeds could at best be crushed using the Neolithic quernstones, and even so, the embryos were not removed.[27] Stokar too agreed that in this period the cereal grains were coarsely ground.[28] The examination of

[23] *Meurers-Balke 1985.*
[24] *Gunda 1961.*
[25] *Hennig 1966.*
[26] *Meurers-Balke 1966.*
[27] *Heer 1866.*
[28] *Stokar 1951.*

food remains from the Portalban site on Lake Neuenburg has shown that fine flour had been produced as early as 4900 BC.[29] The bread-loaf found at Muntelier (dated to 3150 BC) had, for the greater part, been baked from fine flour, and even the embryos had been removed. Experimentation with Neolithic quernstones have shown that repeated grinding produced a coarse meal, and that if the grain was ground over and over again, with the procedure repeated at least fifteen times and combined with sieving and sifting, a very good quality, fine flour was obtained.[30]

4.2. The importance of porridges and gruels

If vegetable and plant based foods loose their water content in the course of cooking, they burn to the sides of the cooking vessel. Their surface becomes cracked, with a distinctive polygonal structure depending on the particular food. Prehistoric foods can then be identified on the basis of this structure.

A soup made with meal or flour cooks quite well until it begins to thicken owing to the evaporation of water. As soon as the bottom of the cooking pot is heated to about 100 °C, the food at the bottom is burnt and charred. This burnt part then acts as an insulation, and the rest of the food can continue to cook without the risk of burning or charring. If the food happens to desiccate, its surface shrinks and becomes polygonal – 'characteristically porridge or gruel shaped' –, and its interior becomes blistered and porous. Prehistoric porridge and gruel remains have a similar structure. These overcooked and dried-out food remains that were deemed unfit for human consumption were thrown into garbage pits.

Porridge or gruel and bread remains are examined using macroscopic techniques.[31] The form and surface of these food remains reveal the type of food that the remains represent, whilst the samples removed from the interior offer evidence for the internal structure of the food and the quality of the ingredients (e.g. of the flour) that went into it. The size and the distribution of the pores can offer important clues as to whether leavening was involved.

According to Maurizio and Stokar the earliest vegetable or plant-based human food was the porridge or gruel.[32] Porridges and gruels were prepared from cereal grains that had previously been ground or crushed. In contrast to bread, these did not undergo fermentation. The baking of dough that had undergone lactic fermentation, the 'invention' of leavened bread, can most probably be dated to the close of the Neolithic, for an oven giving a constant temperature of 250 °C was necessary. Porridges and gruels retained their importance, as part of the staple diet, through the ages.

[29] *Währen 1988.*
[30] *Währen 1985a.*
[31] *Währen 1988.*
[32] *Maurizio 1927; Stokar 1951.*

Cereal grains had been used for the preparation of various dishes since very early times. Barley remains have been found in a vessel dated to 7500 BC from Lebanon. The remains of a dough made from finely ground flour that had undergone lactic fermentation were found inside a vessel from the Portalban site (4900 BC).[33]

Währen has examined over one hundred Neolithic pottery sherds from the period between 3830-3080 BC that contained foods remains.[34] Some of these were found to contain several layers that had successively burnt over each other. Some 90 per cent were found to be the remains of a soup made with flour. The reason for the apparently universal appeal of thick soups made with flour, and of cereal porridges and gruels in prehistory is not entirely clear. Aside from local tastes, practical elements probably also played a role. Originally perhaps only dishes that prevented the seepage or leakage of water were prepared in the porous pottery vessels. Soups made with finely ground flour had perhaps seemed most suited to this. Porridges and gruels were only cooked in the same pot following this procedure. The pots do not appear to have been washed too often for they have sometimes been found to contain several superimposed layers of porridge and gruel remains. It has also been demonstrated that these soups and porridges or gruels had been consumed in roughly equal amounts.

Most of the food remains found in Neolithic pots at various lakeside settlement sites (Burgäschisee-Süd, Yverdon, Hornstaad) were identified as soups made with flour and some kind of porridge or gruel.[35] It is the fineness of the grist or flour that formed the basis of the dish in question that is decisive in its identification. In some cases the porridge or gruel consisted of crushed grains; however, these were not necessarily cereal grains for one of the vessels from Yverdon contained crushed flax seeds.[36]

In his examination of the porridge and gruel remains from Neolithic lakeside settlement sites Währen attempted a reconstruction of how they had been prepared.[37] The most ancestral type was made by first moistening the cereal grains, sprinkling them with flour, pressing them into shape and placing the 'loaf' onto a hot oven. The porridge or gruel thus prepared was usually 5 cm long (the Twann site, lower Cortaillod layer, 3830-3730 BC). Alternately, the porridge or gruel was prepared in a similar manner and covered with glowing ashes (the Twann site, upper Cortaillod layer, 3600-3500 BC). Another method of preparation involved the moistening of the coarsely ground cereal and mixing it with flour. The dough was then placed on a pre-heated stone and, occasionally, also covered with glowing ashes (the Twann site, upper Cortaillod layer, 3600-3500 BC).

[33] *Währen 1985b.*
[34] *Währen 1985b.*
[35] *Schlichtherle 1983.*
[36] *Schlichtherle 1983.*
[37] *Währen 1985b.*

Cooked porridge or gruel consisted of grains and seeds rich in carbohydrates. The basis for porridge and gruel were the grains of husked cereals: einkorn wheat (*Triticum monococcum*), emmer wheat (*Triticum dicoccum*), barley (*Hordeum vulgare*), and bread wheat (*Triticum aestivum*). They were made with liquid – water or milk – and were not fermented. Legumes and a variety of vegetables, the occasional apple or other fruits, as well as meat and fish was added to porridges and gruels for flavour and taste.

The next phase in the history of cooking is baking. Some of the food remains from Twann, dating to 3700-3600 BC can best be described as a dry 'gruel-pie' that can perhaps be seen as intermediary phase between porridge or gruel and bread.

This 'gruel-pie' was prepared without leavening, by mixing high protein seeds and grains with water; it became hard and dry in the course of baking. It was covered with glowing ashes for this purpose. When freshly baked, it could be immediately consumed. Dried out it became a kind of porridge or gruel concentrate that could be used at some later point (e.g. crumbled into a soup).

The oldest leavened bread has been reported from the Twann site of the Cortaillod culture, from a context dated to 3560-3530 BC.[38] The same site also yielded 'gruel-pies' and porridge or gruel remains. The bread was baked from wheat flour, water and salt, and was leavened. The sugar content of the bread was quite high and the bread itself was surprisingly light. This small loaf was not actually baked in an oven, but was covered with embers and glowing ashes, traces of which have survived on its surface. The dough was made with lactic fermentation and the microscopic examinations have revealed that its dough was kneaded from finely ground wheat flour.

Aside from porridges, gruels and bread-loaves, tarts and other cakes were also prepared in the Neolithic. A small tart baked on birch bark was found in a late Cortaillod context (3600-3500 BC).[39] This type of small tart was probably eaten with some kind of wild fruit such as raspberries, wild strawberries or blackberries.

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Eszter Bánffy

SOUTH-WEST TRANSDANUBIA AS A MEDIATING AREA. ON THE CULTURAL HISTORY OF THE EARLY AND MIDDLE CHALCOLITHIC

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1. Introduction

In 1955, Ida Kutzián was the first to assign a date to the beginning of the Chalcolithic in the Carpathian Basin. She dated the dawn of Early Chalcolithic to the period which is marked by the emergence in Eastern Hungary of the Tiszapolgár culture, and defined the Middle Chalcolithic as contemporaneous with the early phase of the Bodrogkeresztúr culture.[1] No one has challenged this definition yet. In the meantime, our knowledge of the period has become more accurate with the identification and insertion of the transitory proto-Tiszapolgár culture.[2] It appears that the Tiszapolgár culture did indeed mark the beginning of a new period in the

[1] *Kutzián 1955* 69-87; *Kutzián 1963* 536-538.
[2] *Kalicz – Raczky 1984.*

region, which was qualitatively different from the Late Neolithic era represented by the Tisza-Herpály-Csőszhalom cultures. At the same time, it is a proven fact that the transition from this late neolithic horizon into the new chalcolithic structure was smooth and direct. The Neolithic and Chalcolithic in the region have for long decades been in the focus of the attention of Hungarian archaeologists. Consequently, the ongoing thorough excavations and analyses are not expected to significantly affect or alter the established chronology and genesis of these cultures.

Archaeological research has been far less comprehensive in Transdanubia. While the Late Neolithic sites in the eastern counties have been more or less thoroughly explored by earlier large-scale excavations (Wosinszky, Dombay; and most recently Zalai-Gaál), there are still blank spots in the archaeological map of the area west of Lake Balaton. The chalcolithic sites in eastern Hungary had already been sufficiently and thoroughly explored by the time the first results were published of the archaeological topography of the Keszthely district and of N. Kalicz's research.

There were two specific discoveries that exerted decisive influence on our understanding and knowledge of the latest phase of the Lengyel culture. First was the body of finds that was discovered during the field surveys of Veszprém county, published in Volumes 1 and 2 of the Archaeological Topography of Hungary. Credit for this work goes to N. Kalicz, with whom the name Balaton culture originated, and who also classified the finds at issue into three chronological categories (Balaton I, II and III). Eventually, in an attempt to emphasise the close relationship between the Balaton I culture and the southern Lasinja culture, he adopted the term Balaton-Lasinja culture, and he also related the Balaton II and III phases with the Central European circle characterized by the use of stab and drag decoration (Furchenstich horizon).

Research owes thanks to Nándor Kalicz for identifying, describing and placing into a broader regional context of the Balaton-Lasinja culture. Having analysed its pottery and metal objects, Kalicz identified the roots of the Balaton-Lasinja culture in the South, and associated its emergence with a populace originally residing in the Central Balkans.

The other discovery has to do with the Lengyel culture. In Transdanubia, researchers a long while ago identified several, albeit unevenly distributed sites as belonging to the Early and the so-called Classical Lengyel phases. For example, a settlement dating from the oldest phase was discovered in the neighbourhood of Sé, and another such site was identified in the Hahót microregion, at Zalaszentbalázs-Pusztatető. Several sites are known to have yielded pottery dating from the phase marked by the use of incised and red-yellow painted decorations (e.g. Aszód or Csabdi-Télizöldes). Objects dating from the classical or white-painted phase of the Lengyel culture (in Hungarian terminology: Phase II) are known to have been discovered primarily in the eastern half of Transdanubia, in the so-called "Eastern Lengyel Circle" (e.g. Lengyel,

Zengővárkony, and certain parts of Mórágy). For reasons unknown as yet, the sites in western Transdanubia, notably in Zala and Vas counties, have yielded no objects associable with this phase. The dearth of evidence considerably hinders work on a comprehensive chronological classification. (For the time being, pending the thorough analysis and classification of the finds at issue, we cannot preclude the possibility that of some of the objects discovered at the Lengyel settlement of Balatonmagyaród-Hídvégpuszta in the neighbouring Little Balaton area dating not from the last phase of the Lengyel culture but instead from the classical phase. However, none of these fragments exhibited traces of crusted white painting.)

Objects associated with the earliest phase of the Lengyel culture have also been discovered in the neighbouring countries, primarily in Slovakia, Moravia and Eastern Austria. These finds do not, or only rarely do, exhibit traces of painting. The period at issue has gone down in the literature as the Nitra-Brodzany or MOG IIa Phase. In the wake of a rescue excavation conducted near Veszprém, P. Raczky in 1974 published a body of coeval finds, thereby establishing the presence of this phase in Transdanubia. Simultaneously, he identified comparable sherds in other such assemblages which the above-mentioned Veszprém county MRT (Archaeological Topography of Hungary) volumes classified either in the Lengyel or the Balaton-Lasinja cultures. Raczky concluded his research by stating that the classification of these finds into two different chronological groups was erroneous, as they all belonged to the last, unpainted phase of the Lengyel culture.

The attempts to classify these related objects into two separate cultures on the basis of typological considerations should in fact have aroused suspicion right at the outset, and that in turn could have prompted either P. Raczky or N. Kalicz to look into the relationship between the late phase of the Lengyel culture and the Balaton-Lasinja culture (in 1970, J. Makkay made a rather vague one-sentence reference to the apparent similarities between the two cultures[3]). However, on the strength of the

[3] J. Makkay's sentence reads as follows: "There are a few sherds, especially among those coming from undecorated (unpainted) vessels, which remind us of the wares of the succeeding Early Chalcolithic Balaton group" (*Makkay 1970*, 36/32). For the sake of accuracy, let us note that to the best of our current knowledge the Balaton-Lasinja culture coincided with the Middle Chalcolithic only, as the latest phase of the Lengyel culture was contemporaneous with the Early Chalcolithic Tiszapolgár culture. In his study, Makkay published a slightly Beaker-shaped tubular support from Sárkeresztes-Pékmalomdomb, which most probably dates from the latest phase of the Lengyel culture. At the same time, the markedly Beaker-shaped tubular support discovered at the Székesfehérvár-Szeder utca cemetery site can be considered Middle Chalcolithic. Fejér county, and most probably also the subsequently explored sites in Csepel Island, belong to the area where the assemblages simultaneously exhibit traits of both the southern Lasinja culture and the authentic post-Lengyel Ludanice culture. Makkay identifies several Ludanice sites in the county (e.g., Gárdony, Soponya, Csákvár cave).

available data, the theory of immigration from the south during the Middle Chalcolithic was so very prevalent at the time that this eventuality understandably missed the attention of both researchers.

It was not until recently that this problem came to the fore again, due primarily to the activity of a few local experts of the Neolithic, and also as a result of the excavations conducted in the "microregions" of the Little Balaton and Hahót.

In the period between 1987 and 1993, we conducted excavations at the following Neolithic and Chalcolithic sites of the Hahót microregion:

Hahót-Szartóri I. (1989, Eszter Bánffy)

Disturbed traces of a small settlement dating from the Lengyel culture (the finds could not be dated more accurately).

Settlement dating from the Baden culture.

Hahót-Szartóri II (1989, Eszter Bánffy)

Settlement dating from the Balaton-Lasinja culture.

Zalaszentbalázs-Pusztatető (1988, Eszter Bánffy)

Objects dating from the earliest phase of the Lengyel culture.

Settlement dating from the Balaton-Lasinja culture.

Zalaszentbalázs-Szőlőhegyi mező (1987-89, Mária Bondár; 1992-93, Eszter Bánffy)

2. The beginning of the Chalcolithic in Transdanubia

Recent research has furnished ample evidence that, at the time of the transition from the Neolithic to the Chalcolithic in the Tisza region (and also during other transition periods before that), the developments in Transdanubia were markedly different from those in Eastern Hungary. The manners and practices that characterized the population of the Tiszapolgár culture, whose evolution was uninterrupted (and which was coeval with the early phase of the Lengyel culture), were radically different from those that prevailed during the preceding Neolithic era. While the latter period produced concentrated multi-layer settlements (which often occurred in the form of tells), the former era was characterized by dispersed single-layer settlements, where animal keeping prevailed over farming.

Phases I and II of the Lengyel culture (characterized, respectively, by red-yellow painting and incised decorations, and white painting) coincided with the Late Neolithic, while Phase III (the so-called "unpainted" period) occurred in the wake of the presumed conclusion of the Neolithic era. This continuity applied not only to the culture itself, but also to the manners and conduct of its peoples. In other words, the Lengyel culture was not marked by changes similar to those that occurred in Eastern Hungary. The large settlements extending over hillsides that marked the Lengyel culture had survived unchanged from the previous periods, and there was no perceptible change in the agrarian practices either. At the Zengővárkony site, for example, the finds tell about the continuous

development of the manners and practices during the classical and late phases of the culture.[4]

The Late Lengyel settlements uncovered recently in Zala County to date are markedly similar to the earlier settlements of the same culture.[5] Similarly to the Tiszapolgár culture in Eastern Hungary, the cultural transition into the Chalcolithic did eventually occur in Transdanubia as well. This is known to have taken place during the second phase of the above-mentioned chalcolithic scheme, i.e. in the Middle Chalcolithic, contemporaneously with the Bodrogkeresztúr and the Balaton-Lasinja cultures.

In light of the above, the question may arise whether the established chronologies for the two regions of the Carpathian Basin can be considered accurate. In other words, is there a reason to suspect that the changes in culture and habit of life that are summarily referred to as chalcolithic developments occurred almost simultaneously in these two regions? It appears that neolithic-chalcolithic research has enough information at its disposal to make this "chronological shift" unquestionable. The relationship between the Tisza and the Lengyel cultures was thoroughly examined by N. Kalicz, who also included the imported wares in his research.[6] The contemporaneity of the crusted white painted Lengyel potteries with the comparable objects in the Herpály-Csőszhalom group (i.e., the Herpály culture) is a fact beyond dispute,[7] and the same applies to the unpainted Phase III of the Lengyel culture and the Tiszapolgár culture.[8] Finally, we cannot leave out of consideration the possibility of drawing a parallel between this culture and the late neolithic-early chalcolithic cultures of the region. Accordingly, Slovakian research has established the contemporaneity of the unpainted phase of the Lengyel culture (Phase IV according to Slovakian classification) with the Tiszapolgár culture, and that of Phase V (Ludanice culture) with the Balaton-Lasinja and the Bodrogkeresztúr cultures.[9] Having analysed the smaller but equally important assemblages from Burgenland and Lower Austria, E. Ruttkay came to a similar conclusion.[10]

Given our current knowledge, we have every ground to consider unchallengeable the contemporaneity of the earliest phase of the Lengyel culture and the Early Chalcolithic period in the Tisza region. Consequently, we can establish that the economic, social and other related changes summarily identified as Chalcolithic reached Transdanubia significantly later than the Great Plains region. Let us now take a closer look at the causes of this delay, and also at the nature of these changes.

[4] *Kalicz 1985.*
[5] *H. Simon 1990* 52-53.
[6] *Kalicz 1970.*
[7] *Kalicz 1991; Kalicz – Raczky 1984.*
[8] *Raczky 1974.* .
[9] *Lichardus – Vladar 1964; Lichardus 1974.*
[10] *Ruttkay 1983.*

While it would be rather difficult to identify one specific explanation for this belated development, we can suspect it to be the product of the coincidence of several circumstances. The simplest explanation seems to be a geographical one, i.e., that the farther we go to the north and the west, the more belated the cultural changes were. This approach is over-simplified, and can therefore be discarded right away on the grounds that it is disproved by the parallel development of the Tisza and the Lengyel cultures,[11] and also by the Middle Neolithic period in Transdanubia, where the people of the Transdanubian Linear Pottery are believed by many to have played an instrumental role in spreading the linear pattern cultures of Central Europe.

The relatively underdeveloped state of metallurgy comes closest to what could be considered a proof for the belated development as compared with the eastern half of the Carpathian Basin. There is nothing to prove the existence of the contemporaneous abundance of gold and copper in the Tiszapolgár culture or in the Central Balkans and the Lower Danube regions, during the early phase of the Lengyel culture. This time-lag had only partly been reduced by the Middle Chalcolithic. The gold finds discovered in Transdanubia and Eastern Austria, or the copper objects unearthed recently at Zalavár, are clearly no match for the metal art of the Bodrogkeresztúr culture, which flourished to the east of the former areas. Irrespective of its significance from the point of view of association and dating, the copper disc uncovered at Zalavár-Basasziget, together with its parallels coming from Hlinsko and Hornstaad, is hardly more than an imitation of the gold discs. The pit at Bisamberg which has yielded the earliest casting mould in Eastern Austria already dates from the Balaton-Lasinja culture.[12] We should also keep in mind that no cemeteries have been discovered yet in the Western Lengyel circle, and that the bulk of the metal objects associated with the Tiszapolgár culture came from burials!

Several researchers have raised the theory that a significant climatic change occurred in the Balkans at the dawn of the Middle Chalcolithic (which coincided with the early phase of the Early Chalcolithic in Hungary). This development is believed to have affected primarily the Black Sea coast and the steppe to the north of that region, but it also caused marked changes throughout South-Eastern Europe. Students of the area[13] argue that the warmer and drier weather drove the peoples of the steppe toward the West, and that this slow migration brought about a series of significant changes in the Chalcolithic cultures of the Lower Danube region. Eventually, this migration exerted a domino effect on the cultures of the Carpathian Basin, and it even influenced the peoples of Lower Austria and Bavaria. This climatic change is also believed to have eliminated the dominance of

[11] *Kalicz 1970.*
[12] *Ruttkay 1993* Fig. 2/11.
[13] *Todorova 1989; Greenfield 1988* 579, 586.

farming during the Neolithic, primarily because the dry and hard soil was impossible to cultivate with Stone Age tools. At the same time, however, the change in the weather did not affect the quality of the pasture lands. The eventual switch over to animal keeping sparked off a series of other changes which are commonly identified as chalcolitisation.

Granted that the theory on climatic change holds water, the conclusion comes logical that the inhabitants of Transdanubia, and especially of its hilly, sub-Alpine regions which were rich in precipitation, were not reduced to giving up their predominantly agrarian way of life. Consequently, the Neolithic manners and practices could survive there well into the period of Early Chalcolithic in the Great Plain.

At the same time, while a closer look at the Early Lengyel culture would inevitably reveal its underlying Neolithic nature, there is also no mistaking the signs of a slow and gradual transition into the Chalcolithic.

3. The latest phase of the Lengyel culture (IIIb) in Transdanubia (*Fig. 10*)

According to the first three volumes of the MRT (Archeological Topography of Hungary), the number of sites associated with the Lengyel culture is many times higher than that of the Balaton-Lasinja sites (in Volume 2, for example, there are 32 Lengyel and only 6 Balaton-Lasinja sites). At the same time, N. Kalicz stated in 1991 that one specific difference between the Balaton-Lasinja and the Lengyel periods is that the number of sites associable with the former far exceed that of the latter.[14]

Discounting those on the neolithic and chalcolithic sites near the villages in the Hahót "microregion," we have a few new data at our disposal today. Recently, K. H. Simon of the Göcsej Museum of Zalaegerszeg has undertaken to methodically collect and evaluate the sites dating from the Lengyel culture in Zala county. Her activity has already reduced the "blank spots" in Western Transdanubia's map of the Lengyel culture. Meanwhile, the excavations related to the rehabilitation project of the Little Balaton region have brought to light classical and late-period Lengyel objects at Balatonmagyaród-Hídvégpuszta. The system of oval ditches that surround the extensive settlement has yielded objects from the latest phase of the culture.[15] The Late Lengyel finds from Nagykanizsa-Inkey Chapel will be published by N. Kalicz. Traces of a settlement dating from the same period are also known to have been discovered near Kápolnapuszta in the Little Balaton region.[16] In the catalogue of an exhibition on the Little Balaton region staged in Mannheim in 1989, Zsuzsa

[14] *Kalicz 1991* 356, and Note 8.

[15] *Bánffy, in print;* the assemblages from the oval ditches will be published in full by L. Horváth, leader of the excavations; the finds will be evaluated independently by E. Bánffy.

[16] excavations directed by L. Horváth, finds will be evaluated by J. Barna.

M. Virág listed all the Lengyel, middle chalcolithic, and Balaton-Lasinja sites that have become known during the microregion research projects there.[17] The catalogue identifies 17 sites as dating from the Lengyel culture, and ascribes 16 others to the Balaton-Lasinja culture.

As we have seen, no matter how small our research area is, thorough exploration can be expected to shed light on its densely populated past. In her analysis of the Late Lengyel sherds coming from the environs of Tekenye, K. H. Simon came to the following conclusions (which chime in with Raczky's deductions): on the basis of the presence of pedestalled vessels with a bell shaped support, conical and hemispherical bowls, bowls with thickened rim, pots with two strap handles and funnel-shaped neck, and the characteristic rim decorations can be associated with the above-described Lengyel III phase in Transdanubia, the Nitra-Brodzany group in Slovakia, and the Wolfsbach group in Austria.[18] Elsewhere, drawing her conclusions from minor excavation projects and field surveys conducted in the relatively unexplored Zala county region, K. H. Simon identified 65 sites as dating from the Lengyel culture. Some of these sites can be ascribed to the late phase of the culture, while there are other sites in her list that have yielded both Lengyel and Balaton-Lasinja sherds.[19] On the other side of the border, in nearby Slovenia, we know of a site that has offered Late Lengyel and Lasinja objects simultaneously.[20] Not long after it had become a proven fact that Southwestern Transdanubia is replete with sites dating from the Lengyel culture, including its latest phase, M. Bondár started excavations in 1988 at Zalaszentbalázs-Szőlőhegyi mező. Preliminary field surveys at the site indicated there the presence of a settlement dating from the unpainted phase of the Lengyel culture. The excavations continued into the early nineties, when the author of the present paper took over from Bondár in 1992-93. In our opinion (see below the excavation reports by M. Bondár and E. Bánffy) the above-mentioned objects dating from Phase III of the Lengyel culture predate those which came to light at the Zalaszentbalázs-Szőlőhegyi mező site.

In our opinion, the latest phase of the Lengyel culture can be summarized only in the light of its precedents, i.e. the early and the classical phases.

In Eastern Transdanubia, the early period which was marked by red-yellow painted and incised decorations demonstrably antedated the white-painted phase (Phase II). Similarly, the area has yielded objects dating from the post-classical phase (e.g. at Zengővárkony). In the western parts of Transdanubia, and in the area west of Lake Balaton in particular, the

[17] *M. Virág 1989.*

[18] *H. Simon 1987* 12-14.

[19] (e.g. sites 29/a and 29/b, *H. Simon 1990* 52-53).

[20] the latter finds most probably date from the classical, and not the early phase of the Lasinja culture – *Šavel 1992.*

"white painted" phase is conspicuously missing.[21]

The Hahót microregion, which can no more be considered an under-explored area, has yielded sites dating from the earliest phase of the Lengyel culture (Zalaszentbalázs-Pusztatető, and probably also Hahót-Szartóri I), as well as numerous finds representing the late, unpainted phase of the culture — especially if we include here the neighbouring Little Balaton area or the environs of Zalaegerszeg.

Accordingly, we have to establish that for some reason these sites have offered no traces of settlements dating from Phase II of the Lengyel culture. This despite the fact that there is nothing to support the assumption that the region was uninhabited between the earliest and latest phases of the same culture. After all, the latest phase of the culture was a direct, organic continuation of the white-painted classical phase. It is not unlikely that there are stray assemblages dating from the phase at issue in the explored area, and the only reason we cannot identify them is because the crusted white paint got worn off the surface of the sherds under the shallow earth cover. However, since this explanation fails to carry conviction, it falls on future research to settle this problem (along with some other unresolved questions of the Late Neolithic in Western Transdanubia, like e.g. the absence of burials).

P. Raczky was the first to have summarized the features of the latest phase of the Lengyel culture in Transdanubia (1974). In his analysis of the finds coming from the settlement and burials at the Veszprém-Felszabadulás út site, he characterized the objects dating from the latest phase of the Lengyel culture as follows: yellowish-brown, reddish pottery; extremely coarse finish; sandy, limy or gritty texture. Sherds exhibit no traces of paint.[22]

And yet, in terms of their form, these finds are clearly associable with the Lengyel culture. In his description of the bowls, Raczky pointed out that the slightly inverted rim was characteristic of the late phase of the culture. In the same context, he also published a bowl with thickened rim.[23] Raczky considered it distinctively chalcolithic features that the tubular support of certain vessels was slightly funnel-shaped, and that none of the bowls were profiled.[24] He held the bellied pots with funnel-shaped neck, and also the pots with slightly everted, furrowed rim and wart or

[21] *H. Simon 1990.*

[22] *Raczky 1974* 188.

[23] *ibid.* Pl. 11, Fig. 7.

[24] In her study on late-period Lengyel finds, K. H. Simon expresses a different opinion. In her opinion, the upper parts of the bowls with tubular support were patterned on the bowl types without such support, and therefore the bowls themselves could be profiled in the later periods just as they could be unprofiled in the early periods. By way of example, she cites a grave-furniture from Austria, which consists of a Beaker-shaped tubular support and a profiled bowl (*H. Simon 1987* 12), and she also — mistakenly — associates this find with Phase II of the Sopot culture. Researchers believe that this phase predated Phase III of the Lengyel culture, and was contemporaneous with the latter culture's classical Phase II (*Kalicz 1991* 381).

strap handles to be completely new developments, and associated these objects with the Nitra-Brodzany group, the Austrian Wolfsbach group, and the Alpine facies finds of the Lengyel culture. He also noted the survival of these shapes into the Balaton-Lasinja culture. He also ranges the finds (coming from topographic field research) of Veszprém-Nyúlkertek, Veszprémpinkóc and some small assemblages here.[25] Contrasting the latest phase of the culture with its classical phase, Raczky pointed out a territorial expansion, which he associated with the Early Chalcolithic developments in the Great Plains region.[26]

In several respects, the Late Lengyel settlement discovered at the Zalaszentbalázs-Szőlőhegyi mező site has broadened, and to an extent also modified, our understanding of the era at issue.

3.1. Settlements

The absence of information on the local precedents of the classical phase of the culture prevents us from identifying the effects of the transition on the settlements. In Southwestern Transdanubia, the Late Lengyel settlements were all situated on hillsides in the proximity of rivers, albeit never directly on river banks. Characteristic of the density of these settlements is the fact that K. H. Simon identified 65 Lengyel sites in her register.[27] In our research area, the distance between the sites varied from a few hundred metres to 2-3 kilometres. At Szőlőhegyi mező, the settlement nuclei, each consisting of a few houses only, were most probably only 100-200 metres apart.

There are indications that the buildings themselves differed according to regions. The apsidal long-house at Veszprém-Felszabadulás út has no known parallels at Late Lengyel sites in Southwestern Transdanubia. At the same time, the 2.5-4 m x 5-7 m building with a slightly irregular rectangular plan discovered at the nearby Tekenye-Öcse site is associable with the Szőlőhegyi mező buildings. At both sites, the foundations of the buildings consisted of several huge irregular-shaped refuse pits. Other associations for this settlement type include the Balatonmagyaród-Hídvégpuszta site in the nearby Little Balaton region (where several comparable buildings were discovered during earlier excavations), or the Late Lengyel site at Kápolnapuszta in the same region which was unearthed most recently by L. Horváth. The above-mentioned sites all included round or amorphous refuse pits, which were often interlinked. In the neighbouring Vas county, a building with strikingly similar ground-plan was uncovered by M. Károlyi at the Late Lengyel site of Jánosháza-Fürdődomb.[28] The foundation pit of building No. 1 at Szőlőhegyi mező

[25] *MRT 2 1969* Pl. 3; *MRT 3 1970* 25-251, Fig. 84.
[26] *Raczky 1974* 209.
[27] *H. Simon 1990.*
[28] *Károlyi 1992* 101, Pl. 3.

included three round stake-holes, and there was a fourth one as well in the middle of the narrow end of the building. Furthermore, all these buildings have yielded countless mud-flakes with twig imprints.[29] All three buildings that I explored at Szőlőhegyi mező have yielded exceptionally large quantities of 4-5 cm thick red-burnt mud-flakes, some of which were 3-4 dm^2 in size. One side of these flakes exhibited perceptible traces of twig imprints, while the other side was always smoothed. These finds lead us to conclude that the settlements at issue consisted of semi-sunken, pile-work buildings with wattle-and-daub walls which most probably housed smaller families. This conclusion appears to fit into our understanding of life during the Neolithic.

The assumption that the typically Neolithic spread-out settlement at Szőlőhegy mező consisted of separate groups of buildings which were not necessarily occupied simultaneously appears to support the theory of slow chalcolithic transition. This assumption is based on the observation that the burnt-down buildings were left completely abandoned, and exhibited no trace of reconstruction or other subsequent field-work. The stratification of the building sites and the refuse pits was equally indistinctive, with diverse pottery types found lying next to each other in the rubble and the filling of the pits. On the basis of these facts, we can establish that the settlement at issue was a single-layer one. Furthermore, these facts may also lead us to conclude that the decline of the large neolithic communities and their eventual transformation into smaller and impermanent chalcolithic settlements took place on the very pattern described above.

3.2. Pottery

The following summary of the Late Lengyel wares classifies the characteristic types into two main groups. The first group includes those types which had survived from the preceding phases of the Lengyel culture, while the second group is made up of "new" types, i.e., ones that appeared in the Late Lengyel phase only. Some of the pottery types in the latter group can be considered typical of the chalcolithic period

3.2.1. Traditional Lengyel ware (*Fig. 8*)

a/ Bowls. Mostly profiled, with everted rim, present throughout the whole Lengyel culture.

b/ Pots. The two distinct subtypes are: 1. amphora-shaped pots with everted rim and occasionally with knob on the belly; 2. so-called butt-pots, whose slightly slanting, asymmetric archetypes already existed in the Late Neolithic. These butt-pots usually had several superimposed horizontal, tapering spouted handles attached to them. The appearance of these handles next to each other was a late period development.

c/ Vase-shaped vessels. Depending on the height, quality and diameter of the mouth, the pottery in this category are classified in other

[29] *Károlyi 1992* 101, Pl. 3.

publications as bowls with S-profile, pots or mugs. A characteristic Lengyel ware which was in use throughout the culture.

d/ Small-size vessels. The vessels in this category are not higher than 10 cm. Their wall is rather thin, and their execution is fine. They are either biconical or S-profiled. Some biconical ones, and especially the small cups among them, are characterized by extremely sharp joints: the lower part is bellied while the upper part is concave (let us note here that the middle chalcolithic "Schultergefäß" is the very reverse of this, in that there the shoulder is concave!). These vessels were quite often painted in the early Lengyel phases. Perhaps this is why most of the pottery of this type uncovered at Szőlőhegyi mező exhibit traces of monochrome red paint.

e/ Spoons. The hemispherical clay spoons with shaft-hole were present throughout the culture. A miniature spoon is known from Szőlőhegyi mező.

f/ Strainer. Rare, but present throughout the culture.

g/ Idols. Present in the cultic assemblages of both the Western and the Eastern Lengyel circles. Rare in the late-period assemblages.

h/ Altarpieces. These wares, often identified incorrectly as lamps, were typical of the early (albeit not the earliest) phase of the culture. It is up to future research to explain their marked presence in late-period assemblages in Southwestern Transdanubia.[30]

i/ Animal sculptures. See h/ above.

3.2.2. New forms (Fig. 9)

The new, foreign wares in the Late Lengyel assemblage that are believed to be of southern origin can be divided into two groups: 1/ those already present during the Veszprém and Tekenye (IIIa) phases; and 2/ those that appeared in the latest, transitory (IIIb) phase only.

The first group includes the wares with slightly bell-shaped pedestal, the coarse egg-shaped pots with thick wall, and the storage vessels with cylindrical neck and impressed rim. The biconical bowls and mugs that belong here have no sharp joints and are slightly concave.

Besides the vessels mentioned above, Phase IIIb was characterized by the use of large-size bowls with spout, conical bowls with thickened rim, and biconical bowls with sharp joint below the rim. The latter bowls are markedly different from the biconical bowls that appeared in Austria during the preceding phase. While the Austrian bowls are always concave below the rim, the Late Lengyel bowls have quasi-convex body. Some of the conical bowls have peculiarly thickened vertical protrusions or triangular warts on their rim. The tubular supports are either slightly bell-shaped or thick-set conical. The latter often have two pierced round holes in them, which makes them similar to the early chalcolithic pedestals prevalent in Eastern Hungary. The smaller rim fragments with handle most probably come from jugs, but we are not yet able to determine

[30] *Bánffy 1996.*

whether these jugs had one or two handles. This group also includes black polished graphitic wares, which were demonstrably local products.

3.3. Way of life

Judging from the above-named phenomena and finds, it appears safe to conclude that the manners that prevailed during the Late Lengyel culture were similar to those of the neolithic people. The data at my disposal indicate that the Late Lengyel stone implements were also neolithic in nature (cf. the study by K. T. Bíró and E. Bácskay in the present volume). The few animal bones that could be subjected to analysis did not provide proof for a chalcolithic-type animal keeping (cf. L. Bartosiewicz's study in the present volume). It is also a fact beyond dispute that agriculture played a key role in the life of the Lengyel people (for the analysis of the plant remnants, cf. F. Gyulai's study in the present volume).

3.4. Burials

Reference must be made here also to a group of finds which is interesting because it *does not exist*. Several authors have noted the conspicuous absence of Late Neolithic and Early Chalcolithic burial sites Transdanubia, and in the Lengyel areas in Austria, and the same conclusion was drawn from the excavations conducted in the Little Balaton and Hahót microregion in Zala county. The researchers meticulously combed through the surroundings of the sites in the latter area, and at Balatonmagyaród-Hídvégpuszta they even surveyed a several kilometer-long stretch of land which was broken by dam builders there. The archaeologists went over all those mounds which had once stood out from the marsh, i.e. which could at least theoretically be expected to contain archeological phenomena. The environs of this extensive entrenched settlement, which consisted of several houses and a huge pit, have yielded no trace of burials.

On this basis, we saw no reason to approach the excavations at Zalaszentbalázs and Hahót with high expectations, notwithstanding our incomprehension of the fact that this intensely cultivated and deep ploughed agricultural area has offered no burials at all. The Late Lengyel burials that have been brought to light to date all represent unique, peculiar burial rites: the mutilated corpses were often found lying in sacrificial pits (bothroi), and were accompanied by unusual objects (e.g. tusk or antler).

An example for this peculiar burial rite is the skeleton of a child, discovered in the foundation trench of a building at the Veszprém-Felszabadulás út site. This outstanding find was described by the excavator as a construction offering.[31] Comparable finds are known to have been discovered at contemporaneous Lengyel and Moravian painted pottery

[31] *Raczky 1974* 187-189.

sites in Austria, Slovakia and Moravia.[32] These burials had precedents in the prehistoric period of the Carpathian Basin, and their survival into the Chalcolithic furnishes proof for the continuity of the cultic practices.[33] At the same time, however, the absence of burials dating from the western Lengyel circle leaves researchers in the dark about the burial rites peculiar to that era. Rather than devising voluntary interpretations for this phenomenon, we should leave this problem to be resolved by future research.

3.5. Finds indicative of cultic practices

Many of the finds coming from the Zalaszentbalázs-Szőlőhegyi mező site are described by researchers as ritual objects, and the same applies to the assemblages discovered at the other Little Balaton sites mentioned above. This phenomenon is interesting for two specific reasons. Firstly because researchers of the Lengyel culture appear to share the understanding that both the so-called "oil-lamps" and the animal-shaped altarpieces and other cultic objects are characteristic only of the early phase of the Lengyel culture.[34] Secondly because these finds prevailed only at the Southwestern Transdanubian sites, and not in the whole area of the Late Lengyel culture. While no comparable objects came to light at the site of Veszprém-Felszabadulás út[35] or in the environs of Szombathely[36] and Tekenye,[37] the four buildings and the associated pits at the Szőlőhegyi mező site alone have yielded eight altarpieces and fragments of those, an altar with large figural decoration (four animal heads?), three idol fragments, a lid handle depicting a double-headed ram, a fragment from a miniature piece of furniture, and several other smaller objects that can be interpreted as cultic. Comparable objects have been known to have been discovered in relatively large numbers at the nearby Hídvégpuszta site, and their frequency at Kápolnapuszta was similar to that at Szőlőhegyi mező.[38] While we have no explanation yet for this unusual concentration of kindred objects, we can definitely rule out the "chance factor" here.

Meanwhile, we can expect the other, as yet unexplored, sites of the Late Lengyel and Ludanice cultures to produce similarly large assemblages of cultic objects. For the time being, Slovak researchers remain firm in their belief that figural sculptures had disappeared toward the later phase

[32] Such unusual burials are known from Branc (Berencsváralja), dating from the Nitra-Brodzany and Ludanice phases: (*Vladar 1969* 497ff); and from the Mlynárce (Molnos), Telnice, Hrabetice, Drbanice, Brno-Královo Polje sites associable with the Moravian painted pottery circle (*Novotny 1962* 161-163, 221-222; *Zápotocká 1969* 571-574). Comparable finds are known from the Austrian sites of Poigen, Bisamberg-Parkring, Eggendorf-Zogelsdorferstr. and Bernhardstal (*Berg 1956* 70-76; *Ruttkay 1983).*

[33] *Bánffy 1985 1986.*

[34] especially of Phase IIa in the Slovak classification, which is also known as Santovka phase — *Pavúk 1976 1981.*

[35] *Raczky 1974.*

[36] *Károlyi 1992.*

[37] *H. Simon 1987.*

[38] courtesy of J. Barna.

of the Lengyel culture.[39] The Late Lengyel circular trench, which was discovered in the neighbourhood of the Szőlőhegyi mező site but which contained no archeologically appreciable features.[40] casts doubts on the arguments of those researchers who believe that the practice of digging circular trenches had been abandoned throughout the area of the culture prior to the beginning of the Late Lengyel phase.[41] A solution to this problem may result from the analysis of the unparalleled clay horn which came to light in a bothros associated with a depot of vessels with tubular support in the Kisalföld area.[42] I am firm in my belief that this assemblage predated the Ludanice-Balaton-Lasinja culture, and as such it represents the cultic art of the Early Chalcolithic period in Transdanubia.

4. End of the latest phase of the Lengyel culture in south-western Transdanubia, and its associations with the Balaton-Lasinja culture (*Fig. 11*)

As we have already discussed above, N. Kalicz was right to conclude from the data at his disposal that at the start of the Middle Chalcolithic in Transdanubia the people of the Balaton-Lasinja culture were fundamentally different in terms of the roots of their culture and traditions from the other resident peoples of the region. Kalicz based his reasoning on the survival of the southern forms and also on the difference in the habitats of the Late Lengyel and the Balaton-Lasinja peoples. In a most detailed summary of his research, Kalicz concluded that there was a hiatus between the two cultures.[43] Aware of the Lengyel elements that had survived into the Balaton-Lasinja culture, Kalicz identified the influence of the Vinča-Pločnik and Salcuta-Krivodol-Bubanj Hum la peoples and cultures of the northern and central Balkans as far more determinant.

In 1991, Kalicz made his first reference to the extremely late Phase IIIb within Phase III of the Lengyel culture. He identified the biconical vessels (sometimes with pouring spout) as new developments.[44] At the same time, he considered it important to emphasize that the majority of the vessel types and ornaments of the Balaton-Lasinja culture were completely unprecedented in the Carpathian Basin. Specifically, he noted the absence in the pre-Balaton-Lasinja culture period of fluted ornaments and decorations with incised parallel lines, and also of the black polished, metallic and graphitic wares and the jugs with one or two handles. According to Kalicz, these new developments, along with the changes in the number and location of habitats, should be considered indicative of the influx of new peoples in the region.

[39] *Lichardus 1985* 33.
[40] *Bánffy 1993; Bánffy, in print.*
[41] *Trnka 1991* 318-319.
[42] courtesy of A. Figler — let me thank him hereby for showing the clay horn to me.
[43] *Kalicz 1991* 355.
[44] *ibid* 355.

However, in the light of the findings of the recent excavations (cf. the reports on the Zalaszentbalázs-Szőlőhegyi mező site) we have to modify our understanding of the way the transition from the Early to the Middle Chalcolithic actually took place.

As we have seen, many of the new and foreign elements which were referred to by Kalicz did indeed crop up during the last phase of the Lengyel culture at several sites, including Szőlőhegyi mező, in the environs of Szombathely, and at the as yet unpublished sites of the Little Balaton region.

The refraction under the rim of the above-mentioned biconical vessels, and the round knob on this refraction, should be considered archetypes of the "Schultergefäß," which was a leading pottery form in the Middle Chalcolithic. During the Balaton-Lasinja culture the shoulder of this pottery type became bulging (and usually carried a channelled decoration), and the round knob became oblong and hanging. Of the above-named sites, those at Szőlőhegyi mező, Kisunyom and Jánosháza have yielded large quantities of spouted vessels. The black polished wares, and the graphite granules found in closely associated assemblages, should be dated to the transition period between the two cultures. The slightly bell-shaped pedestal support is widely regarded as the archetype of the markedly beaker-shaped support typical of the Middle Chalcolithic. The pots with slightly inverted rim, as well as their lower variant with two small handles on the shoulder, have parallels among the Late Lengyel types. These wares represent the most common forms of the Balaton-Lasinja culture. The absence of sherds that could be pieced together prevents us from classifying the jugs with complete certainty.

On the other hand, if we look at the relationship between the two cultures from another perspective, we find that there are certain phenomena which characterize the Lengyel culture but which at the same time have associations in the Balaton-Lasinja culture as well.

This similarity is by far the most apparent in the texture of the wares. About half of the wares dating from the Early Lengyel phase were made of coarse yellowish-brown micaceous sandy clay, i.e., the practice of levigation with crushed tiles was supplemented with sand. While the former technique was not adopted by the peoples of the Balaton-Lasinja culture, the wares made of coarse yellowish-brown micaceous sandy clay remained very much in use during that period.

Topping the list of those pottery types which were typical of the Lengyel culture and which survived into the Middle Chalcolithic are the butt vessels with horizontal handles and the clay spoons with shaft-hole. The most recently discovered Lengyel assemblages have also yielded several small cups and bowls with thin wall, which were also typical of the Balaton-Lasinja assemblages.

It is worthy of note here that the "Lasinja" and other southern forms were markedly common in the Balaton-Lasinja assemblages. The typological charts at our disposal suggest that the black polished jugs

with one handle and with fluting on their belly were common throughout the culture. However, these jugs were extremely rare at the "typical" Balaton sites, which consisted of a few refuse pits only. Our microregion, which includes the Balatonmagyaród site, has yielded three such sherds only, with two of them coming from the same vessel. Leaving the fine potteries out of consideration, most of the sherds discovered at these sites came from biconical mugs and egg-shaped pots with blunted belly edge. Accordingly, we can establish that the majority of the wares at issue were present and used in both cultures, i.e. only a few of them were exclusive to one culture only.

The most recent discoveries in Zala county lead me to conclude that the quantitative pre-eminence of the sites dating from the Balaton-Lasinja culture over those belonging to the Late Lengyel culture can be satisfactorily explained by the difference between the relatively static neolithic practices and the more eventful life of the stock-breeding peoples of the Chalcolithic. The fact that the middle chalcolithic settlements were smaller and provisional in nature appears to support this argument, especially if we contrast them with the larger settlements of the Late Lengyel period. In the Great Plains, this difference was far more marked between the few but concentrated Late Tisza-Herpály-type tell-settlements and the numerous small settlements of the Tiszapolgár culture. Accordingly, the increase in the number of settlements should not be considered indicative of the arrival of new settlers in the region.

From the point of view of cultural continuity, it may also be important to note that the sites dating from the two cultures at issue were quite often situated close to each other on minor elevations or hillsides, near but not on riverbanks. This conclusion is supported by the topographical researches conducted in the region of Zalaegerszeg; and a similar picture emerges from the publications of the smaller sites near Szombathely and my own researches in the Little Balaton and Hahót microregions. According to R. Müller and K. H. Simon, certain sites in Zala county offered assemblages that contained finds dating from both cultures.[45] Similarly, I do not consider it a decisive argument in favour of the theory of immigration that settlements dating from the Balaton-Lasinja culture are known to have been discovered in such high-level areas of the eastern Alps which were practically uninhabited after the Late Paleolithic.[46] Granting that the existence of several smaller settlements can be considered indicative of the presence in the given area of nomadic stock-breeders, it seems reasonable to conclude that these migrant people could easily reach new and unexplored areas in their permanent quest for grazing lands, and could establish temporary settlements there.

[45] *Müller 1971* 33-35, 44-45; *H. Simon 1990* 54.
[46] *Kalicz 1982 1991, 1992.*

All things considered, I am of the opinion that the most recent findings in Southwestern Transdanubia bring us closer to understanding the close associations between the Late Lengyel culture and the Balaton-Lasinja culture of the Middle Chalcolithic. In other words, we can safely establish that the period of transition from the Early to the Middle Chalcolithic was marked by ethnic continuity and a slow but uninterrupted change of structure brought about by southern influences and other (climatic) conditions, and not by immigration and cultural discontinuity.

5. Problems of the transition from the Early to the Middle Chalcolithic in the neighbouring regions

In order to clarify the geographical, cultural and chronological associations of the Early Chalcolithic in Southwestern Transdanubia, I feel it appropriate to briefly summarize here the state of research on this issue in the territories bordering on our target area.

5.1. Northern Transdanubia

The conclusions outlined below are still subject to modification by future research. For example, the archeological excavations conducted along Route M1 have brought to light settlements dating from the latest phase of the Lengyel culture in such areas which had earlier been considered unsettled by the Lengyel peoples.[47] Most recently, the same excavations near Lébény have produced remnants of settlements dating from the Late Lengyel and the Balaton-Lasinja cultures.[48] The eventual publication of the findings of these excavations is expected to shed light on several internal chronological aspects of the period, including those relevant to south-western Transdanubia.

5.2. South Eastern Transdanubia

The latest summary of the state of research into the Lengyel culture in south-eastern Transdanubia was compiled by I. Zalai-Gaál.[49] According to this report, most of the Lengyel sites in this area date from the culture's early phase. The presence of the white-painted Phase II is now supported by finds discovered at Lánycsók and in burial group B1 at Mórágy. Meanwhile, no objects dating from the latest phase of the culture have been discovered yet in this area, and therefore we have no finds at our disposal indicative of the transition from Phase II to Phase III of the Lengyel

[47] e.g. on the outskirts of Mosonszentmiklós — courtesy of A. Figler.
[48] *T. Németh 1995.*
[49] *Zalai-Gaál* 1992, 82-83.

culture, and from Lengyel Phase III to the Balaton-Lasinja culture.[50] Our knowledge of the latter culture in the area is also limited.[51]

According to E. Ruttkay's most recent summary, the latest phase of the Lengyel culture is known to have covered a vast area that included Silezia, Bohemia, Moravia, Little Poland, South-western Slovakia, Transdanubia, the foot of the Alps, Styria, Carinthia, Slovenia and Croatia.[52] In her opinion, the core of the culture was situated in the centre of this "oikumene." To her reasoning I would add that this "core area," which definitely included the south-eastern part of Transdanubia as well, most probably played a key role in mediating the inventions of the Chalcolithic peoples of the central Balkans, the Lower Danube region and eastern Hungary to the north-west and to Central Europe.

5.3. South-western Slovakia

Objects dating from the latest phase of the Lengyel culture are known to have been discovered at several sites, such as Nitriansky Hradok-Zameček, Pečenady and Berencsváralja (Branc).[53] The majority of these finds represent more than one phase of the culture, and so they can be used for clarifying the culture's internal chronology as well.[54] The phase also known as Nitra-Brodzany (equivalent to Lengyel IV in the Slovak nomenclature) was undoubtedly the continuation of the classical Lengyel culture. An example for this is the site of Komjatice-Tomašove,[55] where the habitats and the material and type of the wares were directly associable with the Late Lengyel finds discovered in Zala county. At the same time, the occurrence of copper objects and the frequency of the burial sites in Slovakia are remarkable differences[56] that can best be explained by presuming that the differences between the eastern and the western Lengyel circles, which had already been marked in the classical phase, survived into the latest phase as well.

Another fact of decisive importance is that the typological features which were identified at the Szőlőhegyi mező site and in its environs, and which foreshadowed the Balaton-Lasinja culture, were completely missing

[50] *Kalicz 1969-70.*

[51] Although I. Zalai-Gaál makes no reference to this, it is worth mentioning here that some of the sites in the area at issue, which were identified in N. Kalicz's studies as belonging to the "Balaton group" (*Kalicz 1969-70*) – e.g. Pécsbagota or Mözs – should be dated not to the Early Chalcolithic or the Balaton-Lasinja culture, but instead to the Late Chalcolithic, i.e. to the last phase of the Furchenstich culture which was also referred to earlier as Balaton III culture. In fact, the assemblage coming from Mözs should be dated to the transitional proto-Boleráz phase (*Kalicz 1973; idem 1991*).

[52] *Ruttkay 1993* 162-163.

[53] *Pavúk 1965* 13; *Lichardus – Vladar 1964*, 107; *Vladar – Lichardus 1968*, 324; *Vladar 1969.*

[54] It is worthy of note that it was on the basis of the Slovakian Late Lengyel unpainted wares that Hungarian researchers had postulated the existence of similar finds in Transdanubia way before the discovery and identification of the Veszprém-Felszabadulás út site (*Raczky 1974*).

[55] *Točik 1978.*

[56] *Lichardus 1986* 32-33.

from the Lengyel IV pottery assemblages discovered in Slovakia. In addition, the Slovakian Ludanice culture, which was contemporaneous with the Balaton-Lasinja culture, was likewise free from southern influences, i.e. as the Slovak term "Lengyel V" suggests, the Lengyel traditions had survived in Slovakia until the second half of the Middle Chalcolithic, i.e. until the occurrence of the Bajč-Furchenstich-type objects.

The assemblages associated with the peoples who lived on the periphery of the Lengyel culture -- i.e. in remote areas such as Little Poland or in the Elbe-Saale region – were more markedly mixed with objects that could be traced back to the Stichband and Rössen circles, or elsewhere to the Trichterbecher culture. The new groups that emerged as a result of this amalgamation were markedly different from our south-western Transdanubian population, and therefore their evaluation would fall outside the scope of the present paper.[57]

5.4. Eastern Austria

Most recently, researchers in Austria have focused their attention on the Austrian Furchenstich horizon and its eastern and south-eastern associations, i.e., on the end of the Middle Chalcolithic.[58] At the same time, research into the decline of the Lengyel culture is by and large limited to the evaluation of the Moravian assemblages (cf. MOG IIb horizon). Several researchers challenge the use of the name "epi-Lengyel" for identifying finds associable with the Early Lasinja culture.[59] These objections are based not so much on chronological considerations, but instead on the denial of the theory which originates the Bisamberg-Oberpullendorf group with the Lengyel culture. We have not yet been able to establish the point of transition from the Late Lengyel phase to its immediate successor, which occurred simultaneously with the Eastern Austrian Balaton-Lasinja horizon. In 1976, E. Ruttkay inferred the spread of Balaton-Lasinja-type objects already during the Transdanubian Late (unpainted) Lengyel phase. However, the most recent findings in Transdanubia appear to counter Ruttkay's stance. At the same time, there are two specific reasons why it remains difficult to analyze the relationship between the two cultures solely on the basis of the Eastern Austrian finds. First, because these otherwise important assemblages contain only a few appreciable objects, and second, because the overwhelming majority of these objects (e.g. Oberpullendorf, Würnitz, Schleinbach, Bisamberg) are in fact associable with the Balaton-Lasinja culture. Ossarn is perhaps the only site that has yielded objects datable to the very late phase of the Lengyel culture.[60] The problems outlined above prevent us from assigning

[57] *Lichardus 1974; 1976.*
[58] *Ruttkay 1985; 1988; 1993.*
[59] N. Kalicz, as well as e.g. *Budja 1983* 83.
[60] I could have a glance at the finds by the courtesy of E. Ruttkay.

more accurate dates to the objects coming from the sites in Lower Austria and Burgenland.[61]

In a broader context, we can safely state that the objects discovered in Austria of those groups of people that lived during the transition period from the Late Lengyel culture to the Early Balaton-Lasinja culture can be fit into the contemporaneous assemblages coming from Western Transdanubia, South-Western Slovakia and Moravia. At the same time, the finds at issue can be considered the link between Transdanubia and the territories to the north-west of it. Accordingly, they can be considered products of the centre of the so-called Western Lengyel-Moravian painted circle, which was a kind of cultural umbrella that comprised a series of loosely connected local groups. This also sheds light on those considerations which prompt us to identify much closer associations for the Western Transdanubian group in Wolfsbach, Bisamberg-Oberpulledorf, Würnitz, Schleinbach, Nitra-Brodzany and Szob-Tapolcsány than in Eastern Transdanubia, the Aszód region, or Southern Slovakia.

The Lasinja-age assemblage coming from Raababerg/Graz I consider a further proof for the close associations between Eastern Austria and Western Transdanubia.[62] Several elements of this assemblage were also identified at the Szőlőhegyi mező site.

5.5. Moravia

My earlier conclusions about the inherences of the "Western Lengyel circle" in Eastern Austria apply to Moravia as well. Even the conditions of research are comparable, in that the Moravian researchers have more facts at their disposal about the Middle Chalcolithic Bajč-Retz horizon than about the preceding Moravian painted and Jordanow cultures.

One of the first studies on the late phase of the Moravian painted culture appeared early this century.[63] However, P. Košturik is of the opinion that the finds published by Palliardi are representative of the south-western part of Moravia only.[64]

Košturik assigns the bulk of the finds discovered at the Unicov/ Olomouc site to Phase IIb of the Moravian painted culture, i.e. to the Early Chalcolithic. The same date can be applied to the assemblage coming from Uherski Brod in Eastern Moravia.[65] And yet, in spite of the existence of the site referred to above, Pavelčik and Janak go along with Košturik when they say that in Moravia the presence of Phase IIb of the MBK (i.e. the "epi-Lengyel" phase) is demonstrable in a small area only.[66] The remaining parts of Moravia have yielded only a few objects indicative of

[61] *Ruttkay 1976; Ruttkay 1979* 13; *Ruttkay 1993* 162-163.
[62] *Obereder 1989.*
[63] *Palliardi 1914.*
[64] *Košturik 1972* 40-42.
[65] *Pavelčik 1974.*
[66] *Pavelčik and Janak 1989*, 67.

the influence there of the late phase of the Lengyel-Moravian painted culture.

We have several objects dating from the earliest phase of the Jordanow culture at our disposal that prove this culture's south-eastern associations. Discussing the site at Dolni Vestonice, I. Rakovsky says that its associations are more marked with the Balaton-Lasinja culture in Lower Austria and Western Transdanubia than with the Ludanice culture in neighbouring Western Slovakia.[67] This opinion appears to support the view voiced by Kalicz in 1982, and again by Ruttkay in 1985, that the Bavarian, the Bisamberg-Oberpullendorf, and the Jordanow groups were parts of the same cultural complex in Moravia, in which the influence of the Balaton-Lasinja culture was predominant.

An important but as yet unrecognized landmark on this "western route" was the Western Transdanubian group of the latest phase of the Lengyel culture, which mediated the influences of the Central Balkans through Eastern Austria, and which also controlled the development of the post-Rössen and Trichterbecher groups.

5.6. Croatia

The areas to the south and south-west are perhaps the most important for the student of the Early Chalcolithic in South-Western Transdanubia, since it was from there where the new Chalcolithic influences originated.

R. Pittioni was the first to identify the Lasinja culture as an independent development,[68] and the culture's first summary was published by St. Dimitrijević.[69] In 1979, the latter researcher published a comprehensive summary of all the known Lasinja sites. On the basis of that work, Težak-Gregl[70] compiled a detailed chronology of the culture.[71]

While the southernmost areas of the Lasinja culture have yet to be identified,[72] research has been far more thorough in the neighborhood of Transdanubia, and therefore we have less questions to deal with there.

The clarification of the eastern affiliations of the Sopot III and Lasinja cultures is rendered more difficult by the conflicting views that have been published to date regarding the end of the Vinča culture in the Central Balkans. Part of the stratum that was discovered by B. Bruckner at Gomolava, i.e. the horizon identified as "eneolithic humus," yielded biconical wares, pots with strap handle, jugs, and vessels with pouring lip. Accordingly, this horizon can be dated to the transition period from the Lengyel to the Balaton-Lasinja cultures. Bruckner himself identified

[67] *Rakovsky 1989* 61-63.
[68] *Pittioni 1954.*
[69] *Dimitrijević 1961.*
[70] *Težak-Gregl 1980,* 33-36.
[71] We certainly cannot go along with the chronological chart published by Z. Marković in 1976, which identifies the Late Baden culture as contemporaneous with the Lasinja-Bodrogkeresztúr horizon (*Marković 1976* 42-67).
[72] *Benać 1979.*

two separate phases: Gomolava IIa, which he identified with Vinča D2, and more generally with the later phase of the Lengyel culture and with the Nitra-Brodzany phase in Slovakia; and Gomolava IIb, which he said marked the beginning of the Middle Chalcolithic.[73] This horizon most probably postdated Vinča D2, although the uncertainty that prevails in this respect is clearly manifest in the use of such terms as "post-Vinča" or the references to a presumed "Vinča D3" phase. These latter terms represent attempts to bridge the gap that still exists between the end of the Vinča culture and the Bubanj Hum Ia—Salcuta Iv horizons.

It goes without saying that all these considerations have a bearing on the Sopot and Lasinja chronologies in Slavonia, Syrmia and Slovenia. In an attempt to rectify his earlier stance, N. Tasić published a Sopot-Lengyel and Lasinja stratification from Bosut near Sid,[74] where he said a direct relationship could be established between the Vinča-D2-Sopot II layer and the Balaton-Lasinja layer above it. Tasić identified this with the "eneolithic humus."

It is worthy of note here that the finds highlighted by Tasić from the latest Lengyel layer were the same as those which we have identified as new types at Szőlőhegyi mező (biconical bowls, bowl with inverted rim, vertical strap handles, pierced short tubular support). Tasic identified these finds as belonging to the late Sopot III—unpainted Lengyel "degenerierte Phase"[75] which marked the pre-chalcolithic transition period. According to Tasić, this phase was characterized by the spread of Vinča D2 toward the north-west as far as Bapska, and also by the spread of the Late Sopot-Lengyel culture toward Eastern Syrmia.[76] In my opinion, the Bosut stratification, which proves the continuity of the Lengyel-Balaton-Lasinja cultures, and the phenomena I have discovered in Southern Transdanubia mutually support each other.[77]

The most recent findings of Slovenian researchers are perhaps yet more important in this respect. M. Budja has published a summary of the earlier theories on the Chalcolithic, encompassing works by Korošec, Dimitrijević and Bregant.[78] According to Budja, the Eastern Alpine fazies of the Lengyel culture should be considered a synthesis brought about by the northward expansion of the Danilo and the southward expansion of the Lengyel cultures. Alongside the Vinča D2 (D3?) influences, he identifies further local elements as affecting the Late Lengyel group in Southwestern Transdanubia. Tasić and Budja share the view that the latest phase of the Lengyel culture was more mobile than the preceding phases, both in terms

[73] *Bruckner 1980-81* 24.

[74] *Tasić 1986.*

[75] *op. cit.* 52.

[76] by way of example, he cited the Lengyel wares discovered at Budjanovice – *op. cit.* 53.

[77] The uncertainty and skepticism that surround the stratification at Bosut apply to layer IIb only, which has yielded both Balaton-Lasinja and Boleráz objects. These doubts do not extend over the issue of the Late Sopot-Lengyel and Lasinja transition.

[78] *Budja 1983.*

of territorial expansion and as regards mutual cultural exchanges. This completely answers our understanding of the instability that marked the beginning of the Early Chalcolithic.

At the same time, Budja cannot go along with Dimitrijević in his assessment of the transition from the Lengyel to the Lasinja cultures. Budja challenges the authenticity of the stratification at Ajdovska Jama (which is one of the most important sites in this context) when he considers the dating of the lower stratum to the Lengyel period inaccurate.

Meanwhile, I. Horvat-Šavel's most recently published excavations appear to support the theory of continuous development.[79] The settlement at the Bukovnica site, near Muraszombat (Murska Sobota), has offered objects associable both with the Szőlőhegyi mező Lengyel phase and the Balaton-Lasinja culture.

5.7. Eastern Hungary

I. Bognár-Kutzián's 1972 monograph gave a detailed description of the Tiszapolgár culture's distribution, its four local groups and chronology. It appears to be a fact beyond dispute that the Tiszapolgár culture was the successor of the Late Neolithic Herpály culture – especially since it was possible to identify at the Herpály tell the objects of the transitory, so-called Proto-Tiszapolgár phase.[80] During the Tisza, Herpály and Tiszapolgár phases, the peoples of Eastern Hungary maintained active ties with the peoples of the Lengyel culture in Transdanubia. Specifically, there were close associations between the Tisza culture and the end of the red-yellow painted Lengyel Phase I (according to the Hungarian nomenclature); and between the Herpály-Csőszhalom culture and the crusted white-painted Lengyel Phase II. Similarly, it is possible to draw a parallel between the Tiszapolgár culture and the Slovakian Nitra-Brodzany phase and the late unpainted Phase III in Transdanubia. Again, more specifically, we can assign to the same date the later part of Phase A at Tibava and in the Deszk group, and the Lengyel Phase IIIa at Veszprém-Felszabadulás út and at Tekenye. The sites at Szőlőhegyi mező and near Szombathely were most probably contemporaneous with the Tiszapolgár B phase.

If we accept P. Patay's theory [81] that the gap between the Tiszapolgár and the Bodrogkeresztúr cultures was bridged by a transitional group (which he identified with one group each at the Magyarhomorog and Tiszavalk-Tetes cemeteries), we can also presume that the "transitional" settlement at Szőlőhegyi mező survived into that phase.

The synchronicity of the Balaton-Lasinja culture (which marked the beginning of the Middle Chalcolithic) and Phase A of the Bodrogkeresztúr

[79] *Šavel 1992.*
[80] *Kalicz – Raczky 1984.*
[81] *Patay 1979.*

culture is so very unequivocal that no researcher has ventured to challenge it yet [82].

5.8. Lower Danube region, Central Balkans

In several respects, research into the Early Chalcolithic period of the Lower Danube region and the Central Balkans is much more advanced than elsewhere in the continent. Romanian, Serbian and Bulgarian researchers have long ago established the relationship among the Salcuţa I-III, Krivodol and Bubanj Hum Ia cultures.[83] The fact that several copper objects are known to have survived from this period appears to support our understanding of the transition into the Chalcolithic.[84]

The termination of the Karanovo VI circle can clearly be accounted for by the expansion of the Cernavoda I culture.[85] The two major trade routes that are believed to have traversed the continent at the time must also have served as arteries of chalcolithic transformation. One of these routes led toward the north, connecting the Bodrogkeresztúr culture with the Baalberg culture and the Trichterbecher circle. The other route, which is more important from our perspective, served the dissolution and dispersion toward the north-west of the Vinča D2 (D3?) culture. The latter development occurred simultaneously with the Salcuţa II-III phase.[86] Consequently, during the latest phase of the Lengyel culture and also during the related Balaton-Lasinja culture the southwestern part of Transdanubia must have functioned as the mediator of the southern and southwestern influences toward the north and the north-west. It is just possible that this process also entailed the influx of a limited number of people from the north-west. At the same time, as it has hopefully been proved by the evaluation of the assemblages coming from Szőlőhegyi mező and its environs, that the main reason behind the changes was not the ethnic influence on the surviving Lengyel population but instead a series of prompts which inspired the people of the late Lengyel phase to gradually relinquish their Neolithic practices. As I have already pointed out, these prompts most probably included the climatic change that marked the Early Chalcolithic period, and thus the adoption of animal breeding. These factors mobilized the previously static population, and as a result the large Neolithic-type settlements were transformed into several smaller, single-layer settlements. This mobility is believed to have resulted in better communication among the various ethnic groups, which in turn promoted cultural and commercial contacts among them. This is how the western Transdanubian Lengyel-Balaton-Lasinja culture mediated toward Western Europe the chalcolithic life-style and practices of South Eastern Europe.

[82] *Kalicz 1969.*
[83] *Roman 1971, Tasić 1979, Nikolov 1984.*
[84] *Patay 1984, Kuna 1981, Jovanović 1971, Jovanović 1993.*
[85] cf. most recently: *Lichardus 1988, Lichardus 1991.*
[86] *Kalicz 1991.*

6. Problems of absolute chronology

Sites in Hungary have yielded only a few 14C data to date. In order to show the gap between different results of different laboratories, only one date should be mentioned as an example: N. Kalicz has published a conventional datum from the Nagykanizsa-Sánc site: 3040-2980 BC ± 80. On the heels of an earlier work by Breunig,[87] a comparative chronological study has been published most recently under the editorship of R. W. Ehrich. A chapter in this volume sums up the extended chronological data of the major cultural formations of Central Eastern and South Eastern Europe,[88] raising several problems concerning differences of calibrated data from early chalcolithic layers.

The horizon that interests us is identified as Temporal Equation V.[89] However, in view of the lack of data, the author of the chapter had no choice but to "leave further references for detailed analyses in the bibliographies of the works cited, and to use the calibrated but uneven radiocarbon dates to act as checkpoints within the suggested network".[90] On this basis, it is just understandable that the few 14C data at our disposal do not as a rule chime in with the otherwise often unconfirmed relative chronological horizons. The link between the Tiszapolgár-Gumelniţa A2-B1-Karanovo VI2-Early Salcuţa III-latest Vinča-Pločnik-Sitagroi III cultures in the south-east, and the quasi-simultaneous Nitra-Brodzany, Late Rössen-Early Gatersleben-Münchshöfen cultures is represented by the Late Lengyel culture. According to averaged calibrated data, this link existed between 3910-3760 BC (epi-Lengyel), and 3960-3795 (Tiszapolgár). M. Budja has published a similar datum on the basis of his research in layer 5/6 at the site of Moverna vas. That layer dates from the transition period from the Late Lengyel to the Lasinja phase (3900 ± 140 BC).[91]

At the same time, the south German dendrochronological data fit into a continuous chronological sequence that ends with the termination of the Epi-Rössen period (Cortaillod, Late Michelsberg, Schwieberdingen, Pfyn). On this basis, the Late Münchshöfen (Wallerfing) and later Michelsberg cultures should somewhat predate even the calibrated 14C data, and the same should apply to the contemporaneous Middle Chalcolithic in the Carpathian Basin. According to Petrasch, the dendrochronological considerations at our disposal should prompt us to date the beginning of our Late Chalcolithic (i.e. the Boleráz horizon) to the period between 3900 and 3800 – which would also mean dating the Balaton-Lasinja culture and the Late Lengyel culture in their entirety to the 5th millennium![92] When J. Pavelčik challenged Petrasch's conclusions, he did

[87] *Breunig 1987.*
[88] *Ehrich ed. 1992.*
[89] *op. cit.* 389-391.
[90] *op. cit.* 389.
[91] *Budja 1992* 103.
[92] *Petrasch 1984* 280-283.

so more from the point of view of comparative typology than on the basis of absolute chronology.[93] Most recently H. Parzinger has published an article on the issue, in which he identifies a few as yet unresolved conflicts when comparing the absolute chronological data with the earliest written documents from the Middle East.[94] He argues that if we draw a parallel between the beginning of the "0. Dynasty" in Egypt (3126 BC) and the Amuq G-Cernavoda III horizon, we are bound to consider the Boleráz-Early Baden culture in the west contemporaneous with the former culture.

However, on the strength of the calibrated 14C data at our disposal Parzinger dates the Boleráz horizon to the period between 3546 and 3497. The problem is that this date postdates by almost 500 years the date supported by the dendrochronological findings.

There is one point, though, where these prevailing uncertainties do not apply. The debates are centered on the dating to the beginning or middle of the 4th millennium of the Late Lengyel and the other contemporaneous cultures. On the other hand, see the calibrated dates from Szőlőhegyi mező (by E. Hertelendi) in this volume (4360 BC at average). They seem to fit the dendrochronological concept as well as Proto – and early – Tiszapolgár data from Eastern Hungary, (determined in the same laboratory in Debrecen). Irrespective of which conclusion we choose to identify with, the fact remains that the eventual solution to this problem should be sought outside the scope of traditional historical chronology.

While I am not in a position to take sides in this debate, I have to point out that, seen from a perspective of several thousand years, the continuous dendrochronological series identified in the area of Lake Boden differ by a minimal margin – i.e. by 20 years at most. Consequently, we cannot avoid considering these data as a weighty, if not decisive, proof for the assumption that the calibrated 14C data are the closest to what could be called realistic.

7. Conclusion

Summing up our considerations about the period of transition to the Lengyel and Balaton-Lasinja cultures, we can establish the following:

1. The latest phase of the Lengyel culture, which coincided with the Early Chalcolithic, did exist in the western part of Transdanubia. However, the location and structure of the settlements, as well as the data indicative of agricultural activities, lead us to conclude that the life of the population at issue was marked by surviving neolithic practices.

[93] *Pavelčík 1988.*
[94] *Parzinger 1992.*

At the same time, part of the pottery types already manifest chalcolithic traits. Specifically, they reflect marked influences from the Southern, Northern and Central Balkans.

2. The same vessel types with more marked characteristics and complete with single-handled jugs appear in the Balaton-Lasinja culture. On this basis, we can establish that the above-mentioned southern and south-western influences became significantly more marked during the early phase of the Middle Chalcolithic, i.e. during the Balaton-Lasinja culture.

3. At the same time, the surviving Lengyel pottery types, as well as the proximity of the sites that have yielded such wares, are indicative of ethnic continuity.

4. On the strength of the above, we can infer that the Middle Chalcolithic Balaton-Lasinja culture in the southern part of Transdanubia was but the bequest of the population of the surviving Lengyel culture. Slowly and gradually, these latter groups adopted the chalcolithic practices, as is indicated by many of their temporary settlements. It is a fact beyond dispute that the impulses toward the adoption of chalcolithic practices came from the South, through the mediation of the Vinča-facies Sopot culture. The cultural changes in the East in general, and the decline of the Late Vinča-Pločnik culture in particular, are believed to have played a key role in amplifying the cultural influences toward the north-west during the early phase of the Middle Chalcolithic. All these factors were demonstrably crucial to the emergence of the Lasinja culture. Considering the geographical location of the Balaton-Lasinja culture, it comes as no surprise that the most marked influences came from the Lasinja culture of Croatia and Slovenia. The data at our disposal prompt us to speak about cultural diffusion rather than the immigration of ethnic groups.

5. In the areas east of the Danube, a "metal boom" (i.e. the adoption of metallurgy) occurred simultaneously with the close of the Lengyel III culture and during the Balaton-Lasinja culture. This "boom" may have originated in Transylvania and the southern parts of the Carpathians, and it exerted a strong influence toward the south – the Lower Danube region and north-eastern Bulgaria (culminating in the cemetery at Varna). And the north-west – where it resulted in the rich copper and goldsmith's crafts of the Tiszapolgár-Bodrogkeresztúr culture.

From the point of view of metallurgy, the Balaton-Lasinja culture counts as a secondary area.[95] This despite the fact that while the metal objects coming from Eastern Hungary were discovered primarily in depots and as grave-goods, no cemeteries are known to have survived from the Balaton-Lasinja culture, except for a few scattered burials discovered at sites dating from the latter period. Nevertheless, the fact remains that the Middle Chalcolithic copper and gold finds coming from Transdanubia are

[95] the same applies to the more remote Jordanow-Jordansmühl, and the Brzesc-Kujawski cultures cf. *Pavelčik 1979.*

no match either in quantity or in quality to those discovered to the east of this territory. A proof for this is furnished by the locally-made copper imitations of the pierced gold discs characteristic of the western areas (Csáford, Stollhof treasures), which came to light at Zalavár-Basasziget[96] and at Hornstaad-Hoernle near Lake Boden.[97] To date, we have discovered no other trace of the activity of coppersmiths in Transdanubia in either the latest phase of the Lengyel culture[98] or the Balaton-Lasinja culture. The first copper objects appeared during the second half of the Middle Chalcolithic, at sites marked by incised fluted wares.[99] At the same time, I agree with J. Makkay's inference that the gold objects of the "Balaton group" are indicative of that group's marked social differentiation.[100]

6. The Late Lengyel (IIIb) sites in the Little Balaton region, near Nagykanizsa, in the Hahót valley and in Vas county, and also those discovered at Muraszombat (Murska Sobota) in Slovenia near the southern border of Zala county, appear to constitute a distinct regional group within the vast Late Lengyel circle. This group complements the other contemporaneous groups in the circle. The influence exerted by the neighbouring southern peoples played a key role in the emergence and separation from the other Lengyel groups of the western Transdanubian group.

7. Characteristic of the northern and north-western associations of the south-western Transdanubian group is that their relationship is much closer with the assemblages discovered in Moravia, Lower Austria than with those coming from Slovakia and Eastern Transdanubia. This conclusion comes as no surprise since the absence of cemeteries, and the characteristic features of the idol sculptures and the potteries both made this territory markedly more related to the western circle throughout the preceding Lengyel phases.

8. On the basis of the above, we can venture the conclusion that within the vast area of the Lengyel culture, the separation of the late-period groups took place according to the influences the other cultures had exerted on them. Accordingly, the Lengyel population that survived into the Balaton-Lasinja culture was subjected to strong influence from the south primarily because they lived on the southern confines of the Lengyel circle. Furthermore, the Ludanice culture was located to the north of the Balaton-Lasinja culture. Researchers in Slovakia agree about the evolution of the former culture, as is indicated by its alternative identification as Lengyel V. culture. The Middle Chalcolithic in and around

[96] *M. Virág 1986.*

[97] *Dieckman 1987; Strahm 1988.*

[98] The copper objects coming from the Zengővárkony and Lengyel sites can be dated to the period preceding the earliest phase of the Lengyel culture, i.e. to the Late Neolithic (cf. N. Kalicz's "1st copper horizon" which lasted until the beginning of the Tiszapolgár culture, *Kalicz 1982* 11).

[99] *Kalicz 1982*, 8-9.

[100] *Makkay 1976* 287-290.

Budapest was marked by the Ludanice, and not by the Balaton-Lasinja culture. Zs. M. Virág has recently published a study on a Ludanice settlement discovered during the archeological excavations that preceded the construction of the M0 beltway around Budapest.[101] The assemblages coming from that settlement contain significantly less objects of southern origin than those discovered at Balaton-Lasinja sites in the south, but still more than those coming from the centre of the Ludanice culture in the northern part of the Little Plain region. The site of Ludanice (Nyitraludány), after which the culture was named, is also to be found in this region. In the area of Nyitra, the Ludanice wares are almost exclusively surviving Lengyel types.[102] Accordingly, it appears that the emergence of these regional groups was determined primarily by the effect the southern Chalcolithic influences had exerted on them. This influence was the strongest in the southern part of Transdanubia; was relatively modest in the area of Budapest; and was virtually non-existent in the region of Nyitra.

The culture identified with the sites at Bisamberg-Oberpullendorf to the north-west of the Balaton-Lasinja culture constitutes a similar regional group. As the alternative names of this culture (MOG IIb and Epi-Lengyel[103]) suggest, it is also associable with a population with whom the Lengyel-Moravian painted potteries had survived. It would indeed be interesting to find an explanation for the fact that the Lasinja culture's influence was more marked in eastern Austria than in the northern part of Transdanubia, in south-western Slovakia or in eastern Moravia. At the same time, the existence of a western route through which the southern cultures could influence several regions in Central Europe is proved, among other things, by the striking similarities between the later phase of the Bavarian Münchshöfen culture (the so-called Wallerfing-facies wares) and the Lasinja culture. Perhaps the only difference between these two cultures is that the former one also manifests the influence of other, earlier cultures – e.g. the surviving effects of the post-Rössen and Stichband circles.[104]

Let us finally mention here the Kanzianiberg culture, which prevailed in the Alpine areas of Austria, Italy and Slovenia, i.e. on the boundaries of both the Lengyel circle and the Lasinja culture. Among other things, the pottery of this culture was influenced by the Italian Chalcolithic Vaso a Bocca Quatrata culture.[105]

9. Western Transdanubia played a key mediating role in the chalcolithisation of Europe. The *origins* of the Chalcolithic impulses can thus be traced back to the Karanovo VI-Gumelnita-Vinča D2 circle, which was broken up by the migrations toward the Pontus region in the heart of the Balkans. Western Transdanubia and Eastern Austria were undeniably the

[101] *M. Virág 1992.*
[102] *Lichardus – Vladar 1964.*
[103] *Ruttkay 1976.*
[104] *Süß 1969, Uenze 1989.*
[105] *Pedrotti 1990.*

mediators in this process. In these areas, the surviving Lengyel peoples adopted and eventually transmitted through their commercial ties the new cultural elements. The *terminal points* of these influences must have been Upper Austria and Bavaria (the Münchshöfen and Wallerfing cultures, respectively), from where these impulses were spread through secondary (and tertiary) contacts to the emerging Central German and other chalcolithic cultures (e.g. Michelsberg III-IV, Schussenried, etc.).

All these findings lead us to conclude that the peoples of the western Transdanubian Lengyel and Balaton-Lasinja cultures, and especially the inhabitants of the extensive settlement at Szőlőhegyi mező, played a significant role in disseminating the south-eastern European methods and culture of chalcolithic metallurgy.

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Chronology	Southern Germany	Moravia Bohemia	E-Austria	SW - Slovakia	W - Transdanubia	Sloveni E - Croatia	S-E Transdanubia	Tisza region	Mid Balkans	Lower Danube
Middle Chalcolithic	fazies Wallerfing Münchshöfen Schussenried	Jordanov	Baalberg A Bisamberg-Oberpd. MOG IIb	Lengyel V (Ludanice)	Balaton-Lasinja Z-Szőlő-	Lasinja	?	Bodrogker. A	Salcuta III Bubanj Hum Ia	Cernavoda I B.Hercul. II
Early Chalcolithic	Michelsberg IV III Schwieberdingen	MP IIb Stichband V	Wolfsbach MOG IIa	Lengyel IV (Nitra-Brodz.)	hegyi m. Veszprém Tekenye	Sopot III?	Lengyel III?	Tiszapolgár Proto-	Vinča D3? Vinča D2	Salc.-Krivodol Gumel-niţa
Latest Neolithic	Aichbühl Rössen II	Stichband IV	MOG I	Lengyel III	?	Sopot II	Lengyel II	Tiszap. Herpály Csőszh.	Vinča D1	Vadastra Karan.VIa V

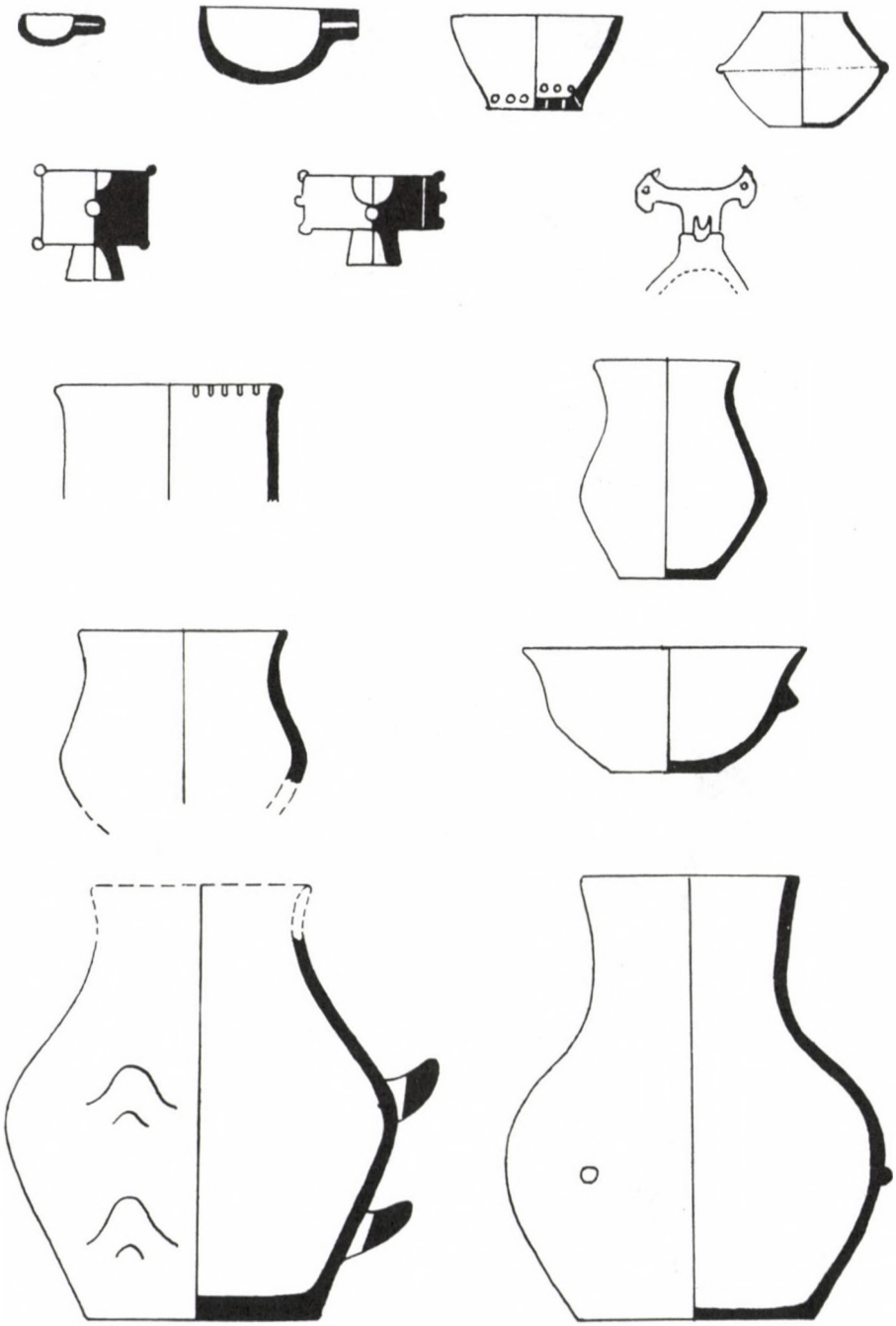

Fig. 8. Traditional Lengyel ware in the West Transdanubian Late Lengyel group.

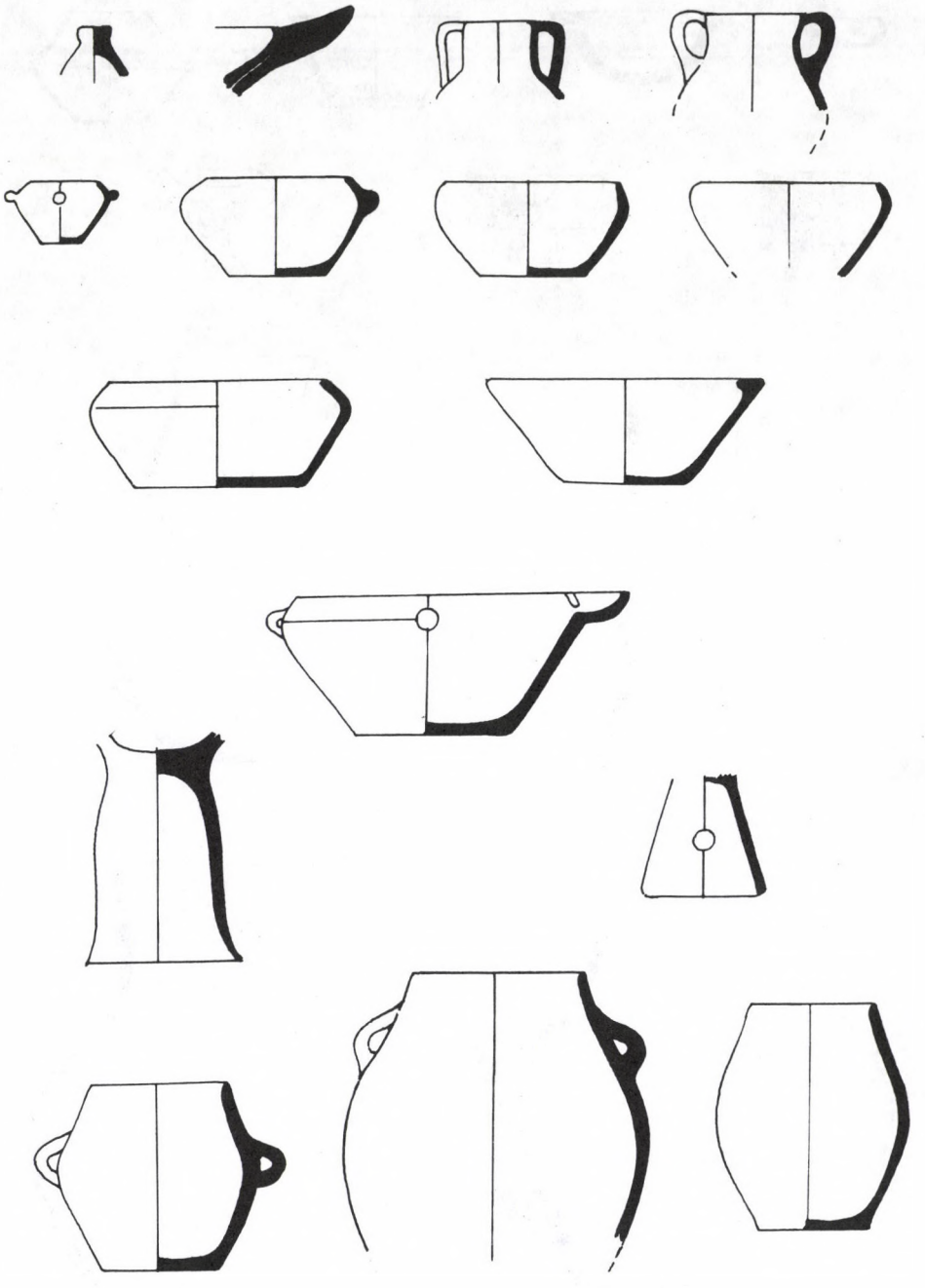

Fig. 9. New types in the pottery of the West Transdanubian Late Lengyel group.

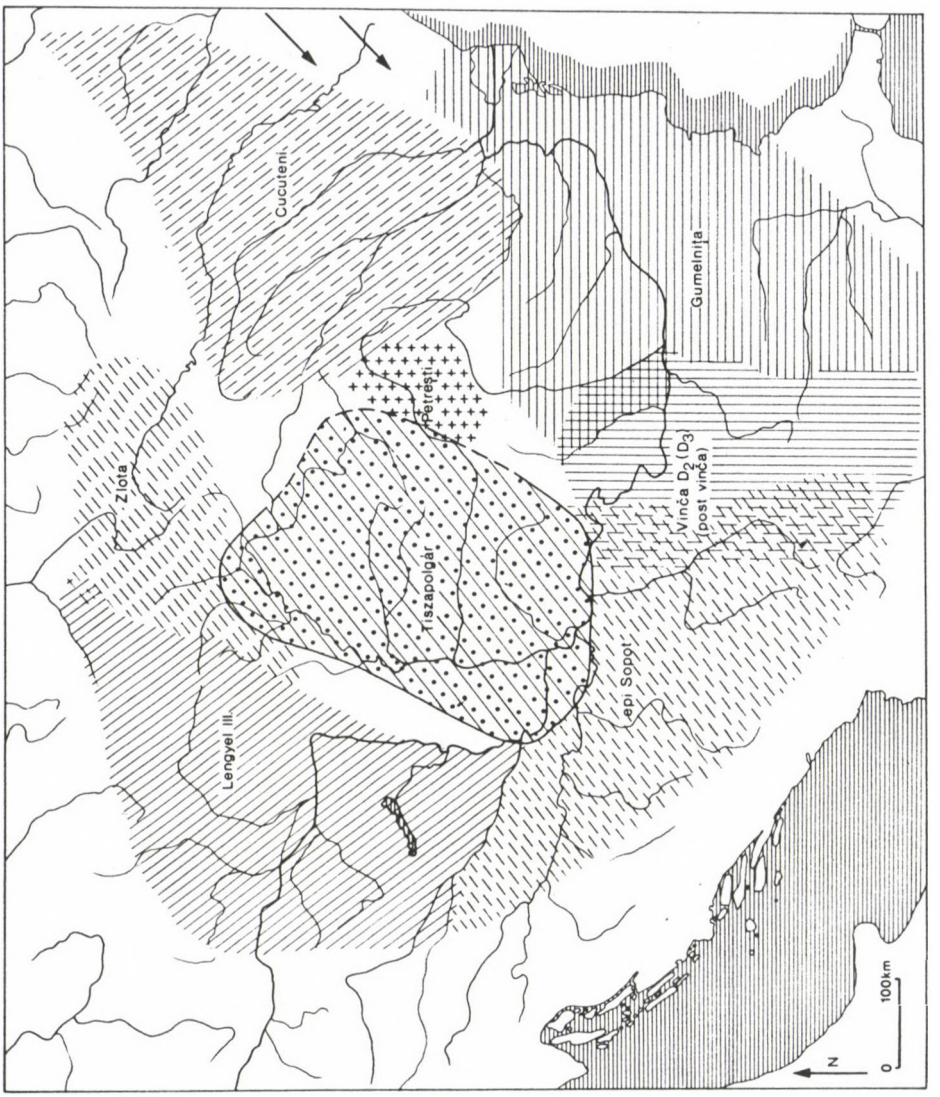

Fig. 10. Early chalcolithic cultures in the Carpathian Basin.

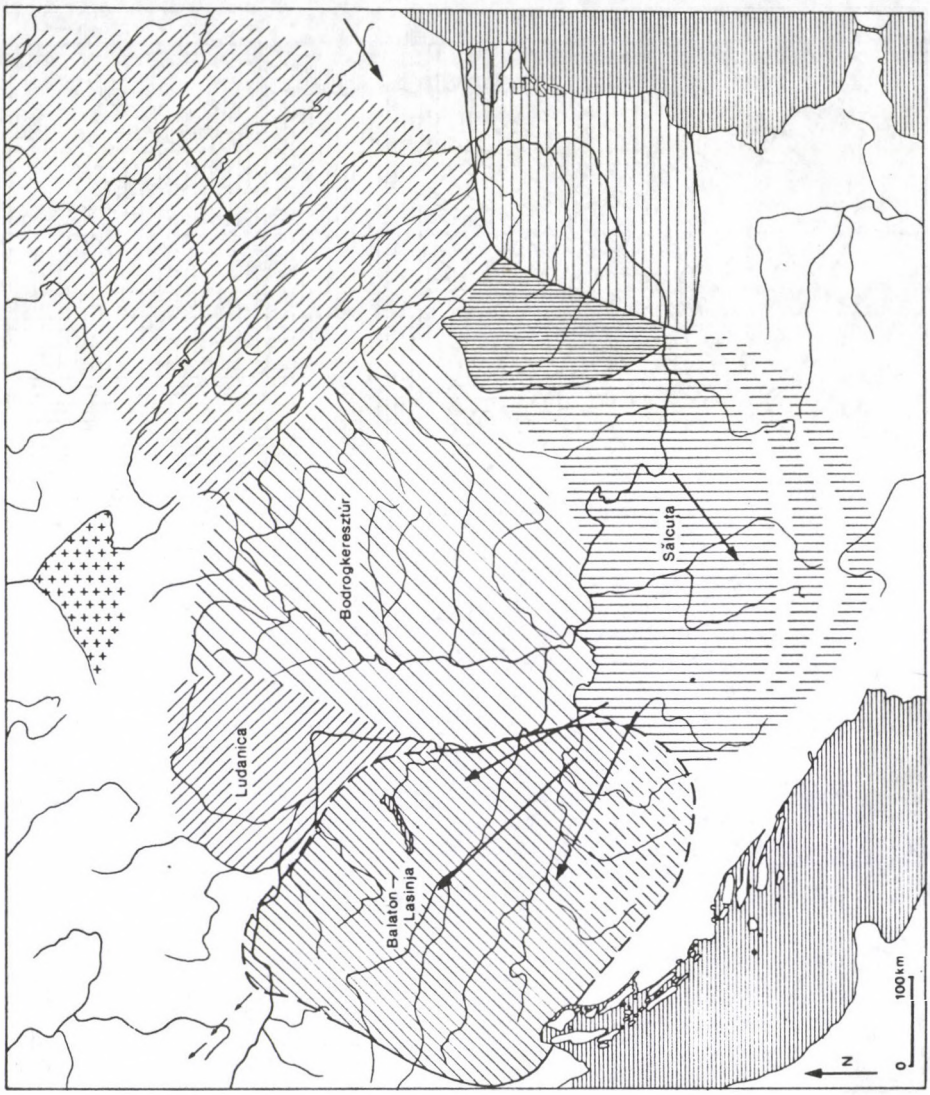

Fig. 11. Middle chalcolithic cultures in the Carpathian Basin.

Mária Bondár

EARLY BRONZE AGE SETTLEMENT PATTERNS IN SOUTH-WEST TRANSDANUBIA

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1. Introduction

A brief glance at the various studies dealing with the prehistoric cultures of Transdanubia shows that its southwestern areas continue to remain a 'terra incognita' on all the maps.

Following the extensive and systematic field surveys conducted by László Horváth, Jolán Horváth, Róbert Müller, László Vándor, Katalin Simon and László András Horváth, as well as a number of excavations directed by Ilona Valter, Nándor Kalicz, this area, present-day county Zala, is slowly filling up with Neolithic and Copper Age sites.

Bronze Age sites began to appear on the distributions maps of the region as a result of systematic investigations during the past twenty years: László Horváth's topographic field surveys, the large-scale archaeological investigations and rescue excavations linked to the Little Balaton project, as well as the microregional investigations supported by the National Scientific Research Fund (OTKA). This is especially exciting in terms of the Early Bronze Age for the investigation of prehistoric settlement patterns has since long been a major topic of research. In the lack of sites and for theoretical considerations, the results of these surveys have been extrapolated for the less intensively investigated areas of Transdanubia using various graphic techniques, such as hatching, screen

patterning and tinting — in various comprehensive studies[1] as well as in studies dealing with individual and smaller cultural units;[2] this area has rarely been depicted as a 'terra incognita', devoid of sites, reflecting the actual state of research.

My main objective, then, is to prove the presence of the Early Bronze Age Somogyvár-Vinkovci culture in Southwest Transdanubia and, also, to contribute to a better knowledge of the artefactual remains of this culture by publishing the finds from the largest closed settlement features of this culture known to date.[3]

2. Börzönce—Temetői dűlő

2.1. The site and its excavation

Börzönce lies in the centre of Zala county, in a side valley of the Hahót basin: a small settlement half-way between Nagykanizsa and Zalaegerszeg. This area of Zala county had, in the past twenty years, been one of the uninvestigated areas, a distinctive blank area on the distribution maps of prehistoric cultures.

László Horváth's field surveys have given a rough outline of the prehistoric settlement patterns in the Hahót basin, that was further refined by subsequent surveys. The systematic excavations conducted on the basis of these latter surveys were enabled by a grant from the National Scientific Research Fund (OTKA) for the project "Contact between Pannonia, Illyricum and Northern Italy from Prehistory to the Middle Ages. Micro-Regional Research in the Hahót Basin". Between 1988 and 1993 I conducted an excavation at Börzönce, a site that had been originally identified by L. Horváth (*Pl. 116*).

The Early Bronze Age site lies to the east of the modern community, on the southern slope of a 5.5 km long, 1.4 km wide and 80 m high hill, in a truly picturesque hilly upland region criss-crossed by streams. To the east, the hill rises over a shallow marshland that probably marks the eastern boundary of the one-time settlement. A stream runs at the edge of the meadow at the southern foot of the hill: I regarded this as the southern boundary of the site. Another stream borders the settlement to the north. A dirt track, leading to the modern cemetery, cuts through the hill, and is regularly scraped and levelled, bringing to light numerous sherds and pottery fragments; pits cut into half were also often to be seen. The extension of the site, on the basis of the surface pottery finds and burnt daub fragments, can be estimated as 8 to 10,000 m^2. About ten percent of the site was investigated.

[1] *Kalicz 1968* 80; *Mozsolics 1942* 44; *Bóna 1992* 16; *Bóna 1994a* 16.

[2] *Bóna 1965*; *Károlyi 1972*; *Ecsedy 1979*; *Schreiber 1991* etc.

[3] I would here like to thank István Bóna, Pál Raczky, Nándor Kalicz, Rózsa Schreiber, László Horváth and last but not least Béla Szőke the director of the project supported by the National Scientific Reserach Fund (OTKA) for their help and invaluable comments.

The site lies on agricultural land leased by the local cooperative to private farmers, and this created some difficulties for the trenches had to positioned so as to cause the least possible damage to the agricultural plots. In marking out the trenches I concentrated on the surface patches indicating various features that I had observed during my repeated surface surveys.

Assuming that the sherds at the base of the hill were there in a secondary position, through erosion and that the settlement itself had been established on the higher part of the hill, I opened the first trench (trench I) at the top of the hill. My assumption proved wrong, for it soon became clear that the settlement features yielding the richest assemblages (features A and B) lay at the foot of the hill, thus in 1989 I continued the excavation in that area (trenches II-IV). In 1990 a new trench (trench V) was opened perpendicular to the earlier N-S oriented trenches. In 1991-1992 I tried to investigate the area outlined by the pits (trenches VI-VIII) in the hope that I would find one or more buildings of the settlement. Unfortunately, instead of the hoped-for buildings I only managed to 'uncover' the bed of a former watercourse — proving useful in one respect, for it did clarify one particular feature of the internal organization of the settlement: it became clear that the pits mostly lay along the two banks of this former watercourse running NE to SW. The buildings were either flimsy structures with a short life-span or they lay in the uninvestigated, western part of the hill. In the course of a survey conducted in spring 1992 and 1993, I also noted a fair number of Bronze Age sherds on the eastern slope of the hill and thus I opened a trench (trench XI) in this area, but no archaeological features were uncovered. In late 1993 I again opened trenches on the southern slope of the hill (trenches IX-X) and another one in the meadow, in which two features (nos 19 and 20) yielding an extremely rich assemblage of finds were uncovered.

The dimensions of the individual trenches were as follows:

Trench I:	2 m x 20 m	Trench II:	3 m x 30 m
TrenchIII:	3 m x 30 m	Trench IV:	3 m x 20m
Trench V:	5 m x 30 m	Trench VI:	6 m x 20 m
Trench VII:	6 m x 5 m	Trench VIII:	3 m x 10 m
Trench IX:	3 m x 8 m	Trench X:	2 m x 18.5 m
Trench XI:	2 m x 35 m	Trench XII:	2 m x 11 m

Between 1988 and 1993 I uncovered 890 m^2 of the settlement, with a total of 35 settlement features. One of the pits also contained Lengyel pottery (feature 19), one yielded Late Migration period and Árpádian Age finds (feature P), whilst eight also contained medieval pottery (features C, L, Q, 8-11 and 14). Two pits contained solely medieval finds (features N and 5). Distinctive Somogyvár-Vinkovci pottery wares were recovered from thirty pits (features A-J, L-P, 1-3, 6-15, 17 and 19-20). Ten of the Bronze Age pits only contained a handful of pottery sherds (features C-D, M, Q, 2-3, 8-10 and 13), whilst the others yielded an abundance of finds. Three pits were especially rich in finds (features J and O-P).

The Early Bronze Age pits were either relatively shallow, with straight walls and flat floors (C-E: see *Pl. 118*; É: *Pl. 118*; 2, 6-7: *Pl. 119*) or deeper, beehive-shaped pits with a round mouth, roughly 1.5 m in diameter (A: *Pl. 117*; B, H: *Pl. 118*; I-J: *Pl. 118*; L: *Pl. 117*; O: *Pl. 119*; P: *Pl. 119*; and feature 17). Some of these pits had a peculiar round-ended 'extension' with straight walls and flat floor (F: *Pl. 118*; and features 3-4) whose function eludes interpretation. Their fill matched that of the Early Bronze Age features, and yielded but a few sherds.

The features appeared as dark patches of soil, and Early Bronze Age finds were apparent already at a depth of 40 cm from the modern surface. The fill of these features was reminiscent of a 'layered cake', with several distinct levels. In some features the base was dug out to form a bench or platform on one side (features 12, 15 and 19). An intact cup or jug stood on the floor of some features (feature A), whereas in others the fragments of pots, cups and bowls formed a distinct cluster (feature H). In one case a cup and a jug were laid to their side, with a larger stone lying above them (feature P).

I did not find any features that could have been construed as dwelling houses or above-ground structures. Only feature G, a large, roughly rectangular feature with a 'terraced' interior, could perhaps be interpreted as such on the basis of its dimensions and form (*Pl. 117*); since, however, no postholes, and no wall or floor remains could be noted, it should be better considered as a large storage pit. Two explanations can be cited for the lack of habitation buildings: either they were log constructions (an alternative that is, however, contradicted by the numerous burnt daub fragments found in the features) or that the houses lay in the unexcavated area of the site.

3. The finds

The finds from the features form an extremely rich assemblage. Over sixty vessels were either found intact or could be assembled from their fragments; also among the finds were an intact idol, the head of another, the fragment of a wagon model, clay wagon wheels, a clay mould, miniature animal statuettes, spindle whorls, two stone axes and a few silex blades.

3.1. Pottery[4]

The ceramic inventory from Börzönce shows a wide range of forms. Most pottery fragments came from storage jars and pots, with a high number of bowl fragments. Jugs, juglets, cups and amphorae were fewer in number, similarly to cylindrical flasks. No sharp distinction can be drawn between coarse and fine wares in terms of fabric and finish. The upper

[4] After cataloging, the finds will be housed in the Göcsej Museum of Zalaegerszeg. The cataloging of the finds from the 1988 and 1990 seasons has been completed, the catalogization of the rest is in progress.

half of bowls, pots and large storage jars was smoothed, whilst their lower part was roughened, either by a technique reminiscent of brushing, in an almost 'barbotine' technique or by applying another uneven clay layer.

Sand and crushed pebbles were used for tempering the clay. We did find river pebbles that served as 'raw material' for temper, together with larger stones that had been used for crushing them.

Vessels were fired in one of two ways: firing in a reduced atmosphere gave colour shades ranging from grey to black; in contrast, firing in an oxidizing atmosphere resulted in shades of ochre and orange. Both types of firing can be noted among jugs and bowls, as well as among pots and storage jars.

The hitherto known Somogyvár-Vinkovci ceramic inventory has been enriched by newer types through the Börzönce finds, offering a possibility for a more detailed typology. Individual pottery types have been distinguished according to their fabric, finish, form and ornamentation, but no new categories have been introduced for differences in size. The high number of fragments from individual vessel types support the accuracy of the type determination and also confirm that vessel form, size and finish were linked to specific functions. (On the type charts vessel types that were either represented by a few fragments only, or whose reconstruction was based on analogies from other sites, were placed at the end of the type sequence.)

A few vessels can be regarded as borderline cases. A great similarity of form can be noted between small pots (EF/1-4) and cups (B/1-3). Differences in wall thickness and firing, however, justify a distinction based on function. Cup B/4 is a transitional form to jugs, and only its size justifies its inclusion among the cups, for its finish is identical with that of larger juglets and jugs.

Storage jars, pots and bowls come both with and without handles. Handles come singly, or in pairs of two or four, most being strap or loop handles.

In the case of pots, jugs, juglets, cups and bowls the handles generally spring from the vessel rim and join the vessel body under the vessel shoulder. Certain cups (B/3), pots (F/7, KF/2) and bowls (T/12) have the handle drawn from under the rim, between the neck and the belly. Storage jars, amphorae and the vessels open at both ends have handles perched on the carination line or on the lower third of the vessel. No vessels with segmented or asymmetric handle, or their fragments, have been found at Börzönce.

Most frequent among ornamental elements are the knobs, that occur on storage jars, pots, amphorae and bowls. Knobs occur either in pairs of two or four, or in uneven number (one, three and seven), depending on other ornamental elements. Most knobs are impressed. Small, pointed knobs were quite popular, alongside rounded and impressed varieties. One distinctive form is the knob pinched into a lug-handle that mostly ornamented bowls. The vessel rim of storage jars and pots was often

widened into triangular lug handles.

Another popular ornamental motif on bowls, pots and storage jars is the rib or ridge ornamented with finger impressions or indentations. Arched ribs are also quite frequent on bowls and storage jars.

A distinctive ornament is a thin band of clay applied immediately below the rim, often with finger-tip impressions that were done while the clay was still wet. This rim type occurs often on storage jars.

The most common form of incised patterns is the line encircling the shoulder of cups (B/4), jugs (Ko/1, 2a-c), juglets (K/1) and storage jars (H/3). Certain jugs (Ko/3) and pots (F/3) are ornamented with various incised motifs on their body. Bowls too are habitually ornamented with incised patterns, either on their interior (T/9), their exterior (T/11) or on both (T/10). Among the several thousand sherds, the number of vessel fragments ornamented with incised patterns is minimal: a total of only seventeen sherds (*94-95, 100, 115, 192, 251, 296, 309, 425, 427-431, 462, 464-465*), hardly allowing a reconstruction of the full ornamental repertoire.

Rows of punctates or impressed dots occurs on pots (F/2, F/4, EF/3, EF/7), storage jars (H/9) and bowls (T/10).

Storage jars (Type H)

Storage jars come in a wide range of size and finish. Their height ranges from 24.5 cm to 42 cm, their rim diameter between 12 cm and 30 cm, and their base diameter between 10 cm and 18 cm. The neck is smoothed, the vessel body is generally rusticated. Ornamentation is generally in the form of impressed knobs.

Type H/1. Reddish-brown in colour, tall and slender, with slightly everted rim. The slightly swollen rim pinched into two pointed knobs (feature H: *359*; see the type chart, and features J, O-P, 11-12 and 17).

Type H/2. Grey to brown in colour, ovoid body with short neck, body brushed. No other ornamentation (feature J: *361*; see the type chart, and features A, I, L, O, 12 and 15).

Type H/3. Brownish-grey in colour, with slightly swollen rim and elongated S profile, and barbotine-like ornamentation. Two horizontal impressions on the shoulder, and a pair of antithetic impressed rounded knobs, together with a pair of impressed knobs (feature H: *362*; see the type chart, and features A-B, I-J, O-P, 11-12 and 15).

Type H/4. Brown to grey in colour, with elongated S profile; four impressed knobs on the shoulder (feature O: *364*; see the type chart, and features A-B, E, I-J, L-M, P, 1 and 11).

Type H/5. Brown to grey in colour. Storage jar with everted rim, short neck, body in the shape of an inverted truncated cone. The swollen rim is decorated with finger imprints and broadens at four places into triangular handles. Neck smoothed, body rusticated (feature H: *324,* see the type chart and features A, J, O-P, 1, 7, 11-12, 17). Also smaller variants of the shape occur; they are attested to, however, only by sherds (features B, É, J-H, L, P, 1, *18, 155, 179, 203, 270*).

Type H/6. Brown to grey in colour, with short neck and elongated S profile; rusticated surface. Two variants can be distinguished as regards ornamentation and neck form (see the type chart).

Type H/6a. Short cylindrical neck, with a thin band of clay under the rim and seven knobs, placed symmetrically on the shoulder (feature O: *325*; and features J, P, 11-12 and 17).

Type H/6b. Short incurving neck. Two pairs of impressed knobs on the rim and the shoulder (feature A: *363*; and features E, I-J, L, O-P, 7, 11-12, 15 and 17).

Type H/7. Brown to grey in colour, with short cylindrical neck and elongated S profile. Its body is rusticated. Two variants can be distinguished as regards ornamentation and neck form (see the type chart).

Type H/7a. Two knobs, placed antithetically on the shoulder, with an indented rib inbetween (feature O: *326*; and features A-C, E, J, L, 7, 11-12, 19 and 20).

Type H/7b. Smaller, with a thin band of clay on its rim (feature O: *322*; and features A, F, I-J, L and 15).

Type H/8. Large, grey in colour, body smoothed to the shoulder and rusticated on the belly, with two short loop handles on the carination line. No intact or restorable specimens were found at Börzönce, and thus similar vessels from Ilok are shown on the type chart (features E, G-H, J, M, O-P, 12 and 19: *113, 145, 181, 187, 196, 222, 247, 249-250, 260 and 328*).

Type H/9. Grey in colour, with ovoid body; small knobs on the neck or shoulder, a thin rib on the carination line or a garland-like impressed rib, as well as loop handles with a row of punctates or a thin rib on either side. Only fragments of this vessel type were found (feature H, J, O and P: *154, 180, 182, 246, 249, 259 and 262*).

Pots

Pots come in a wide variety of sizes and surface finish. Their height ranges between 9 cm and 20 cm, their rim diameter between 6.8 cm and 15 cm, and their base diameter between 5.5 cm and 11 cm. The neck is generally smoothed, while the body is rusticated. Most common among their decoration are the impressed and indented ribs, sometimes wholly encircling the shoulder. Rims pinched into triangular drooping knob handles are also common. Three main variants of this vessel type occur at Börzönce: pots without handles, or, conversely, equipped with one or two handles.

Pots without handle (Type F)

Type F/1. Grey in colour, with elongated S-profile and profiled base. The swollen rim is pinched into two drooping lug handles. The body is covered with coarse brushing. Four impressed knobs had originally been placed on the shoulder (feature H: *381*; see the type chart, and features B, J and 1).

Type F/2. Reddish-grey in colour, with elongated S-profile. The slightly swollen rim is pinched into two drooping lug handles. An incised line

encircles the shoulder; a pair of pointed knobs between the lug handles (feature H: *382;* see the type chart, and features A, É, L, O-P, 11-12 and 15).

Type F/3. Reddish-brown in colour, conical body, ornamented with bands of framed stitch patterns. Only fragments of this vessel type were found: the type chart shows its reconstruction (feature E and O: *94-95, 105, 309 and 462*).

Type F/4. Reddish-brown in colour, with an impressed rib on its shoulder; small, with elongated S-profile. Only fragments of this vessel type were found: the type chart shows its reconstruction (features É-F, J, L, O-P and 11: *130, 135, 207 and 244*).

One-handled pots (Type EF)

Type EF/1. Grey in colour, thin-walled, ovoid body with short, slightly incurving neck. The strap handle springs from the rim and joins the body under the shoulder (feature E: *376;* see the type chart, and features A, J, 1, 11 and 20).

Type EF/2. Brown in colour, thin-walled, conical body with short neck. The strap handle springs from the rim and joins the body under the shoulder. A small rounded knob opposite the handle. The vessel body is flattened in four places (feature O: *375;* see the type chart).

Type EF/3. Light brown in colour, thin-walled, with slightly curved and swollen rim and short cylindrical neck. A line of heavily impressed dots encircles the shoulder. The belly is rusticated. The handle springs from the rim and joins the body at the shoulder (feature F: *125;* see the type chart, and features 1 and 15).

Type EF/4. Grey in colour, thick-walled, with slightly swollen rim, short neck; elongated S-profile. A deep furrow encircles the shoulder. The handle springs from the rim and joins the body at the shoulder. Three impressed knobs were probably placed under the shoulder (feature A: *377;* see the type chart, and features L and 17).

Type EF/5. Light brown in colour, thin-walled, ornamented with a thin band of clay; elongated S-profile. Three knobs ornamented the shoulder. The short loop handle springs from the rim and joins the body under the shoulder (feature E: 380 and 383; feature 7: *395;* see the type chart, and features A-C, 1 and 20).

Type EF/6. Grey in colour, thick-walled, conical body, with short, slightly incurving neck. The vessel body is rather irregular. The handle springs from the rim and joins the body at the shoulder (feature P: *357;* see the type chart, and features O, 12 and 19).

Type EF/7. Reddish-brown in colour, thin-walled with short neck, the shoulder is ornamented with impressed dots or an impressed rib. The handle springs from the rim and joins the body at the shoulder. Only fragments of this vessel type were found, and no restorable specimens came to light (features E-F and J: *103, 127 and 176*).

Two-handled pots (Type KF)

Type KF/1. Grey to brown in colour, slender, with elongated S-profile.

The two ribbon handles spring from the rim and join the body under the shoulder (feature O: *358*; see the type chart).

Type KF/2. Brown in colour, with slightly swollen rim and elongated S profile. Two short loop handles spring from the neck to join the body under the shoulder. A slightly pointed knob sits between the handles on either side (feature O: *354*; see the type chart, and features F, J, P, 7 and 17).

Amphorae (Type A)

Three variants of the classical amphora form can be distinguished in the ceramic inventory.

Type A/1. Grey in colour, thin-walled, with smoothed globular body (feature 20: *327*; see the type chart).

Type A/2. Grey in colour, thin-walled, with tall neck and smoothed body (feature J: *184*; see the type chart).

Type A/3. Grey in colour, thin-walled, ovoid body, with short, slightly funnel-shaped neck; the surface is smoothed. Two small loop handles on the belly (feature O: *323;* see the type chart, and features A, E-É).

Vessel fragments that could be assigned to one of these types were found in other features too (features E, L, 12 and 17); however, they could not be more precisely categorized.

Vessel open at both ends

A unique type in the ceramic inventory. Grey in colour, with brownish red spots, tempered with large pebbles; biconical in shape with incurving neck and rounded carination line; two handles. Height: 21 cm; rim diameter: 20 cm; base diameter: 13.5 cm (feature O: *356*; see the type chart). Its function is unknown. It is not charred and neither could there be observed other traces of wear — thus it is unlikely that it would have been used as a fire guard or a portable hearth. It is possible that it had been covered with textile and used as a strainer, or perhaps as a funnel; alternately, it might have functioned as a drum if one side had been covered with leather.

Juglets (Type K)

Juglets are roughly the same size and have a careful finish. Their height varies between 17.2 cm and 19.3 cm, their rim diameter between 7.4 cm and 10.4 cm, and their base diameter between 7.2 cm and 9 cm. Their surface is smoothed and they are never decorated.

Type K/1. Dark greyish in colour, biconical body with funnel-shaped neck and rounded carination line. The ribbon handle springs from the rim and joins the body under the shoulder. An incised line encircles the shoulder (feature P: *347 and 349*; see the type chart, and features A, E, H-J, 12 and 15).

Type K/2. Dark greyish in colour, biconical body with cylindrical neck. Two variants can be distinguished in terms of the carination line and the position of the handles (see the type chart).

Type K/2a. Juglet with rounded carination line. The strap handle

springs from the rim and joins the body under the shoulder (feature H: *346*; feature 7).

Type K/2b. Juglet with marked carination line. The wide strap handle springs from the rim and joins the body under the shoulder (feature J: *348*; features L and 12).

Jugs (Type Ko)

Jugs come in a wide range of sizes and finish. Their height ranges between 12 cm and 13.8 cm, their rim diameter between 5.6 cm and 8.4 cm, their base diameter between 4 cm and 8 cm. Their surface is carefully smoothed.

Type Ko/1. Grey in colour, biconical body with marked carination line. Cylindrical neck, the strap handle springs from the rim and joins the body under the shoulder (feature P: *339*; see the type chart, and features O and 12).

Type Ko/2. Grey in colour, with biconical body and long neck. Three variants could be distinguished on the basis of the neck, the carination line and the position of the handle (see the type chart).

Type Ko/2a. Cylindrical neck, marked carination line; the soulder is encircled by an incised line. The handle springs from the rim and joins the body under the shoulder (feature A: *337*, feature M).

Type Ko/2b. Cylindrical neck and marked carination line. An incised line encircles the shoulder (feature P: *341 and 343*; feature J).

Type Ko/2c. Cylindrical neck with slightly inverted rim and rounded carination line. The strap handle springs from the rim and joins the body under the shoulder. This variant is squatter than the other types and it is also heavier (feature J: *371*; see the type chart).

Type Ko/3. Incised pattern on the neck; the vessel fragment, however, was too small to allow the reconstruction of the entire pattern (feature É: *115*).

Vessels with constricted neck

Vessel type reminiscent of jugs and juglets which, however, cannot be assigned to either type. It has a biconical body with a short consticted neck, grey in colour. The surviving fragments of this vessel type do not indicate the presence of handles. The rim is slightly peaked. Two sizes were found at Börzönce, with a height of 19 cm and 14.2 cm, a rim diameter of 8.2 cm and 5.2 cm and a basal diameter of 8.2 cm and 6.8 cm. Both are greyish in colour, with a heavily worn surface. Neither specimen was decorated (feature P: *353* and feature 7: *344*; fragments from features O and 12: *293*).

Cylindrical flasks (Type P)

One of the most distinctive vessel forms of the Somogyvár-Vinkovci culture. This vessel type has been alternately called a cylindrical flask, stove-pipe shaped vessel, tube shaped flask, etc. Several variants are known from the distribution of the culture. This form seems to have been

more popular than would appear from the surviving intact pieces for its fabric and finish are practically identical with that of cups and jugs, and thus vessel fragments could not always be assigned to a specific vessel type. These flask come in two varieties at Börzönce.

Type P/1. Grey in colour, thin-walled slightly incurving body with cylindrical neck. A pair of knobs on the rim, two pairs of perforations under the knobs (feature P: *329;* see the type chart, and features 12 and 19).

Type P/2. Brown in colour, with cylindrical and slightly incurving body, its lower part is heavily worn (feature 11: *330;* see the type chart, and feature E).

Cups (Type B)

Cups too occur in a wide range of sizes. Their height varies between 5.2 cm and 9.8 cm, their rim diameter between 4.3 cm and 7.4 cm, their base diameter between 3.4 cm and 5.2 cm. Their surface is generally carefully smoothed. Their colour is greyish and, less frequently, reddish. None of them are decorated, and neither have cups with so-called segmented handle been found.

Type B/1. Grey in colour, squat, ovoid body with short neck. The handle is conspicuously high and thick compared to the proportions of the body (see the type chart). Two variants can be distinguished in terms of neck size and the position of the handles.

Type B/1a. Tall cylindrical neck with rounded belly. The handle springs from the rim and joins the body above the carination line (feature O: *333*).

Type B/1b. Short cylindrical neck. The handle springs from the rim and joins the body under the shoulder (feature H: *334*).

Type B/2. Grey in colour, biconical body with funnel-shaped neck. The strap handle springs from the rim and joins the body above the carination line (feature O: *375;* see the type chart).

Type B/3. Grey in colour, biconical body with short cylindrical neck and rounded belly. The handle springs from the rim and joins the body above the carination line (feature J: *345;* see the type chart, and features 1 and 11).

Type B/4. Grey or reddish-brown in colour, biconical body with cylindrical neck and marked carination line (see the type chart). Four variants can be distinguished in terms of the profile of the neck and the position of the handles. This type leads to the jugs.

Type B/4a. Cup with incurving neck. The strap handle springs from the rim and joins the body above the carination line (feature 7: *335*).

Type B/4b. Cup with cylindrical neck. An incised line encircles the shoulder. The long strap handle springs from the rim and joins the body under the shoulder (features 7 and 20: *331 and 336*).

Type B/4c. Cup with incurving neck. The strap handle springs from the rim and joins the body above the carination line (features L and P: *332*).

Type B/4d. Cup with cylindrical neck. The handle joins the body in the middle of the neck (feature A: *338*).

The cup fragments could not always be assigned to one of the above types. Fragments assignable to Type B/1 came to light from features A, E, H, L, O-P, 1, 6 and 7, whilst sherds assignable to Type B/2 were recovered from features H, J, O and 19.

Bowls (Type T)

Bowls come in a variety of sizes and finish. Their height varies between 3 cm and 16 cm, their rim diameter between 7.5 cm and 38 cm, their base diameter between 3.8 and 14 cm. Two types of finish can be distinguished: carefully smoothed, similarly to jugs, juglets and cups, or rusticated, similarly to the pots.

Type T/1. Grey in colour, globular body with smoothed neck and rusticated body (see the type chart). Three variants can be distinguished in terms of neck form and ornamentation.

Type T/1a. Large, with pronounced horizontal rim and incurving neck. An impressed rib encircles the shoulder (feature A: *355;* features E, J, L-M, O-P, 7, 12, 15 and 19).

Type T/1b. Bowl with short, smoothed neck. Compared to other bowls its finish is coarse, similarly to pots (features A, H, J, L, O-P and 19: *166, 205, 231 and 255*).

Type T/1c. Thick-walled unornamented bowl that comes in various sizes (features L, P, 19 and 20: *211*).

Type T/2. Grey in colour, biconical body with short, incurving neck, originally with two handles (feature P: *350;* see the type chart, and features A, E-F, O, 17 and 19).

Type T/3. Brown or grey in colour, with funnel-shaped neck and marked carination line, it comes in various sizes, with or without handles (feature J). One variant has a thin band of clay applied under the rim (feature O: *173 and 229;* see the type chart).

Type T/4. Reddish-brown in colour, conical body, with cylindrical neck. Two slightly drooping pointed knobs, placed antithetically on the shoulder (feature 12: *351;* see the type chart, and features É-F, I, L, O-P, 17 and 20).

Type T/5. Grey or light brown in colour, conical body, with short neck; four symmetrically placed strap handles spring from the rim and perch on the shoulder (features O and 19: *352 and 373;* see the type chart, and features A-C, E, G, J, L, P, 7, 11, 15, 17 and 19).

Type T/6. Grey in colour, conical body, with a thin, curved rib on the belly. Only fragments of this bowl type have come to light: its reconstruction is based on analogies from other sites (feature A, H, O-P and 7: *30;* see the type chart).

Type T/7. Grey or brownish-red in colour, biconical body with short neck. The rim and the shoulder are connected with a knob pinched into a handle (features E, 11 and 16: *93, 96, 98 and 281;* see the type chart).

Type T/8. Dark grey in colour, thin-walled, conical body, with short neck; the body itself is rather irregular (see the type chart). Two variants

can be distinguished in terms of the number and the position of the handles.

Type T/8a. The two strap handles spring from the rim and join the body under the shoulder (feature A: *365*).

Type T/8b. The four small handles are placed symmetrically; springing from the rim, they are perched on the shoulder (feature 7: *366;* features A, H and J).

Type T/9. Grey in colour, globular body, carefully smoothed and decorated on its interior, with a small knob on its carination line. The rim is occasionally also decorated (features E-É, J, L, O and P: *100, 252, 425, 430-431 and 464*).

Type T/10. Grey in colour, globular body, carefully smoothed, decorated on both sides. Unfortunately, the few surviving fragments do not allow the reconstruction of the entire pattern, made up of encrusted punctates and incised lines. The ornamental technique differs from the deeply incised Vučedol patterns and have much more in common with the Kostolac encrusted technique (features J and L: *192 and 430*).

Type T/11. Bowl fragment with decoration on its exterior. Its form can only be reconstructed from similar finds since only fragments of this type have been found (features O-P and 15: *251, 296-297, 427 and 428*).

Type T/12. Grey in colour, biconical body with inverted neck. A short handle joins the rim and the shoulder (features E, J and O: *168 and 224;* see the type chart).

Type T/13. Grey in colour, with the occasional red patch in its interior, conical body with short neck and slightly swollen rim. The base is perforated, suggesting that it was a strainer (feature E: *368;* see the type chart, and feature J: *170*).

Type T/14. Grey in colour, globular body, without ornamentation (feature 11: *369;* see the type chart).

Oil lamps

Two small vessels have been found at Börzönce. They were probably used as an oil lamp, even though no traces of burning or soot could be noted in their interior.

(1) Grey in colour, with conical body and obliquely drooping rim. Two pairs of small perforations on the rim that widens into a lug. It was probably suspended (feature E: *367;* see the type chart).

(2) Grey in colour, with conical body and wide drooping rim. Its rim is fragmentary and thus it is not clear whether there had been perforations for suspension (feature O: *370*).

Lids

Two specimens have been found at Börzönce.

(1) Light brown in colour, conical body, the top is slightly indented (feature H: *149;* see the type chart).

(2) Grey in colour, conical body, its lug is perforated (feature P: *433*).

3.1.1. Analogies

Analogies to individual vessel types can be sought in a narrower, (i.e. Somogyvár-Vinkovci) context or in a wider one that includes neighbouring, as well as related cultures of more distant regions. This section will focus on analogies from other Somogyvár-Vinkovci sites; interrelations with other cultures will be discussed in section 5.

While searching for analogies to individual vessel types we noted that the closest parallels are to be found for the cylindrical *flasks*, mainly for type P/2. This is hardly surprising since this vessel can be regarded as the type fossil of the Somogyvár-Vinkovci culture, and it is thus fairly certain that if its fragments are recovered from any given site, it is bound to appear in the publication of the finds from that particular site. Such flasks have been reported from Alsódörgicse,[5] Gerjen-Váradpuszta,[6] Gradina,[7] Ilok,[8] Kéthely,[9] Lengyel,[10] Nagygörbő-Várhegy,[11] Ostrikovac,[12] Pécs-Nagyárpád,[13] Somlóvásárhely,[14] Szava,[15] Szedres-Gencspuszta,[16] Szekszárd,[17] Zók-Várhegy[18] and Vinkovci.[19] The latter was found in a well-datable context and has been assigned to the Vinkovci A horizon by Dimitrijević.

Analogies to the less frequent P/1 type, with lugs instead of handles, are known from Ilok[20] and Vinkovci.[21]

Aside from flasks, plentiful analogies exist among the already published finds from other sites to *cups* and *jugs*. A more detailed study of the cups (in terms of their size, proportions, the position of the handles, etc.) reveals that there are no two identical forms, and thus only a few truly close analogies can be quoted. Type B/1 has its closest parallel at Szava,[22] whilst specimens comparable to type B/4 can be quoted from Alsódörgicse,[23] Keszthely-Fenékpuszta[24] and Szava.[25] A cup close to type B/3 has been published from Szava,[26] even if the latter is slightly larger and has different proportions.

[5] *Bóna 1965* Pl. XIV. 14.
[6] *Bóna 1965* Fig. 1. 4-5.
[7] *Tasić 1968* Fig. 7; *Tasić 1984* Pl. II. 4.
[8] *Tasić 1984* Pl. II. 9.
[9] *Bóna 1965* Pl. XIV. 6, 9.
[10] *Bóna 1965* Pl. XIV.19.
[11] *Nováki 1965* Fig. 4. 3, 15.
[12] *Tasić 1984* Pl. II. 3.
[13] *Bándi 1979* 65.
[14] *Bóna 1965* Fig. 1. 8-9.
[15] *Ecsedy 1979* Pl. II. 3-6; Pl. VIII. 3.
[16] *Bóna 1965* Fig. 1. 2 and Pl. XIV. 20.
[17] *Bóna 1965* Fig. 1. 3.
[18] *Bóna 1965* Pl. XVI. 11.
[19] *Dimitrijević 1982a* Pl. 6. 6.
[20] *Tasić 1984* Pl. II. 5.
[21] *Dimitrijević 1982a* Pl. 4. 4.
[22] *Ecsedy 1979* Pl. I. 3.
[23] *Bóna 1965* Pl. XIV. 14.
[24] *Bóna 1965* Pl. XIV. 3.
[25] *Ecsedy 1979* Pl. VIII. 1 and Pl. XII. 6.
[26] *Ecsedy 1979* Pl. XI. 5.

The same holds true for the jugs that are present in a wide range of form and finish. Analogies to type Ko/2c are known from pit B of the Lánycsók-Égetthalom site.[27] A fragment similar to the jug with incised ornamentation has been published from Szava,[28] although the latter, a jug with segmented handle, has no direct parallels at Börzönce.

Analogies to the *juglets* are known from several sites. Parallels to type K/1 are known from Sármellék,[29] Somogyvár[30] and Szava,[31] whilst parallels to type K/2 have been reported from Kemendollár,[32] Kéthely,[33] Keszthely-Fenékpuszta,[34] Szava[35] and Vinkovci.[36]

Amphorae too have a varied repertory of types and a wide range of forms. Even so, immediate parallels are rare; comparable vessels from Golokut,[37] Gönyü,[38] Lánycsók–Égetthalom pit 3,[39] Nagykanizsa–Inkey kápolna,[40] Neusiedl am See,[41] Vrdnik,[42] Zók-Várhegy[43] and Pécs-Nagyárpád[44] are all classical representatives of amphora shaped vessels.

Most parallels to the *bowls* come from the same sites. A bowl comparable to type T/1c came to light from pit B of the Lánycsók–Égetthalom site,[45] whilst a T/5 type bowl has been reported from Golokut.[46] A bowl comparable to type T/8 was recovered from a Vinkovci A context at Vinkovci[47] and from pit B at Lánycsók-Égetthalom.[48] Type T/3 bowls are known from Vinkovci.[49] Analogies to type T/11, bowls decorated on their exterior, are known from Vinkovci[50] and Szava.[51] Parallels to type T/12 can be quoted from Golokut[52] and from pit 3 of the Lánycsók-Égetthalom

[27] *Ecsedy 1980* Pl. VII. 1.
[28] *Ecsedy 1979* Pl. VIII. 2 and Pl. IX. 3.
[29] *Bóna 1965* Pl. XIV. 7.
[30] *Bóna 1965* Pl. X. 8.
[31] *Ecsedy 1979* Pl. IX. 1.
[32] *Bóna 1965* Pl. XVI. 10.
[33] *Bóna 1965* Pl. XIV. 10.
[34] *MRT 1* Pl. 7. 6.
[35] *Ecsedy 1979* Pl. V. 3-4.
[36] *Tasić 1984* Pl. IV. 11.
[37] *Petrović 1991* Pl. I. 5.
[38] *Bóna 1965* Pl. XIII. 2.
[39] *Ecsedy 1980* Pl. V. 5.
[40] *Horváth 1984* Fig. 5. 16.
[41] *Bóna 1965* Pl. XIII. 7.
[42] *Tasić 1984* Pl. III. 5, 7 and Pl. IV. 2, 7, 10.
[43] *Ecsedy 1983a* Fig. 29.
[44] *Ecsedy 1979* Fig. 5 type G.
[45] *Ecsedy 1980* Pl. VII. 4-6.
[46] *Petrović 1991* Pl. II. 5.
[47] *Dimitrijević 1982a* Pl. 5. 7.
[48] *Ecsedy 1980* Pl. VII. 3.
[49] *Dimitrijević 1982a* Pl. 5. 1.
[50] *Dimitrijević 1982a* Fig. 5. 9, 11, 14.
[51] *Ecsedy 1979* Pl. II. 11. Pl. VI. 4-7. Pl. VII. 2 and Pl. X. 2.
[52] *Petrović 1991* Pl. I. 1.

site that has been assigned to the Vučedol C phase.[53] A vessel comparable to the strainer bowl (type T/13), but somewhat larger in size, has been published from Szava.[54]

Only one single analogy can be quoted to the *vessel open at both ends.* The piece described by G. Szabó as the upper part of a storage jar with constricted neck,[55] was recovered from pit 30 – assigned to the Proto-Nagyrév period – of the Dunaföldvár-Kálvária site. On the basis of the published drawing,[56] the latter seems to match the specimen from Börzönce down to the smallest detail. Unfortunately, I could not personally examine the Dunaföldvár vessel and to see for myself whether it is similarly open at both ends. Should this be the case, a hitherto unknown or unregistered new Somogyvár-Vinkovci pottery type can be added to the ceramic inventory of the culture.

The *vessel with constricted neck* is a similarly controversial form. Possible analogies in terms of shape and size always come with handles, as the parallels from Gradac,[57] Šljunkara,[57] Vinkovci[59] and other sites show. In contrast, the fragmentary or reconstructed specimens from Börzönce show no indication of a handle.

Few analogies can be quoted to the so-called coarse or household pottery for it is often impossible to reconstruct the original vessel form on the basis of surviving body fragments or, alternately, the reconstruction of several forms is possible. Another difficulty lies in the fact that most excavation reports tend to focus on fine or decorated wares, and coarse pottery is often neglected.

A number of storage jars and pots could be reconstructed from the vessel fragments brought to light at the Börzönce site, and I have also tried to assemble possible analogies to these vessels. I have neglected 'uncertain' parallels and have only included vessels whose form appeared in the publication.

Parallels to the *storage jar* type H/3 have been published from Szava[60] and Lánycsók–Égetthalom, from a pit assigned to the Vučedol C period.[61] An analogy to type H/7b can be quoted from Sághegy.[62] Type H/7 is known from pit 3 of the Lánycsók-Égetthalom site, from a Vučedol C context.[63] A storage jar of type H/6b has come to light at Szava.[64] A number

[53] *Ecsedy 1980* Pl. II. 13.
[54] *Ecsedy 1979* Pl. X. 12.
[55] *Szabó 1992* 49.
[56] *Szabó 1992* Pl. LIX. 3 and Pl. LXXXIII. 3: photo and drawing of the same vessel.
[57] *Tasić 1968.* Fig. 13.
[58] *Vranić 1991* Pl. III. 2.
[59] *Dimitrijević 1982a* Fig. 5. 2.
[60] *Ecsedy 1979* Pl. VI. 8.
[61] *Ecsedy 1980* Pl. IV. 4.
[62] *Bóna 1965* Pl. XII. 7.
[63] *Ecsedy 1980* Pl. IV. 1.
[64] *Ecsedy 1979* Pl. XII. 5.

of storage jars comparable to type H/8 have been reported from Ilok[65] and a vessel from Ajka can also be assigned to this category.[66] Fragments that can be assigned to type H/9 have been published from Somogyvár,[67] although it must here be noted that comparable specimens have not survived intact at any one site.

Similarly, very few analogies can be quoted to the *pots*. A pot comparable to type EF/3 has been published from Szava,[68] whilst a fragment close to type EF/7 was found in a Vučedol C context in pit 3 of the Lánycsók-Égetthalom site;[69] although the latter comes from a two-handled pot, its decoration is comparable to the specimen from Börzönce. Analogies to type KF/1 can be quoted from Szava,[70] and parallels to type KF/2 have been published from Golokut[71] and Pécs-Nagyárpád.[72] Analogies to type KF/3 are few and far between, and thus no far-reaching conclusions can be drawn: its decoration is reminiscent of Coţofeni patterns.[73] A similarly ornamented, but smaller fragment has come to light in a cremation burial of the Vinkovci culture at Drljanovac.[74] Analogies to type F/2 can be quoted from Proto-Nagyrév assemblages.[75]

Analogies to the small vessel defined as an oil lamp are known from both settlements and cemeteries. However no direct parallels are known from the Somogyvár-Vinkovci culture; comparable specimens have been reported from pit 146 of the Bell Beaker site at Szigetszentmiklós,[76] an early Nagyrév burial uncovered at Békásmegyer,[77] and settlements of the Makó culture at Budaörs[78] and Budapest-Aranyhegyi street.[79] Similar oil lamps are known from the Belotić-Bela Crkva group, from the type site,[80] as well as from the classical phase of the Ljubljana culture,[81] and the type site of the Ig group that can be linked to the same cultural complex.[82]

[65] *Tasić 1984* Pl. I. 5-6.
[66] *Bóna 1965* Pl. XIII. 1.
[67] *Bóna 1965* Pl. XII. 6.
[68] *Ecsedy 1979* Pl. II. 7.
[69] *Ecsedy 1980* Pl. V. 4 and Pl. VI. 4.
[70] *Ecsedy 1979* Pl. XI. 3.
[71] *Petrović 1991* Pl. III. 2.
[72] *Baranya monograph* 66.
[73] *Roman 1976a* Fig. 39. 10, 13 and Fig. 96.
[74] *Majnarić-Pandzić 1981* Fig. 1.
[75] *Szabó 1992* Pl. XXXIX. 8-9.
[76] *Endrődi 1992* Fig. 62. 8.
[77] *Schreiber 1972* Fig. 4. 3.
[78] *Schreiber 1972* Fig. 1. 10.
[79] *Schreiber 1994* Fig. 4. 2a-b. Similary, this piece too only has perforations on one side.
[80] *Garašanin 1982* Fig. 29. 9.
[81] *Govedarica 1989* Fig. 8. 5.
[82] *Harej 1978* Pl. 2. 6; *Harej 1987* Pl. 2. 13 and Pl. 12. 3.

3.2. Mould

A clay mould (*432*), used for casting pins, was recovered from feature O of the Börzönce site. Moulds were generally manufactured from some durable substance, generally stone, and clay moulds are considerably less frequent. A comparable mould is known from the Debelo brdo site of the Vučedol culture and another from Leliceni site of the Jigodin culture..[83]

István Ecsedy has repeatedly analyzed the metallurgy of this period in connection with the finds from the metal workshop uncovered at the Zók-Várhegy site.[84] He has suggested that "for the smith supplying a single settlement and its environs, who was not an itinerant craftsmen, the preparation of clay, rather than stone moulds was probably a much more sensible solution. Obviously, these moulds were not too durable, but their replacement, should they be damaged, was less time-consuming than that of stone moulds."[85] Ecsedy's suggestion seems valid for the Late Copper Age too. It would appear that individual settlements were supplied by a single metalsmith already during the Baden period, explaining the scarcity of metal finds from both the Baden and the Somogyvár period. Individual metalsmiths catered to local needs, making the occasional bead, lockring, pin or a more elaborate piece of metalwork. He probably prepared his own moulds and worked with raw materials and additives of differing quality: the manufactured metal items too were of differing quality. These metal artefacts of inferior quality and of lower metal content became worn and useless much quicker and were probably re-melted and re-used for the manufacture of new metals. It is therefore improbable that metalworking ceased at the close of the Late Copper Age and the beginning of the Early Bronze Age – metalsmiths merely worked under different conditions and catered to differing needs.

The reason that so few clay moulds have survived might be sought in the fact that they were liable to break and new ones had to be made from time to time – at the same time, the discarded and broken moulds are seldom found in the course of excavations. An alternative possibility is that the fragments of clay moulds that were deformed during casting are not recognized for what they are and are not published owing to their deformedness and coarse finish.

The metal artefacts of the Somogyvár-Vinkovci culture were made either of bronze or of gold. Two gold lockrings were found in a burial at Neusiedl am See,[86] and a number of gold articles, an ornamented Csáford-Stollhof type gold disc, two large spiraliform rings, two smaller rings, twenty small buttons and six small rings, were also brought to light at

[83] *Durman 1983* Pl. 5. 6; *Roman 1992* Pl. 80 4a-c
[84] *Ecsedy 1983a, 1990, 1994a, 1994b.*
[85] *Ecsedy 1983a* 83.
[86] *Bóna 1965* Pl. XVII. 15.

Orolik, near Vinkovci.[87] The articles of this assemblage, assigned to the Vinkovci B-1 period, have been interpreted as grave goods.

The few bronze finds are practically restricted to flat, trapezoidal axes from Szemely-Poljanak-Törökdomb[88] and Majs-Vuka Baba.[89] A mould for a similar axe has been published from Pécs-Nagyárpád,[90] and another mould for shaft-hole axes has come to light from the Ravazd settlement.[91] Axe moulds are also known from the Glina III-Schneckenberg culture.[92] A bronze torques, two spiral beads and a bronze dagger has been published from Zarub.[93]

I. Bóna has recently surveyed the history of metallurgy from the Early Bronze Age to the Koszider period,[94] noting that the bronze workshop uncovered at the Zók-Várhegy settlement[95] has greatly added to our knowledge, proving the existence of a local metallurgy. The moulds for various axe types that came to light from the same pit also challenge the earlier view that the Bányabükk, Fajsz and Kömlőd type axes succeeded each other, and formed a typological sequence. It would appear that the Vučedol metallurgy survived into the Somogyvár-Vinkovci culture, a suggestion also supported by the moulds found at the Somogyvár-Vinkovci sites of Pécs-Nagyárpád, Ravazd and Majs.[96]

The mould from Börzönce offers new evidence for Early Bronze Age metalworking, indicating that bronze was used not only for the manufacture of jewellery and weapons, but also for some of the pin types that only gained wider currency in the later periods of the Bronze Age.[97] It would appear that various pins of southern origin first appeared in Transdanubia not with the Kisapostag culture, but much earlier, in the Somogyvár-Vinkovci culture.

The mould from Börzönce is obviously unable to answer the question of whether metalworking was practiced by local or by immigrant bronzesmiths. This find, however, does strongly argue in favour of local metallurgy, even if the possibility that individual metal articles reached a given settlement through trade cannot be rejected out of hand.

Neither is the relation between the metallurgy of the Vučedol and the Somogyvár-Vinkovci cultures entirely clear. A number of metal articles have come to light from late Vučedol sites over the past few years.[98] The

[87] *Majnarić-Pandzić 1974* 26.
[88] *Baranya monograph* 71.
[89] *Baranya monograph* 71; *Ecsedy 1990* Fig. 11.
[90] *Ecsedy 1983a* Fig. 45.
[91] *Schreiber 1991* Fig. 10 after A. Figler's kind oral communication.
[92] *Machnik 1987* Fig. 10; *Machnik 1991* Fig. 9. 1-2.
[93] *Bóna 1965* 45.
[94] *Bóna 1994b.*
[95] *Bóna 1994b* 49.
[96] *Bóna 1994b* 49.
[97] *Szathmári 1988.*
[98] *Vučedol 1988.*

tumulus burial uncovered at Mala Gruda[98a] yielded an axe, a gold dagger that has been interpreted as a symbol of power and rank – whose origins have been traced to Mesopotamia[99] –, as well as gold pendants that reflect the high degree of craftsmanship in the working of metal. The clay mould from Börzönce definitely supports Bóna's observation that Vučedol traditions survived in the metallurgy of the Somogyvár-Vinkovci culture.

3.3. Animal figurines

The small animal figurines found at Börzönce mostly depict bovines (*399-400, 412, 421 and 423*), sheep (*401-405, 411, 413-414*), pigs, recognizable from their marked bristle (*406-407, 417-418*) and dogs (*415, 420 and 424*). These figurines share a feature that the legs were not fitted to the body separately: the fore- and hind feet were pinched into form from the body. The sex of the male animals was also strongly emphasized. Such figurines came to light from features J (*414*), L (*402, 408, 415*), O (*399-400, 403-405, 407, 411-412*), P (*401, 406, 409-410, 413*), 6 (*423*), 11 (*416, 421, 424*) and 15 (*417-420*). The schematic modelling that nonetheless reflects important traits bespeaks the sophistication of their sculptors and also suggests that the occupants of the Börzönce settlement lived in close quarters with these animals and that their observation cannot have run into difficulties.

These small animal figurines were recovered from refuse features, together with pottery fragments: there were no indications whatsoever of a cultic deposition. The economic and religious importance attached to these animals undoubtedly differed from that of the Late Copper Age Baden culture. The number of animal bones was relatively low in proportion to the size of the settlement and the quantity of other finds.[100]

Comparable animal figurines of the Somogyvár-Vinkovci culture have been published from Nagykanizsa–Inkey kápolna.[101] An ornamented figurine fragment, found in a Glina III context, has been reported from Odaia Turcului,[102] and similar animal statuettes are also known from the late Vučedol, Coţofeni and Glina III-Schneckenberg cultures.[103] Miniature animal statuettes, although in a somewhat different style, occur later also in the Ottomány and Hatvan culture.[104]

3.4. Wagon model

The wagon model *(422)* came to light from the bottom of feature J, without any indication that this object had had any special function. One

[98a] *Parović-Pešikan - Trbuković 1971.*

[99] *Parović-Pešikan 1985; Maran 1987; Durman 1988* 59.

[100] For the analysis of the animal bones see the chapter by *László Bartosiewicz* in this volume.

[101] *Horváth 1984* Fig. 5. 2. *Horváth 1994* Fig. 8.

[102] *Tudor 1982* Fig. 5. 9.

[103] *Marković 1981* Pl. 5. 3-6 and Pl. 19. 8, 12; *Roman 1976a* Fig. 52. 1-5; *Prox 1941* Pl. XI. 1,3-8, 10; *Machnik 1987* Fig. 8. 22; *Machnik 1991* Fig. 7. 22.

[104] *Kalicz 1968* Pls XLII, XLV, LIX, LXIV, LXXIII, LXXXI, XCIII, CIX and CXVI; *Csányi-Tárnoki 1992* 205 cat. no. 424

of the three clay wheel models from the same feature could, in the light of its size and proportions, in fact have been one of the original wheels of the wagon model. The wagon model is rather schematic, only the lower part of the wagon body has survived with the position of the axles. Its length is 5.4 cm, its width is 3.9 cm and 3.2 cm resp., its height is 1.6 cm. The position of the axles is marked by two longitudinal perforations under the two short sides. The base of the wagon body is rather asymmetrical, even though the position of the axles is identical. A discontinuous incised line runs along one of the long and one of the short sides of the fragment. There is no indication of what the original wagon – on which the model was based – had been made of. The simple and unornamented wagon model would suggest a wooden prototype which, with its solid wooden wheels that turned together with the axle, can be assigned to the category of heavy duty vehicles. The conical form of the wheels would imply that they had been fixed to the axle. There is no indication of the draught-pole on the surviving fragment, or of the mode of traction. The original wagon on which the statuette was modelled had probably been drawn by oxen, as was usual in the case of heavy wagons. And even though the wagon must have been a rather clumsy vehicle since the axle turned together with the wheels, and it probably needed quite some room for manoeuvring, the use of such wagons undoubtedly facilitated the day to day life of their owners both in transport and in transportation.

Contemporaneous analogies to the wagon model from Börzönce are known from the territory of present-day Romania (Kucsuláta/Cuciulata, Szalacs/Sălacea).[105] Aside from the Börzönce and the Romanian models, wagon models are currently known exclusively from the close of the Early Bronze Age, from the Hatvan culture, for only wheel models are known from the Makó culture.[106] The importance of the wagon model from Börzönce lies in the fact that it is the 'missing link' between the Late Copper Age models from Budakalász and Szigetszentmárton, and the Middle Bronze Age specimens, proving that wagons were not entirely unknown in the Early Bronze Age on Transdanubia.[107]

Bóna has recently surveyed the known Bronze Age wagon models, amplifying the currently known wagon models of the Gyulavarsánd and Ottomány cultures with new finds from Vésztő-Mágor, Berettyószentmárton and Berettyóújfalu-Herpály.[108] The series can now be enlarged to include another wagon model from Polgár-Kenderföld-Kiscsőszhalom which has been assigned to the late Hatvan period that 'leads to the Füzesabony culture'.[109]

105 *Bichir 1964* Fig. 1; *Petrescu-Dîmboviţa 1974* Fig. 2.
106 *Kalicz 1968* Pl. CXIII 8; *Kalicz 1984* Pl. XXIII. 4.
107 For a detailed analysis cf. *Bondár 1990* and *Bondár 1992.*
108 *Bóna 1994c* in his cat. nos 330, 424 and 425.
109 *RégFüz* Ser. I. 43 (1991) 13: excavation conducted by M. Máthé and M. Vicze.

Aside from the wagon model, a number of clay wheels, both intact (*445-446 and 454*) and fragmentary (*438-441, 443, 450-453, 455-457*) were recovered from various settlement features (features A, É, J, O, P, 6, 11 and 17). A total of seven intact and nine fragmentary wheels were found; their diameter varies between 3 cm and 8 cm, suggesting that the wagon models to which they had originally belonged also differed in size. Some six to eight wagon models can be assumed from the number of wheels, of which we only found a single one. Bearing in mind the number of wheels from other Somogyvár-Vinkovci sites,[110] the probable number of wagon models is even higher.

The fact that these wagon models come in varying sizes and have been almost without exception been found in refuse features would imply that carts and wagons were by this time a natural part of day to day life and that cult practices were no longer associated with them; they can even be seen as children's toys.

It is generally accepted that these wagon model types originated from the Ancient Near East (Mesopotamia and Anatolia) since the earliest and most frequent occurrences and depictions of similar wagons are known from this area. Opinions are divided, however, as to the exact route of their distribution to the Carpathian Basin. Three major intermediate areas can be considered in this respect: the steppe area north of the Pontic, the Balkans or the Mediterranean and Italy. Of these, the Balkans seem to be the most probable, seeing that the closest analogies come from the Glina III-Schneckenberg culture of Romania.

3.5. Idols

One intact female idol (*1*) and the head of another one *(2)* was found at the Börzönce site (features 7 and 11). The height of the intact female statuette is 7 cm. Its head is triangular and slightly thrown back. On the back of the head is the schematic depiction of a bun or a shawl, and she wore a long dress that reached to the ankles. Its female character is indicated by the depiction of the breasts. The face is rather schematic, the nose is uncommonly large. Eyes are indicated by a pair of barely visible incisions, as if she wore a mask or a veil. The outstretched arms are no more than knob-like clay stumps. Similarly to the pottery, the clay was tempered with crushed pebbles and quartzite.

A number of studies have been devoted to anthropomorphic depictions, generally regarded as part of religious life.[111] This particular issue has been well researched and there is no lack of publications; however, compared to preceding and later periods, relatively few idols are known from the Early Bronze Age.

[110] *Bóna 1960* Fig. 7.

[111] *Makkay 1962; Höckmann 1968; Ucko 1968; Idole 1972; Kovács 1972;* Letica *1973; Karmanski 1977; Kalicz 1981; Makkay 1983; Idole 1985; Gimbutas 1984; Religion 1989; Chicideanu 1990; Gimbutas 1991; Makkay 1992; Horváth 1993; Zalai-Gaál 1993.*

Two types of idols were current in the Vučedol culture: one rooted in Copper Age traditions, with a strong emphasis on secondary sexual characteristics and a detailed depiction of costume, such as the idols from Vinkovci[112] and Ig,[113] or the statuette from Kisfentős/Fînteuşu Mic in Romania.[114]

The other type includes plain and simple female idols, where the breasts are accentuated, but the head and the costume are depicted more carelessly. The body is pillar-like, the arms are marked by small stumps and the feet are hidden by a long dress. Such idols have come to light at the Vinkovci[115] and Apatovac[116] sites of the Vučedol culture; the latter idol is fragmentary, only the upper part of the body has survived. The breasts are indicated, the two arms are stump-like.

Comparable female statuettes have been published from the Velem site of the Makó culture,[117] and from the Tibolddaróc-Bércút,[118] Tiszapolgár,[119] Patvarc[120] and Benczúrfalva[121] sites of the Hatvan culture. An interesting motif on the Benczúrfalva statuette is the deeply incised line encircling the waist that perhaps depicted a belt or the waist-line of the dress. The statuette from Köröstarcsa[122] is even more schematic than the average. A similar duality can be noted in the Ottomány culture, with a rather indistinct statuette, reminiscent of the headless Baden idols, from Szalacs/Sălacea,[123] and a pillar-like idol with schematized head and stump-like arms from Szilágypér/Pir.[124]

The above goes to prove that the duality of anthropomorphic representations persisted into the Early Bronze Age: the lavishly ornamented idols of the Late Copper Age reached their artistic peak in the idols with bell-shaped skirt of the Middle Bronze Age. The simple, more schematic depictions of the Early Bronze Age, that survived into the Iron Age, existed side by side with the former.[125]

Few idols are known from the Somogyvár-Vinkovci culture. A fragmentary statuette (*4*), whose head and left arm are missing, came to light from the ditch of the fortified settlement of Nagygörbő-Várhegy. Its height is 6 cm and it stood on an oval base. Two incised parallel horizontal lines run under the breasts.[126] The fragmentary upper part of a female

[112] *Težak 1975* Fig .1-4.*Dimitrijević 1977-78* Pl. 14. 3, 9
[113] *Korošec – Korošec 1969* Pl. 2. 1.
[114] *Roska 1939* 408; *Dumitrescu 1974* Fig. 402. 1.
[115] *Težak 1975* Fig 5. *Dimitrijević 1977-78* Pl. 14. 5.
[116] *Dimitrijević 1956* Pl. XII. 78.
[117] *Kalicz 1968* Pl. X. 5, 7.
[118] *Kalicz 1968* Pl. CXIII. 1.
[119] *Kalicz 1968* Pl. CXIII. 5.
[120] *Kalicz 1968* Pl. CXIII. 4.
[121] *Kalicz 1968* Pl. CXIII. 2-3.
[122] *Kalicz 1968* Pl. XIII. 6-7.
[123] *Bader 1978* Fig. XXXVI. 3.
[124] *Bader 1978* Fig. XXXVI. 4.
[125] E.g. Ormož: *Lamut 1988-89* Pl. 1. 13; Reci: *Dumitrescu 1974* Fig. 405. 2, 4.
[126] *Nováki 1965* Fig. 7.

statuette has been found at Pécs–Nagyárpád.[127] The head is flat and rounded triangular in shape, the face is wholly schematized. The breasts are portrayed in line with the neck. The Dörgicse statuette (*3*) has also been assigned to the Somogyvár-Vinkovci culture.[128]

The characteristic thrown-back head of the Börzönce idol, as well as its modelling, suggests links with the Balkans and Anatolia.[129] Its closest parallels are the statuettes from Nagygörbő, Dörgicse and Pécs-Nagyárpád. Comparable idols can also be quoted from the Coţofeni[130] and from the Glina III-Schneckenberg culture.[131] The few known idols of the Somogyvár-Vinkovci culture suggest that the idols and statuettes either continued the already existing southern traditions of the Vučedol culture or were influenced by new impulses from the south that reached this region from Anatolia through the Balkans.

4. The Somogyvár-Vinkovci culture: history of research

It has been repeatedly stated in the previous sections that the Börzönce settlement can be assigned to the Somogyvár-Vinkovci culture. But what does this label cover? The research of this culture can look back on a mere thirty years, even if a plethora of studies have been devoted to the various aspects and problems of this exciting period, the Early Bronze Age, both by Hungarian and other scholars.

The finds of the Somogyvár-Vinkovci culture have been known for a long time, but they were generally assigned to other archaeological cultures and groups (Baden, Vučedol, Makó, Nagyrév, etc.). István Bóna was the first to assemble the corpus of known finds from the various museums of Transdanubia and to publish them in a short study under the label Somogyvár-Gönyü group.[132] A few years later he published all the then known finds of the Somogyvár group.[133] He primarily collected stray assemblages from 43 sites in counties Baranya, Fejér, Győr-Sopron, Komárom, Somogy, Tolna, Vas and Veszprém, as well as from Burgenland and Serbia. Together with an overview of the settlement patterns and the burial customs of this group, Bóna also tried to review its links to other cultures of the Carpathian Basin and, also, its relations with the Aegean. In the lack of stratigraphical sequences Bóna could only suggest a tentative relative chronological position for the group: Pécel-Somogyvár-Vučedol/Zók.

[127] *Bándi 1979* 67.

[128] *MRT 2* Pl. 6. 3 (now in the collection of the Archaeological Department of the Eötvös Loránd University).

[129] *Makkay 1962* with further literature; *Idole 1985*; *Makkay 1992* with further literature.

[130] *Roman 1977* Pl. 39. 6.

[131] *Nestor 1927-1932* Fig. 5. 11 and Fig. 6. 10, 12; *Prox 1941* Pl. 11. 2; *Schroller 1933* Pl. 53. 15, 18, 19.

[132] *Bóna 1961.*

[133] *Bóna 1965.*

Simultaneously with Bóna's study, Dimitrijević published the comparable finds from Yugoslavia.[134] Dimitrijević's excavation at Vinkovci-Tržnica clarified the chronological position of the Vinkovci culture and also enabled the internal periodization of the culture. Dimitrijević distinguished two main phases: the lower levels (200 cm to 150 cm) of the 4 m thick deposits was defined as Vinkovci A, while the upper level (150 cm to 40 cm) as Vinkovci B, which he divided into two further sub-phases. In Dimitrijević's view the Vinkovci culture emerged under the influence of Early Bronze Age components from the southern Balkans, but was nonetheless based on the Vučedol culture.[135]

Tasić too gave a brief survey of the Vinkovci culture.[136] In his opinion the Vinkovci culture – of which three layers, A, B1 and B2 could be distinguished at the type site – was the first Early Bronze Age horizon that in Slavonia, in Syrmia and in Northwestern Croatia (the area between Zimony/Zemun and Belovar/Bjelovar) directly succeeded the Vučedol culture. He identified its principal sites as Bosut, Orolik and Gradina, the westernmost site being Drljanovac, near Bjelovar. The Vinkovci culture evolved from the Vučedol culture, whose transformation can be linked to Bronze Age influences from the southern Balkans (northern Greece and Macedonia). Genetic links can be demonstrated with the Makó, the Nyírség and the Vučedol cultures.[137]

In his study of the finds from Nagyvejke Bóna again reviewed the problems of the Somogyvár group, arguing mostly against G. Bándi's concepts.[138] In the light of Dimitrijević's excavations, Bóna modified his earlier opinion on the chronological position of the Somogyvár group, accepting – on the basis of the stratigraphical sequence observed at Vinkovci – that the Vinkovci culture was Vučedol-based, adopting the large vessels, one-handled cups and the ornamentation of the coarse pottery from the latter. Bóna equated the Vinkovci A phase with our Somogyvár group and considered the Vinkovci B phase to reflect the local, Syrmian variant of the culture. At the Vinkovci site the development of the classical Vučedol culture was brought to an end by the influx of southern elements from eastern Macedonia and Thessaly, leading to the emergence of the Vinkovci A horizon. Bóna maintained that the substratum of Vinkovci A and of the Transdanubian Early Bronze Age differed, and that the appearance of the Makó group can be roughly correlated with the emergence of Vinkovci A. As for the chronological position of the Somogyvár group of Transdanubia, only so much could then be ascertained that it should be placed between the classical Vučedol and the early Kisapostag period. Its relation to the Makó group, however, remained unclear.[139]

[134] *Dimitrijević 1966.*
[135] *Dimitrijević 1966; Tasić 1968; Dimitrijević 1982a.*
[136] *Tasić 1971.*
[137] *Tasić 1971* 300.
[138] *Bóna 1971.* For Bándi's view see *Bándi 1968.*
[139] *Bóna 1971.*

The Somogyvár group and the Vinkovci culture were linked to each other by István Ecsedy who demonstrated that they are parts of the same cultural complex.[140] He assembled a type chart of diagnostic pottery forms, based on finds from his own excavation. In his discussion of cultural links, Ecsedy called attention to the Mala Gruda tumulus burial in the western Balkans as an illustration of the interrelations between the western Balkans and the Aegean. Ecsedy also surveyed burial practices and, in particular, the graves into which daggers had been deposited: he noted that the similarities between the finds did not necessarily indicate large-scale migrations, but rather reflected an integration of some sort. He noted that in the south the Somogyvár-Vinkovci culture appeared at the very end of the Vučedol C period, simultaneously with the Makó culture, and that on the earliest Transdanubian sites Somogyvár-Vinkovci finds occur together with Makó pottery. In his opinion the gap between the Vučedol C-Makó period and the Kisapostag was, at least in southern Transdanubia, filled by the Somogyvár-Vinkovci culture.

In his publication of the Early Bronze Age finds from Szava in county Baranya, Ecsedy returned to the discussion of the Somogyvár group. Expanding Bóna's register of sites, he assembled the then known Somogyvár sites and mapped the Zók-Vučedol, the Somogyvár-Vinkovci and the late(?) Somogyvár-Vinkovci sites of Northern Transdanubia. He also prepared distribution maps of the cultures of the Vučedol, the post-Vučedol I and the post-Vučedol II period, together with a chronological chart showing the sequence of Early Bronze Age cultures, on the basis of which he noted that, in contrast to Nándor Kalicz's opinion – according to whom the Vučedol and Makó assemblages are part and parcel of the Zók cultural complex and are, moreover, synchronous –, "the Vučedol type and Makó-Kosihý-Čaka assemblages are not culturally similar and neither are they contemporaneous."[141] On the basis of the finds from a pit of the Lánycsók site in 1980, Ecsedy also distinguished the very latest Vučedol wares that directly preceded the Somogyvár Vinkovci culture.[142]

In his publication of the results of the 1977-1978 season at Vinkovci, Dimitrijević refined the internal periodization of the Vinkovci A horizon, subdividing it into an earlier and a late phase.[143] In a work on chronology published in the same year, Dimitrijević disputed Ecsedy's views concerning the dating and cultural interrelations of the Somogyvár-Vinkovci culture. According to him, Vučedol C and Vinkovci A1 were contemporary, while the Nagyrév, Bell-Beaker-Csepel, Hatvan, Pitvaros, Somogyvár and Ljubljana cultures were contemporary to Vinkovci A2.[144]

[140] *Ecsedy 1978a* 185, note 1.
[141] *Ecsedy 1979* 118.
[142] *Ecsedy 1980.*
[143] *Dimitrijević 1982a.*
[144] *Dimitrijević 1982b* 447-457, Abb. 9.

In the preliminary report of the excavations conducted at the Zók-Várhegy site, Ecsedy discussed various issues relating to the Somogyvár-Vinkovci culture only in brief, for he was mainly preoccupied with the problems of early metallurgy, based on the recovery of a mould and various metal artefacts from the Vučedol C period.[145]

Gábor Bándi, too devoted a series of articles to the Somogyvár group. He first published the findings of the excavations conducted at Pécs-Nagyárpád between 1963 and 1967 in the *Baranya Monograph.*[146] Following a brief review of the history of the research of the culture, he discussed in detail the results of the investigations at the Nagyárpád site. At Nagyárpád the Somogyvár wares only formed a part of the closed assemblages and Bándi maintained that the evidence was insufficient for distinguishing a distinct ethnic group or a separate chronological period. He introduced the Zók-Somogyvár group for describing the ethnic group in which Somogyvár wares form a closed assemblage.[147] Chronologically, this group is separate from the classical Vučedol group – Vučedol being, in his opinion, a precursor to the Zók-Somogyvár group – and also from the Makó group in terms of typology. Bándi, too thought that the stratigraphical sequence observed at Vinkovci can be extended to apply to Southern Transdanubia and agreed that the term Somogyvár-Vinkovci should be used to describe the most important cultural element of the Early Bronze Age in the western half of the Carpathian Basin. Bándi also devoted a lengthy discussion to the internal organization and layout of the Nagyárpád settlement.[148] In his subsequent papers Bándi merely commented on what he had already written in the *Baranya Monograph.*[149]

In 1984 Bándi surveyed the history of Early Bronze Age metallurgy in the Carpathian Basin and noted that "there is very little in the way of evidence for the use of metal in the central areas of the Carpathian Basin during the first period of the Early Bronze Age: in the Somogyvár-Vinkovci culture of Transdanubia and in the Makó-Kosihý-Čaka culture of the Great Hungarian Plain. In Transdanubia the use of the Vučedol copper implements seems to be, quite enigmatically, discontinued. The stray, mostly Kožarac type axes (Érd, Kisbér) cannot be evaluated in this respect. Only the Cypriote daggers from Ószőny and Csorvás reflect a new, hitherto unknown typological link with the south."[150]

Rózsa Schreiber has devoted several studies to the problems of the Early Bronze Age, including the Somogyvár-Vinkovci culture.[151] In a recent, more longer study on the Somogyvár-Vinkovci culture[152] she has briefly

[145] *Ecsedy 1983a.*
[146] *Bándi 1979.*
[147] *Bándi 1979* 60.
[148] *Bándi 1979.*
[149] *Bándi 1980, 1981* and *1984a.*
[150] *Bándi 1984b* 118.
[151] *Schreiber 1972, 1975a, 1975b, 1976a, 1976b, 1984a, 1984b, 1986, 1989, 1991, 1994.*
[152] *Schreiber 1991.*

touched upon the emergence of the Early Bronze Age. Summing up earlier views proposed by Bándi,[153] Bóna,[154] Ecsedy,[155] Kalicz,[156] Schreiber,[157] Ruttkay[158] and Torma[159] she went on to discuss the emergence of the Early Bronze Age in Western Transdanubia. She distinguished three smaller regions: the Alpine foreground (the Laibach group of the Vučedol culture), the southerly areas of Western Transdanubia (the Somogyvár-Vinkovci culture) and the northerly areas of Western Transdanubia (the Makó culture). She noted that the geographical boundaries of the distribution of the older Somogyvár-Vinkovci phase and of the Makó culture cannot be clearly drawn, and that the typological observations made in Southern Transdanubia, primarily in county Baranya, might not be valid for the Somogyvár-Vinkovci culture elsewhere. She modified her earlier observations[160] concerning the relative chronological position of the Somogyvár-Vinkovci culture and attempted to define the diagnostic features of the younger Somogyvár-Vinkovci phase. In the second part of her study Schreiber offers a survey of the so-called vessels with asymmetric handle, a pottery type that, following Copper Age precursors, appeared over a wider area, from Bulgaria to Moravia.[161] Schreiber considers the appearance of this ware, of indisputably southern origin, to have coincided with the transformation of the Makó culture into the Nagyrév culture in the Tisza and Körös region, as well as in the environs of Budapest.[162]

In his comprehensive overview of the Bronze Age tell cultures, István Bóna has recently surveyed the Bronze Age cultures from the Makó period to the Koszider period,[163] noting that from period 2 of the Early Bronze Age the Carpathian Basin had been settled by more or less related population groups of southern origin.[164] There is a general consensus that these population groups arrived in the Carpathian Basin from the Balkans through Thrace and Macedonia. Their migration can be linked to the close of the Aegean Early Bronze Age III and the abandonment of the tell settlements. Bóna outlined five main waves of immigration, from differing directions:

(1) The Somogyvár culture reached Transdanubia through Slavonia, winding its way up the Drina valley. Its first groups reached the Danube in the northwest, their presence can be demonstrated in the Rába region

153 *Bándi 1981, 1982a* and *1982b.*
154 *Bóna 1961, 1963, 1965, 1971* and *1975.*
155 *Ecsedy 1979, 1981, 1983a* and *1983b.*
156 *Kalicz 1968* and *1984.*
157 *Schreiber 1975a, 1975b, 1976a, 1976b* and *1984a.*
158 *Ruttkay 1981.*
159 *Torma 1972.*
160 *Schreiber 1991* 10.
161 *Schreiber 1991* Fig. 13.
162 *Schreiber 1991* 14.
163 *Bóna 1994a.*
164 *Bóna 1994a* 13.

and burials mark their presence in the Leitha region. Bóna offered a detailed analysis of settlements and finds, as well as of links with neighbouring cultures.[165]

(2) The Somogyvár-Proto-Nagyrév culture was another branch of this southern wave that settled on the loess plateau on the right bank of the Danube, establishing fortified settlements (Dunaszekcső-Várhegy and Dunaföldvár-Öreghegy) resembling those of the Vučedol culture. This group in fact corresponds to the Proto-Nagyrév culture from which the Nagyrév culture eventually emerged in the area between Dunaföldvár and Dunaszekcső.[166]

(3) Some groups from the county Baranya distribution of the Somogyvár-Szava-Vinkovci culture crossed the Danube and reached the Tisza, settling between Csikér and Dongér, opposite the Pitvaros territory. This group has been labelled the Somogyvár-Ada group, and their presence curbed the further expansion of the Pitvaros culture.[167]

(4) The expansion of another population group, the (Somogyvár-) Gyula-Roşia group from the Körös region to the Berettyó region checked the expansion of the Ada group. Aside from a few stray finds from Hungary, rich assemblages of this group have been brought to light from the caves lying along the Romanian section of the Rapid Körös. The finds share numerous similarities with the Somogyvár and Vinkovci-Szava group of Transdanubia, but have little in common with the Schneckenberg culture, with Nyírség I or with the Pitvaros culture, also of southern origin. The northern and eastern expansion of the Pitvaros group had probably been curbed by this culture which also seems to have played a role in the emergence of the Ottomány culture.[168]

(5) The eastern branch of these southern migrations traversed the valley of the Lower Danube and arriving to the Romanian plainland contributed to the emergence of the Glina III culture. Similarly to its western neighbours, the Glina III culture also established hilltop settlements and raised a mound over its burials. Migrating east along the Olt valley, they eventually penetrated Transylvania (the [Somogyvár-]Schneckenberg culture).[169]

This overview of the history of research clearly indicates that the 1960s can be seen as the period of the discovery and elaboration of southern links,[170] that gave a fresh impetus to Bronze Age studies and opened up new perspectives. It is, sadly, equally true that the malady plaguing prehistoric research, the passion for re-naming existing groups and cultures, has not spared the Early Bronze Age either. It seems to have be-

[165] *Bóna 1994a* 13-14.
[166] *Bóna 1994a* 14-15.
[167] *Bóna 1994a* 15.
[168] *Bóna 1994a* 15.
[169] *Bóna 1994a* 15.
[170] *Bóna 1960, 1963* and *1965*; *Kalicz 1963* and *1968*; *Makkay 1959, 1962, 1963, 1965* etc.

come almost an article of faith to attach a new label to the same cultural unit in any fresh study or publication, and this seems to be especially valid for the Late Copper Age[171] and the Somogyvár-Vinkvoci culture. Suffice it here to quote but a few of the labels that have been assigned to this culture: Somogyvár-Gönyü group,[172] Somogyvár group of the Zók culture,[173] Zók-Somogyvár group,[174] Somogyvár group,[175] Vinkovci culture,[176] Vinkovci group,[177] Somogyvár-Vinkovci culture[178] and the most recent grouping of the Somogyvár culture by István Bóna.[179]

István Bóna has greatly contributed to a better understanding of the Somogyvár-Vinkovci culture.[180] A series of studies appeared both in Hungary and in Yugoslavia that dealt with various aspects of this culture. The results of the by and large contemporaneous excavations at Pécs-Nagyárpád, Vinkovci and Nagygörbő-Várhegy were published at roughly the same time, explaining to some extent the different labels given to the self-same culture.

By the early 1980s this interest in the Early Bronze Age waned and the focus of research shifted to other periods. The final reports of the excavations conducted at Pécs-Nagyárpád, Somogyvár, Zók-Várhegy and other sites have still not appeared, and neither have new large-scale investigations been launched. The same holds true for research in Yugoslavia. A fresh impetus to the research of this period can be hoped from the large-scale rescue excavations and the systematic settlement and micro-regional research projects launched in the late 1980s, as well as from the publication of larger assemblages and finds from earlier excavations.

5. Evaluation

The above overview of studies devoted to the Early Bronze Age shows that no consensus has been reached over a number of major issues. Views differ over the boundary between the Copper and the Bronze Age. Ecsedy has assigned the Zók-Vučedol, the Kostolac, the late Baden, the Pit-Grave and the Coţofeni cultures to the Vučedol period (Vučedol II),[181] with the Somogyvár-Vinkovci, the Makó, the Nyírség, the Jigodin, the Kosihý-Čaka, the Bosáca, the Jevišovice B and the Glina III cultures falling

[171] *Bondár 1991.*
[172] *Bóna 1960* and *1961*
[173] *MRT 1* and *2.*
[174] *Bándi 1966.*
[175] *Bóna 1965* and *1971*; *MRT 5.*
[176] *Dimitrijević 1966* and *1982a.*
[177] *Tasić 1968* and *1974*; *Garašanin 1983.*
[178] *Ecsedy 1978a*; *Bándi 1979*; *Schreiber 1986, 1989* and *1991.*
[179] *Bóna 1992* and *1994a.*
[180] *Bóna 1960, 1961* and *1965.*
[181] *Ecsedy 1979* Fig. 7.

into the post-Vučedol I period.[182] Late Somogyvár-Vinkovci, Nagyrév, late Glina III, Pitvaros, Nyírség, Kosihý-Čaka, Bell Beaker, early Aunjetitz and the Csepel group are assigned by him to the early Nagyrév period (post-Vučedol II).[183] Ecsedy put the onset of the Early Bronze Age in the late Vučedol period (post-Vučedol I).[184]

In contrast, Kalicz puts the onset of the Bronze Age after the Late Copper Age Baden-Kostolac-Viss-Bošáca-Vučedol period, subdividing the Early Bronze Age into three phases. His Early Bronze Age I includes the Makó (Kosihý-Čaka) and the Somogyvár-Vinkovci cultures, Early Bronze Age II the Nyírség culture, the Óbéba-Pitvaros group, the Csepel group of the Bell Beaker culture, the early Nagyrév phase and the surviving Somogyvár-Vinkovci culture, while Early Bronze Age III spans the Hatvan, the Ottomány, the Maros (Szőreg), the late phase of Nagyrév, the Kisapostag and the early Encrusted Pottery cultures, noting that the cultural conditions of the period following the Somogyvár-Vinkovci culture in the first half of the Early Bronze Age III are still unclear in Transdanubia.[185]

Schreiber assigns to the Early Bronze Age I the Vučedol, the early Somogyvár-Vinkovci, the early Glina III-Schneckenberg, the Belotić, the Jigodin and the Makó (Kosihý-Čaka) cultures.[186] Her Early Bronze Age IIa includes the early Nagyrév, the Bell Beaker-Csepel, the late Somogyvár-Vinkovci, the Chlopicé-Veselé, the Nyírség, the early Maros and the late Glina III-Schneckenberg cultures.[187] To the Early Bronze Age IIb are assigned the early Nagyrév, the late Somogyvár-Vinkovci, the proto-Aunjetitz, the Chlopicé-Veselé, the Nyitra and the early Maros cultures, as well as the Leitha/Lajta group.[188] Her Early Bronze Age IIIa accommodates the late Nagyrév, the early Kisapostag, the Gáta-Wieselburg, the incipient Hatvan and the middle Maros culture.[189]

In his recent studies Bóna assigns the Makó and the early Nyírség cultures, as well as the contemporaneous late Vučedol and Ljubljana-Laibach cultures to the Early Bronze Age I. His Early Bronze Age II includes the Ljubljana culture, Somogyvár-Vinkovci A1, Proto-Nagyrév, Ada, Pitvaros, Gyula-Roşia, Nyírség II, late Makó-Kosihý, Óbéba-Pitvaros and the Bell Beaker complex. Early Bronze Age III covers Szava-Vinkovci A2, late Somogyvár, Drassburg-Kisapostag, early Hatvan, late Nagyrév, Nyírség II, early Pitvaros-Perjámos, the Corded Ware culture of Eastern Europe and the Lajta group. According to his chronological chart the Ottomány

[182] *Ecsedy 1979* Fig. 8.
[183] *Ecsedy 1979* Fig. 9.
[184] *Ecsedy 1979* 118; *Ecsedy 1994b* 18-19.
[185] *Kalicz 1982* Fig. 1.
[186] *Schreiber 1991* Fig. 8.
[187] *Schreiber 1991* Fig. 9.
[188] *Schreiber 1991* Fig. 10.
[189] *Schreiber 1991* Fig. 11.

culture is also to be assigned here.[190] The comparison of various relative chronological systems could easily be continued, but the examples quoted in the above illustrate the differences well.

A similar patchwork of widely diverse opinions can be noted as far as absolute chronology is concerned. A wide, several centuries' large chasm, that seems to be unbridgable at present, separates the adherents of the traditional chronology based on historical sources and the advocates of the C^{14} based chronology. Without going into details here, I myself heartily agree with Tibor Kovács's sceptic remark, made some twenty years ago, but sadly still valid,[191] that the irreconcilable views on the emergence of the Early Bronze Age and the identity of the first Bronze Age population groups are based on the same body of evidence that, for the greater part, does not stem from systematic excavations. And even though a sound typological basis continues to be lacking, broad theories which over the past twenty years have spawned further speculations have come to replace the publication of finds and assemblages.

Investigations in this field were mainly focused on the eastern areas of Transdanubia (counties Baranya, Somogy and Tolna), the area around Budapest and the northern areas of Transdanubia. Owing to the scarcity of finds, only broad assumptions were made concerning the southwestern areas of Transdanubia.

There is very little in the way of adequately published material even from the relatively well-researched eastern areas of Transdanubia. The single wholly excavated settlement, Pécs-Nagyárpád, remains unpublished; Bándi only published brief summaries of his investigations there and of the internal layout of the settlement.[192] Of the vast ceramic assemblage, mostly the intact vessels were published, and only a few sherds, but without profiles.[193] Ecsedy's report on the excavation at Szava is practically the single comprehensive publication of a Somogyvár settlement.[194]

A comparative analysis of the pottery wares can only be based on the finds from Lánycsók,[195] Nagygörbő-Várhegy,[196] Pécs-Nagyárpád,[197] pit 19 of the Szava site[198] and Zók-Várhegy.[199] The greater part of the Yugoslavian material is known only from type charts (Vinkovci, Ilok and Gradina).[200] And even though the past few years have seen a proliferation of studies on the Early Bronze Age and a number of conferences

[190] *Bóna 1992* 16 and *Bóna 1994a* 16.
[191] *Kovács 1975* 265.
[192] *Bándi 1979, 1980, 1981, 1984a* and *1984b.*
[193] *Bándi 1980* and *1981.*
[194] *Ecsedy 1979.*
[195] *Ecsedy 1978b* and *1980.*
[196] *Nováki 1965.*
[197] *Bándi 1979, 1981* and *1984a.*
[198] *Ecsedy 1979.*
[199] *Ecsedy 1983a.*
[200] *Dimitrijević 1982a* Figs 5 and 6; *Tasić 1984* Pls I-IV.

have been organized on this theme,[201] the publication of the find assemblages themselves has not kept up with theoretical speculation. This deficiency has by now, as aptly pointed out by Kovács and, more recently, by Ecsedy,[202] become an element encumbering further research since there are no possibilities for comparative analyses, the refinement of typology or the more precise internal periodization of a given culture.

In Southwestern Transdanubia Nagykanizsa-Inkey kápolna and Börzönce-Temetői dűlő are the two sites that yielded an 'undiluted' Somogyvár assemblage. The analysis of the Börzönce ceramic inventory has shown that the same sites tend to be quoted for analogies, even though the finds from these sites rarely stem from systematic excavations. It follows from this that the Börzönce finds cannot be compared with truly authentic material and thus the validity of any conclusions that might be drawn would remain rather limited – this being the main reason that I have not offered a detailed analysis of possible links or of questions of chronology.

The few analogies indicate that the Börzönce finds share the most similarities with finds from the late Vučedol C and the Vinkovci A1 period, suggesting the survival of Vučedol elements as late as the period represented by the Börzönce site. Analogies with Szava seem to indicate that Szava pottery forms had already made their appearance in Vinkovci A, even if this is not always evident from the known type charts. Contact with the Coţofeni culture, as well as with the Gyula-Roşia and the Belotić-Bela Crkva groups, the Ljubljana culture and the Proto-Nagyrév material can also be demonstrated.

The Börzönce finds nonetheless seem to be most closely bound to the distant Glina III-Schneckenberg culture. The parallels to the wagon model, the wheels, the animal statuettes, the idols, the metallurgy, the jugs, juglets and amphorae tend to underline this connection. (In view of the role of wagons outlined in the above I do not consider the possible cultural or ethnic interrelations between distant areas either inconceivable or particularly surprising.)

Three main techniques for the depiction of the distribution of prehistoric cultures are generally employed: hatching using different signs, shading entire areas or distribution maps showing actual sites. The first two techniques tend to make one conceive of individual cultures and groups as blocks that can be moved and shifted from one area to another at whim, modelling the movement of particular population groups. In contrast, distribution maps filled with actual sites offer a more reliable technique for tracing the 'movement' of a particular culture.

[201] E.g. *Warszawa 1975*; *Bossum–Haarlem 1976*; *Bucureşti 1976*; *Budapest–Velem 1977*; *Thracia praehistorica*; *Vukovár 1981*; *Xanthi 1981*; *Verona 1982*; *Beograd 1984*; *Krakow 1984*; *Lendva 1986*; *Praha – Libice 1986*; *Beograd 1986*; *Berlin – Nitra 1987*; *Strasbourg 1988*; *Saarbrücken 1988* etc.

[202] *Kovács 1975* 265; *Ecsedy 1978a* 186.

When searching for distribution maps with actual Somogyvár-Vinkovci sites in earlier publications, I found that a comprehensive map of the distribution of this culture is lacking both from Hungarian and from Yugoslavian studies. Bóna[203] and Ecsedy[204] mapped only the Hungarian sites of the culture, while Garašanin only mapped the Yugoslavian sites.[205] It was therefore necessary to combine these maps and to complement the Somogyvár-Vinkovci distribution with recent sites (*Fig. 19*).[206] This map clearly reflects the route taken by the Somogyvár-Vinkovci population during its migration: they reached the areas south of the Danube, along the Danube, penetrating first Slavonia and, later, counties Baranya, Somogy, Tolna and Zala.

Four major settlement centres can be distinguished (and even if these four 'concentrations of sites' do, to some extent, reflect that these areas have been more intensely investigated, they also offer reliable evidence for the settlement density of the Somogyvár-Vinkovci culture):

(1) the area around Vinkovci;

(2) the area around Pécs;

(3) the southwestern areas of county Zala (even if the network of settlements is less dense here, probably reflecting the lack of research); and

(4) the area around Győr.

At the same time, Celldömölk–Sághegy, Csepreg, Esztergom, Esztergom–Szentkirályi földek, Sé, Ljubljana, Martinac, Orešac and Zarub cannot be fitted organically into this distribution.

The finds from Northwestern Transdanubia only resemble the Somogyvár-Vinkovci pottery wares at first glance; in fact, there are considerable divergences as regards smaller details. Influences from the north and the west must by all means be considered, as must possible genetic links and the proximity of the Ljubljana culture.

The *settlements* of the Somogyvár-Vinkovci culture have mostly been identified in the course of systematic field surveys or through the occasional stray find: Baksa-Kopárdűlő,[207] Becsvölgye-Barabásszeg,[208] Boda-Nyafastó-dűlő,[209] Boldogasszonyfa,[210] Dunaszekcső–Kálvária,[211] Dunaszek-

[203] *Bóna 1965* Fig. 3 (distribution of pottery types without identification of sites).

[204] *Ecsedy 1979* Fig. 6.

[205] *Garašanin 1983* 834 and Map 11.

[206] I have been unable to personally verify each and every site mentioned in various publications and therefore I have not distinguished between settlements, burials and stray finds in order to avoid a perhaps misleading picture. Neither have I included uncertain sites.

[207] *Baranya monograph* 70.

[208] *Müller 1971* 24.

[209] *Baranya monograph* 70.

[210] *Baranya monograph* 70.

[211] *Baranya monograph* 70.

cső–Várhegy,[212] Erzsébet–Tsz major,[213] Geresd–római temető,[214] Gombosszeg,[215] Győr–Ménfőcsanak-Szeles dűlő,[216] Ivánbattyán–Dögkút,[217] Keszthely–Újdűlő,[218] Keszü–Berekalja,[219] Kisjakabfalva,[220] Mágocs,[221] Pécs-Jakabhegyi út 43-47,[222] Pécs–Makárhegy,[223] Pellérd–MÉV-Ércdúsítóüzem,[224] Petrikeresztúr,[225] Sármellék,[226] Sátorhely,[227] Siklós–Göntér,[228] Somberek–szőlő,[229] Somogyviszló–Bodonya,[230] Szemely–Poljanak,[231] Szentlőrinc–Újhegy,[232] Szulimán–temető,[233] Villány–Virányos,[234] Vörs–Borzás[235] and Vörs–Nyires.[236]

Systematic excavations have only been conducted on a few sites: BalatonmagyaródvHídvégpuszta (3 features),[237] Balatonmagyaród-Szarkavári sziget (2 features),[238] Börzönce-Temetői dűlő,[239] Kajárpéc-Pokolfadomb,[240] Keszthely–Halászcsárda,[241] Kemendollár,[242] Lánycsók-Égetthalom (2 features),[243] Lánycsók–Bácsfapuszta (1 pit),[244] Letenye,[245] Nagygörbő–Várhegy (fortified settlement, 1 pit),[246] Nagykanizsa–Sánc,[247]

212 *Ecsedy 1985.*
213 *Baranya monograph* 70.
214 *Baranya monograph* 70.
215 *Müller 1971* 34.
216 *RégFüz* Ser. I. 44 (1992) 12.
217 *Baranya monograph* 70.
218 *MRT 1* site 21/60.
219 *Baranya monograph* 70.
220 *Baranya monograph* 70.
221 *Bóna 1965* 43 and *Baranya monograph* 71.
222 *Baranya monograph* 71.
223 *Bóna 1965* 44 and *Baranya monograph* 71.
224 *RégFüz* Ser. I. 34 (1981) 14.
225 *Müller 1971* 39.
226 *MRT 1* sites 40/11 and 40/12.
227 *Baranya monograph* 71.
228 *Baranya monograph* 71.
229 *Baranya monograph* 71.
230 *Baranya monograph* 71.
231 *Baranya monograph* 71.
232 *Bóna 1965* 43 and *Baranya monograph* 72.
233 *Baranya monograph* 72.
234 *Baranya monograph* 72.
235 *Kis-Balaton 1993.*
236 *Kis-Balaton 1993.*
237 *Kis-Balaton 1993.*
238 *Kis-Balaton 1993.*
239 See in this study.
240 *Figler 1994* 22.
241 *MRT 1* Supplementary volume site 21/49. Manuscript.
242 *Bóna 1965* 42.
243 *Ecsedy 1978a* and *1978b.*
244 *Kalicz — Ecsedy 1978-1979; Baranya monograph* 70.
245 *Kalicz 1970.*
246 *Nováki 1965.*
247 *Kalicz 1976.*

Nagykanizsa–Inkey kápolna (20 features),[248] Pécs–Nagyárpád (over 200 features),[249] Szava (19 features),[250] Vörs–Battyáni disznólegelő (few features)[251] and Zók–Várhegy.[252] Fortified settlements include, aside from Nagygörbő, Oltárc–Márkihegy[253] and Galambok–Öreghegy,[254] as well as Pécs–Nagyárpád that was protected naturally on three sides.

The overwhelming majority of settlements are single-layer sites, with one thin occupation layer or, occasionally, without an occupation deposit: in many cases only various features and hearth remains indicate the former presence of a settlement. Stratified settlements are few in number. Settlements that yield finds from periods other than the Somogyvár-Vinkovci period, but from separate features, are not stratified sites (Zók–Várhegy,[255] Szava,[256] Lánycsók–Égetthalom,[257] Balatonmagyaród–Hídvégpuszta,[258] Balatonmagyaród–Szarkavári-sziget,[259] etc.). On some sites the remains of pit houses have also been identified: Zók–Várhegy,[260] Keszthely-Halászcsárda[261] and Nagykanizsa–Inkey kápolna.[262] At the latter site, the excavator noted that "one of the Early Bronze Age settlement features (no. 19) was undoubtedly a pit house, whose stepped entrance lay in its southeastern corner. The adjacent area was rectangular. The pit house was originally dug to a depth of 240 cm, but was later, for some reason unknown to us, filled in to a depth of 125-130 cm. The floor level was identified at this depth; it was strongly burnt, with numerous daub fragments lying on it. Only in the southwestern corner did we find a posthole, whose depth was 170 cm."[263]

Only one single Somogyvár-Vinkovci site has, according to the excavator, Gábor Bándi, been completely uncovered in Transdanubia: the Pécs–Nagyárpád site, a single-layer settlement with a clear internal organization and over two hundred settlement features, such as pit houses, outbuildings, fireplaces and simple features. According to Bándi the settlement yielded a homogeneous find assemblage. The site lies on a hilltop, protected naturally on three sides; the village was organized according to a clear, preconceived plan, and a small 'internal fort', separated by an internal ditch was also identified. The village itself comprised large, semi-

248 *Horváth 1984.*
249 *Bándi 1979.*
250 *Ecsedy 1979.*
251 *ArchÉrt* 113 (1986) 271 and *Kis-Balaton 1993* Figs 9-12.
252 *Ecsedy 1983a*
253 *Horváth 1994* 97.
254 *Horváth 1994* 97.
255 *Ecsedy 1983a* 69.
256 *Ecsedy 1979* 117-118.
257 *Ecsedy 1980* 96.
258 Rescue excavation conducted by László Horváth.
259 Excavation of the author.
260 *Ecsedy 1983a* 71.
261 *RégFüz* Ser. I. 27 (1974) 11 excavation conducted by Róbert Müller.
262 *Horváth 1984.*
263 *Horváth 1984* 12.

subterranean structures with beaten clay floor. The village was built along a longitudinal axis, with the smaller, semi-subterranean houses aligned along a 3 to 4 metres wide street. These houses were generally rectangular or quadrangular in plan, with a simple lean-to roof. They measure about 10-15 m^2 Several outbuildings, round beehive-shaped features and open-air fireplaces, as well as few features for the extraction of clay could be associated with individual houses. A wide open area lay in front of the 'internal fort', with two large, 30-40 m^2 large semi-subterranean buildings on either side. No hearths were found inside these buildings and the excavator interpreted them as communal buildings.[264]

Börzönce can be regarded as a single-layer settlement: aside from a few stray Lengyel and medieval finds, only the settlement features and a rich assemblage of the Early Bronze Age Somogyvár-Vinkovci culture were brought to light. It is comparable to the Szava site, both as regards size and internal layout. Ecsedy estimated the size of the Szava settlement to be 15,000 m^2 of which he uncovered some 600 m^2. The settlement had a single layer, with 12 features yielding Early Bronze Age finds. All features were filled with refuse, and the remains of a fireplace could be observed in some features.[265]

The Börzönce site yielded a rich ceramic assemblage as regards the number of whole and reconstructable vessels. The variants of individual pottery types also moves on a wide scale, proving once again that the ceramic inventory of this culture consists not merely of a handful of distinctive vessel types, but that the type variants add up to a wide range of forms.

The animal statuettes, the wagon model and the mould found at Börzönce represent new elements in the currently known material of the Somogyvár-Vinkovci culture. The ceramic inventory also has been augmented by new forms: the vessel open at both ends, vessel with constricted neck, strainer bowl, oil lamp, pots, etc. The low number of decorated vessels is also striking.

Most interesting among the few decorated pottery fragments is the bowl fragment from feature J, ornamented on its exterior and interior *(192)*. The decoration of this fragment that probably comes from a carefully made footed bowl recalls similar bowls of the Vučedol C period from Slovenia.[266] The decoration pattern is composed of hatched triangles separated by bundles of incised lines and the alternation of ornamented and unornamented fields. Its fabric and ornamentation differs from comparable Makó bowls. Aside from Slovenian type late Vučedol influences, Kostolac reminiscences too can be noted in the ornamentation.

In spite of the numerous new elements I would hesitate to label this assemblage either Börzönce-Somogyvár-Vinkovci or Somogyvár-Vinkovci-

[264] *Bándi 1979* 63-64.
[265] *Ecsedy 1978a* and *1979*.
[266] *Dimitrijević 1967* 5.

Börzönce type or group, even though the differences would inspire a new label. The Börzönce site yielded unambiguously and exclusively the finds of the Somogyvár-Vinkovci culture which, on the basis of the few reliable analogies, can be assigned to the Vinkovci A1 period. This region, i.e. the area to the south of the Zala river, was previously occupied by the Baden and Kostolac population, and there is, as yet, no indication of the presence of either Vučedol or Makó populations (the former can be demonstrated in southeastern Transdanubia, the latter in northern and central Transdanubia),[267] and thus the Early Bronze Age is in this region represented by the Börzönce type finds of the Somogyvár-Vinkovci culture. Seeing that this assemblage is strongly based on Vučedol C and that in my opinion it appeared in this region in the Vinkovci A period, almost synchronously with its settlement at Vinkovci, Bóna's suggestion that this population can be seen as a Vučedol-based group bearing a southern culture seems acceptable.

In my earlier papers[268] and in the preliminary report[269] on Börzönce I too made the mistake of a static approach by assuming that the farther a site lies from the centre of a given culture, the later it should be dated. According to the chronological framework based on geographical distances, sites lying farther from the main distribution are generally later than the central sites since the population groups of a given culture obviously migrated from the centre. That the Szava, Pécs–Nagyárpád, Zók–Várhegy, Nagykanizsa–Inkey kápolna and Börzönce–Temetői dűlő sites are later than the eponymous Vinkovci site seems reasonable, the only question being *how much* later. The distance between Vinkovci and Pécs–Nagyárpád is roughly 120 km, and some 105 km separate Vinkovci and Szava; in view of the contemporaneous modes of transport, and bearing in mind both the obstacles posed by uncharted, thick woods, marshland, swamps and unregulated rivers, and the advantages of wheeled transport through the use wagons, this distance could probably be covered within one or two weeks. Börzönce lies some 280 km away from Vinkovci, implying that this distance could be covered within a month! These differences of weeks or months are obviously untraceable in the archaeological record, but they do call for a break with, or at least a reassessment of, this static approach.

Accepting the above assumption, the Vinkovci A pottery could have appeared fairly quickly in counties Baranya, Zala or even Fejér. (There is a general consensus that the ultimate reason for a large-scale migration would have been the aggression of the southern population groups who had reached the Danube-Sava confluence.) Smaller migrations could have

[267] *Bondár 1989* and *Horváth 1994* (also supported by survey data).

[268] Excavation report presented at the annual meeting of the Hungarian Archaeological Society in 1992, Conference on the Early Bronze Age in *Keszthely 1992.*

[269] *Bondár 1990, 1992* and *1994.*

been motivated by a number of different — economic and human — reasons. Smaller migrations would also explain the presence of larger settlements and, also, of sites yielding but a handful of vessels and graves. This is perhaps the reason that little is known about the cemeteries of the Somogyvár-Vinkovci culture, if formal cemeteries separate from the settlements existed at all, and the deceased were not buried outside the settlement in a wholly random place that is more difficult to locate. These smaller migrations could, obviously, also have involved the movement of a smaller group from Börzönce back to their kinsmen, colouring later distribution maps with the occasional broken vessel or solitary grave. This would also explain the subtle regional differences within the apparently uniform assemblages, for 'alien' elements could easily have been added to the original ceramic inventory after the arrival into a new cultural environment through marriage, barter, or more developed forms of trade, etc. It is thus hardly surprising that the Somogyvár-Vinkovci culture has links with distant areas and regions, and that its movement and its 'expansion' cannot be traced step by step in the intermediate areas. These remarks may well be self-evident; if so, they prove once again that prehistoric research does not always subscribe to an approach with living people in mind.

The centres that can be identified from the distribution maps were in my opinion established more or less contemporaneously. The Somogyvár-Vinkovci culture encountered diverse populations in these areas, explaining the local and regional variations in the apparent uniformity (southern elements). One case in point is a stray find from Vörs: a Somogyvár-Vinkovci shaped flask ornamented with a 'Baden' pattern of punctates and incised lines.[270]

I do not consider the south to north migration of the Somogyvár-Vinkovci culture to have been an expansion in the sense that the Somogyvár-Vinkovci population had continuously colonized a larger area, moving from one place to another, implying a population that lived here for a long time.

Almost nothing is known about the burials of the Somogyvár-Vinkovci group, save for a few solitary tumulus graves, the 'mysterious' Somogyvár assemblages and a handful of inurned burials; neither is it known if there existed cemeteries separate from settlements. The lack of cemeteries also seem to support my assumption that the Somogyvár-Vinkovci occupation in Transdanubia did not span a period of 150-200 years. The single-layer settlements with a thin occupation deposit again indicate a settlement of short duration. At Börzönce we noted that the features were filled up with refuse fairly quickly for a pottery fragment found at the bottom of the pit could often be joined with another fragment found at the top of the same pit, even if the fragments of the same vessel sometimes came to light from different features.

[270] *Bondár 1993* Fig. 12.

The fortified settlements of the Somogyvár-Vinkovci culture would suggest that this relatively small population felt the need to defend its settlements in the face of some danger that is unknown to us.

Börzönce should by no means be seen as an isolated Somogyvár-Vinkovci site; its relations can be explored in a wider circle. Aside from the analogies mentioned in the above, comparable vessels can also be quoted from the Glina,[271] the Schneckenberg[272] and the Roşia group (Gyula-Roşia in Bóna's terminology),[273] as well as from the related Ada group[274] and the ceramic inventory of the Makó[275] and Nagyrév cultures.[276]

The Glina and the Schneckenberg cultures are both fairly well investigated cultures. The contacts with Börzönce are mainly attested through the wagon model, the wheels, the animal statuettes and the idol.

In his study of the Early Bronze Age in Oltenia P. Roman has noted that the Glina culture appeared on the Coţofeni sites during the classical phase of the culture (Glina II): Coţofeni III and Glina II settlements both occur in northwestern Oltenia. In his opinion the Glina III phase — labelled Govora Sat-Runcuri phase —, characterized by a Kostolac-Vučedol style, is synchronous with the Coţofeni settlements in western Oltenia. This phase can be correlated with Schneckenberg B and the Ostrovu Corbului horizon, and the Makó-Bela Crkva-Vinkovci-Somogyvár-Nyírség horizon. In this scheme the Glina-Schneckenberg culture precedes the Bell Beaker-Csepel group.[277]

The Roşia or Gyula-Roşia group has been distinguished fairly recently. In his discussion of the finds from various caves in county Bihar, I. Emődi published vessels comparable to the Somogyvár-Vinkovci pottery. Amphorae of type A/3,[278] cups of type B/2[279] and the handled varieties of the vessel with constricted neck[280] all occurred in this material, together with the small, cylindrical flask that is regarded as the type fossil of the Somogyvár-Vinkovci culture.[281] Emődi assigned these sites to the Roşia-Gălăseni group that he sees as broadly synchronous with phase Ib of the Nagyrév culture. P. Roman and I. Németi have also devoted a separate study to the Roşia group, distributed in the Rapid Körös and Black Körös region, noting that the finds come mostly from cave burials and that these finds can be sharply distinguished from the cremation burials of

271 *Nestor 1927-1932; Roman 1976b.*
272 *Prox 1941.*
273 *Emődi 1985; Roman–Németi 1986.*
274 *Horváth 1981.*
275 *Kalicz 1968* and *1984.*
276 *Kalicz 1968* and *1984.*
277 *Roman 1985* 122, *Roman 1992* 118.
278 *Emődi 1985* Fig. 2. 1 and Fig. 18. 45.
279 *Emődi 1985* Fig. 4. 25.
280 *Emődi 1985* Fig. 20. 32.
281 *Emődi 1985* Fig. 1. 12.

the Tisza region. The burial rite and the finds link this group to the Transylvanian tumulus burials. Analogies to the pottery can be quoted from the Jigodin, the Makó, the Kosihý-Čaka, the Priboj, the Vinkovci and the late Coţofeni assemblages. They challenged Emődi's view that the Roşia group should be correlated with Nagyrév phase Ib;[282] and they also publish good analogies of the Somogyvár-Vinkovci culture.[283] A few comparable vessel forms are also known from the Ljubljana culture.[284]

The interrelations of the Somogyvár-Vinkovci culture can obviously also be analyzed in a broader context, too if the mobile lifeway of its population groups is accepted. I have here neglected a more detailed overview of relations with the geographically close-lying Makó, Nagyrév and Bell Beaker cultures for I wholly agree with István Ecsedy who, in an article calling for the categorical distinction between the Bell Beaker-Csepel group and the Nagyrév culture, noted that assemblages containing characteristic Bell Beakers "can be clearly identified and should be typologically distinguished from Makó, Nagyrév and Somogyvár-Vinkovci type assemblages, even if they all happen to contain the same general Early Bronze Age pottery types of the Carpathian Basin and its periphery, for none of these can be regarded as a cultural 'differentia specifica'."[285] In other words, Ecsedy considers Makó, Nagyrév and Somogyvár assemblages to be clearly distinguishable from each other. Consequently, a more detailed analysis of the pottery types that were common to all Early Bronze Age cultures would hardly have promoted a better understanding of the typology and chronology of the finds from the Börzönce site of the Somogyvár-Vinkovci culture.

In sum, we can say that the Börzönce site can be assigned to the Somogyvár-Vinkovci culture of the Early Bronze Age that succeeded the Vučedol C period, and that its finds indicate connections with the Coţofeni, Gyula-Roşia, Glina III-Schneckenberg cultures, as well as with the Belotić-Bela Crkva group, the Ljubljana culture and the Proto-Nagyrév culture. The use of the wagon enabled more mobile lifeways and thus the interrelations between farther-lying regions is hardly surprising. Similarly to other Somogyvár-Vinkovci sites, the Börzönce site too was a single-layer settlement of a short life-span.

I have tried to call attention to possible new approaches in the evaluation of the Börzönce finds; obviously, I could not undertake the clarification of the numerous controversial and still unresolved issues of the Early Bronze Age. Based on the same body of evidence — most of which sadly comes from stray finds —, students of the Early Bronze Age have offered often conflicting views whose reconciliation cannot be the objective of this paper.

[282] *Roman — Németi 1986* 232.
[283] *Roman — Németi 1986* Figs 10, 12 and 17.
[284] *Govedarica 1989* Pl. VIII. 1, 5, Pl. IX. 2. Pl. XII. 3 and Pl. XIII. 6.
[285] *Ecsedy 1988* 16.

It has been noted in the above that there is no general consensus on where the boundary between the Late Copper and the Early Bronze Age should be drawn; similarly, conflicting views have been put forward as regards the indigenous population of the period preceding the Bronze Age, of the various factors and elements that played a role in the emergence of the Bronze Age, as well in questions of absolute chronology and the definition of the concept of the Bronze Age itself.

As regards the absolute chronology of this period, a wide chasm separates the adherents of the traditional, historical chronology and the advocates of a C^{14}-based chronology. This chasm of several hundred years seems to be unbridgable at present, even if some attempts have already been made to harmonize the two systems.

My aim was not the preparation of yet another monograph on the Somogyvár-Vinkovci culture, but rather to explore the traditional 'terra incognita' in Southwestern Transdanubia by the publication of the rich and varied finds from a 'purely' Somogyvár site and thus contribute to the existing source material. Owing to the 'sterility' of the Börzönce assemblage I have been unable to address, at greater length, certain important issues, such as the interrelations between the Somogyvár-Vinkovci and Makó cultures. The common traits shared by these two cultures (settlements of short life-span occupied by smaller communities, the paucity of settlement features, the scarcity of buildings, the lack of separate cemeteries, similarities between certain pottery forms and ornamental motifs, comparable lifeways, etc.) undoubtedly reflect a common ancestry. However, a more precise definition of this common ancestry is still lacking and might not even be demonstrable using archaeological techniques. Accepting that the general use of wagons made both cultures more mobile, it is hardly surprising that these common traits and elements, the so-called cultural interrelations, are to be found in regions lying 2-300 km away from each other and that they cannot be demonstrated in the intermediate area, with only the occasional grave or pit marking the route of the migration.

No well-interpretable evidence for contacts with the Makó culture have come to light at Börzönce. The general 'Early Bronze Age' characteristics of the coarse pottery (the similarity between certain pottery forms, the brushed or rusticated finish of pots and storage jars, etc.) seems inadequate for demonstrating cultural and/or genetic links. Similarly, the role of certain 'diagnostic' ceramic wares needs to be re-evaluated. First among these should be the occurrence of *footed bowls decorated on their interior* for their presence or absence in a given culture was taken to indicate chronological differences. The mapping of the distribution of this bowl type and the definition of the cultural context of its occurrences will undoubtedly offer a definitive answer as to whether this vessel type can be used as a clear-cut chronological indicator. The *cylindrical flask*, considered to be the type fossil of the Somogyvár-Vinkovci culture, must

likewise be re-evaluated. The presence of this pottery type can be demonstrated in the late Vučedol period,[286] in the Makó culture,[287] in the Bell Beaker-Csepel group,[288] in the Proto-Nagyrév culture[289] and in the Glina III-Schneckenberg culture.[290] Similarly, the distribution and the cultural context of *oil lamps* that were hitherto lacking in the Somogyvár-Vinkovci culture, but were present in the Makó,[291] the Bell Beaker[292] and the Ljubljana culture,[293] as well as in the Bela Crkva[294] and Ig group,[295] must also be re-assessed. Further studies must also be devoted to the anthropomorphic and zoomorphic depictions that appear to be superficially similar in various cultures, but might easily have had a different cultural setting.

I had to forego the analysis of these issues in the present study, for here I merely hoped to publish new finds and fresh evidence that can be useful for further investigation. I did not consider it necessary to 're-write' the currently known body of knowledge on the basis of a *single* new body of finds if these do not, in themselves, offer new or basically unique information. I have here tried to emphasize the pitfalls of a static perspective on archaeology, and the need for re-assessing chronological systems based on geographic aspects.

6. Catalogue

6.1. Settlement features

A (1988) (*Pl. 117*)

Beehive shaped pit, cut in half when the dirt track was levelled. Infill: under the modern humus, a mixed layer of broken bricks and mortar, under which lay a black level with burnt daub fragments, followed by a yellowish fill mixed with charcoal, under which lay a thick black layer with burnt daub fragments and pottery fragments. The next layer was dirty yellowish, without any finds, underneath lay a greyish, loose layer mixed with ash. Diameter of mouth: cca 150 cm, diameter of base: 190 cm, depth: -150 cm. A cup was found on the floor of the pit.

Finds

Fragments of brownish storage jars with worn surface, the shoulder encircled by indented ribs or impressed knobs, the belly is brushed, the neck is carefully smoothed *(6-11, 15-19, 20)*; fragments of storage jars

[286] *Korošec — Korošec 1969* Pl. 2. 3, 5; *Marković 1981* Pl. 10. 2.
[287] A. Horváth in *RégFüz* Ser. I. 15 (1961) 14 and *Horváth 1988* 18: Kunpeszér.
[288] *Schreiber 1991* Fig. 21. 2.
[289] *Szabó 1992* Pl. 38. 9, 11-14, Pl. 71. 6, Pl. 73. 1-3; *Szabó 1994* Fig. 5. 9, 11-14, Fig. 6. 12, Fig. 7. 2.
[290] *Roman — Németi 1986.*
[291] *Schreiber 1972* Fig 1. 10, *Schreiber 1994* Fig. 4. 2a-b.
[292] *Endrődi 1992* Fig. 62. 8.
[293] *Govedarica 1989* Fig. 8. 5.
[294] *Garašanin 1982* Fig. 29. 9.
[295] *Harej 1978* Pl. 2. 6; *Harej 1987* Pl. 2. 13, Pl. 12. 3.

with thick strap handles (*32, 34-36, 38*); fragments of an ovoid storage jar (*12-14*); rim fragments of amphorae with short cylindrical neck (*46-47*); fragment of a coarse pot with impressed knob (*363*); fragments of pots with rusticated finish and smoothed neck (*21-24*); one-handled pots (*19, 33, 377*); fragment of a one-handled pot with incurving neck (*378*); fragments of pots with horizontal lug handles (*40-43, 48*); fragments of conical bowls (*25-31, 39, 44*); large bowl, its shoulder encircled by an impressed rib (*355*); small two-handled conical bowl (*365*); fragment of a small bowl with pronounced horizontal rim (*45*); small biconical cups with cylindrical neck (*37, 338*); jug fragment (*337*); spindle whorl (*448*); fragment of spindle whorl (*449*); fragments of clay wheels (*450-451*); loom weight.
Inv. nos 93.6.1-93.6.91.

B (1988)
This pit lay some 10 m south of feature A. Diameter of mouth: cca 90 cm. It had practically been destroyed during the levelling of the road.
Finds
Fragments of storage jars with impressed knobs (*53-55, 68-73*); fragments of rusticated pots with impressed rib under their rim (*49, 51, 66-67*); fragment of a small pot with obliquely cut rim (*52*); fragments of pots with slightly swollen rim (*57-58*); fragment of a pot with rim pinched into a lug handle (*60*); fragments of biconical bowls with marked carination line and funnel-shaped neck (*56, 59, 61-65*); fragment of an ovoid cup with short neck (*50*).
Inv. nos 93.7.1-93.7.44.

1 (1988) (*Pl. 117*)
It first appeared as a cluster of sherds in a brownish patch with specks of charcoal. The pit was very shallow; its profile showed a cca 20-25 cm thick, almost horizontal layer mixed with charcoal and burnt daub fragments, under which lay the pit itself, filled with a 5 cm thick dirty yellowish clay. Adjacent to it was a semicircular patch mixed with charcoal and burnt reddish-brown to a thickness of 20 cm, that partly extended under trench I. It yielded Bronze Age sherds. The edge of this feature was burnt to a width of 20 cm, its interior, mixed with charcoal, was not burnt. No pottery fragments were found in the 'ring' mixed with charcoal. The pit was roughly circular, with a flat floor. Diameter of mouth: 200 cm, diameter of base: 180 cm, depth: -105 cm.
Finds
Fragments of rusticated storage jars and pots, the shoulder encircled by an impressed rib or impressed knobs (*75, 77-79, 81, 83-84, 86-87, 92*); fragment of a large storage jar, with impressed rib under its rim (*88*); fragment of a rusticated storage jar with swollen rim (*89-90*); fragments of one-handled pots (*74, 76*); fragment of a conical bowl (*91*); fragments of thin-walled cups with elongated S profile (*80, 82, 85*); cylindrical, perfo-

rated loom weights, made perhaps of sandstone (*426*).
Inv. nos 93.8.7-93.8.67.

2 (1988)
Round pit with flat base. Diameter of mouth: 130 cm, diameter of base: 100 cm depth: -83 cm.
Finds
Five indistinct Early Bronze Age body fragments.
Inv. nos 93.8.1-93.8.5.

C (1989)
Found in the northern part of trench II. The pit was not outlined on the surface, its presence indicated by a cluster of sherds. Fragments of a medieval vessel were found above this feature. Shallow pit of irregular shape. Diameter of mouth: 100 cm, diameter of base: 120 cm, depth: -59 cm.
Finds
Indistinct body fragments; rim and base fragments from pots; rim fragment of a bowl; fragment of a strap handle.
Inv. nos 93.33.1-93.33.7.

D (1989)
A shallow, elliptical pit in the middle of trench II, filled with blackish-grey earth mixed with ash and burnt daub fragments. Diameter of mouth: 70 cm, depth: -44 cm.
Finds
Only two sherds were found lying on the floor of the pit: the undecorated body fragment of a storage jar and the base fragment of a small pot.
Inv. nos 93.34.1-93.34.2.

E (1989) (*Pl. 118*)
Elliptical pit with straight walls and flat floor, it lay in the middle of trench III. Diameter of mouth: cca 180 cm, diameter of base: cca 160 cm, depth: -67 cm. Infill: blackish, mixed with ash, of rich texture, and a cca 25 cm thick layer of burnt daub fragments, with numerous sherds and animal bones.
Finds
Body fragments of large storage jars, their shoulder encircled by an impressed rib; rim fragment of a large storage jar with short neck (*101*); base fragment of a storage jar (*393*); small handled pot (*376*); similar pot, but larger (*379*); one-handled rusticated pot with impressed knob (*380*) and the fragment of a similar pot (*383*); fragment of a pot with impressed rib under its rim (*106*); body fragments of two-handled pots (*113*); body fragments of small pots with incised decoration (*94-95, 105*); rim fragment of a one-handled pot with elongated S-profile (*97*); fragment of a pot with impressed rib on its rim (*103*); fragment of a pot with rim pinched

into a drooping lug handle (*111*); body fragments of rusticated pots; rim and body fragments of large juglets (*108*); body fragments of jugs (*109*); rim fragments of two-handled amphorae (*110, 112*); base fragment of a small cylindrical flask; rim fragment of a small bowl ornamented with incised pattern on its exterior and indistinct encrusted pattern on its interior (*100*); conical strainer bowl with short, incurving neck (*368*); fragments of bowls with elongated S profile with handle or vertical knob pinched into a handle on either side (*93, 96, 98-99, 102, 104, 107, 114*); small oil lamp with a pair of perforations under the rim for suspension (*367*).
Inv. nos 93.35.1-93.35.45.

É (1989) (*Pl. 118*)
Elliptical pit with straight walls and flat floor, roughly 170 cm x 190 cm in diameter, in the southwestern corner of trench II. Depth: -60 cm. Infill: Blackish on top, yellowish with burnt daub fragments underneath and blackish, of rich texture, with burnt daub fragments at the bottom.
Finds
Body and rim fragments of large storage jars with knobs (*122*); body fragments of large rusticated pots with handle or impressed rib (*119*); pot fragments with large lug handle (*115, 117, 121*); neck fragment of an amphora with S-profile (*123*); bowl fragments (*118, 124*); fragment of a globular bowl, ornamented with a small knob on its exterior and an incised pattern on its interior, as well as an incised net pattern on its rim (*431*); body and base fragments of small thin-walled cups (*120*); rim fragment of a cup with incised pattern on its neck (*116*); fragment of a spindle whorl; stone axe (*459*); stone blade; clay wheel fragment (*438-439*).
Inv. nos 93.36.1-93.36.34.

F (1989) (*Pl. 118*)
Large roughly circular pit, 140 cm x 140 cm, with straight walls and flat floor, in trench III. Depth: -90 cm. A 30 cm wide longitudinal extension of unknown function to the north. Infill: blackish, of rich texture, mixed with burnt daub fragments, but few sherds.
Finds
Rim and body fragments of storage jars with impressed punctates or knobs (*128, 130-131, 133-135*); fragments of a storage jar with handle perched on the shoulder (*141-142*); one-handled small pot with worn surface, its shoulder encircled by an impressed rib (*125*); fragments of pots with thick strap handle; rim fragments of handled pots with a line of impressed punctates (*127, 140*); rim and body fragments of biconical bowls with marked carination line and the occasional small knob (*129, 132, 136-139*); rim and body fragments of thin-walled cups and jugs (*126*).
Inv. nos 93.37.1-93.37.26.

G (1989) (*Pl. 117*)
Roughly quadrangular pit, 3.1 m x 3.2 m, with shelved interior and flat floor. Depth: -150 cm. Infill: brownish, of rich texture, with burnt daub fragments, with a black burnt patch mixed with burnt daub fragments.
Finds
Body fragments of large, rusticated storage jars with knobs or thick strap handles (*145*); indistinct body fragments; base fragments of pots; fragment of a pot with a line of impressed dots under its rim (*144*); body fragments of bowls with marked carination line (*143*); rim and handle fragments of jugs (*146*); fragment of a spindle whorl; a high number of pebbles and animal bones.
Inv. nos 93.38.1-93.38.18.

H (1989) (*Pl. 118*)
The pit lay in trench III, directly beside feature I, the two features being separated by a roughly 20 cm wide area. Beehive shaped pit, 190 cm x 180 cm. Depth: -110 cm. At a depth of -100 cm we found a thick layer of burnt daub fragments, with the fragments of pots, bowls and small cups on the floor.
Finds
The majority of sherds came from storage jars (*148, 150, 153, 155–156, 324, 359, 362, 394, 396-398*) and pots (*381-382*). Several fragments of a large storage jar whose body was ornamented with perhaps several thin, arched ribs, under which sat a small pointed knob (*154*). Other finds include the fragment of a two-handled storage jar, rusticated on its lower half (*328*); a large juglet (*346*); fragments of juglets (*151, 340*); various jugs (*152*), cups, and a small cup with scalloped rim (*334*); a lid (*149*); fragments of bowls (*147*); body fragment of a globular bowl.
Inv. nos 93.39.1-93.39.45.

I (1989) (*Pl. 118*)
Irregularly shaped pit, 160 cm x 140 cm, with flat floor, lying some 20 cm from feature H, in trench III. Depth: -90 cm. Infill: Blackish, mixed with ash and burnt daub fragments.
Finds
Fragments of storage jars (*157-159, 161, 163*); fragments of the lower part of pots with "barbotine-line" ornamentation (*164*); body and handle fragments of jugs and juglets; fragments of bowls (*160*).
Inv. nos 93.40.1-93.40.17.

J (1989) (*Pl. 118*)
Roughly circular, beehive-shaped pit, 190 cm x 220 cm, in trench III. Depth: -120 cm. Infill, from top to bottom: reddish-brown, with burnt daub fragments, blackish, of rich texture, mixed with ashy, burnt reddish, with burnt daub fragments, and finally yellowish, burnt, with charcoal. In the middle of the pit lay a cluster of burnt daub fragments, overlain by a burnt level with charcoal.

Finds
Fragments of pots (*194*) and storage jars (*172, 175, 179, 183, 185-186, 188-191, 193, 195, 384-386, 389-390, 392*); body fragments of large, two-handled storage jars (*174, 178, 181, 187, 196-197*); body fragment of a large storage jar with a thin rib on the shoulder and knobs underneath (*180, 182*); body fragment of a one-handled storage jar with a notched rib on its body and a small knob above it; rim fragment of a light yellowish storage jar with tall neck (*184*); storage jar (*361*); body fragment of a pot ornamented with a row of impressed dots on its rim (*176*); fragments of jugs and juglets; whole jugs (*345, 371*) and almost complete juglets (*348-349*); body fragment of a jug (?) ornamented with a row of impressed dots on its interior, with incised triangles underneath (*465*); fragment of a bowl, its interior ornamented with an incised pattern that cannot be reconstructed (*464*); body fragment of a biconical bowl with incurving neck, the handle positioned on the carination line (*168*); fragments of smaller bowls (*166, 169*); bowl fragments (*165, 167, 170-171, 173*); fragment of a globular bowl with horizontal rim and a round knob on its belly, its interior is decorated (*192*); fragments of small pots (*177*); animal figurine (*414*); fragment of a wagon model (*422*); spindle whorl (*460*).
Inv. nos 93.41.1-93.41.106.

K (1989)
Its presence in trench III was indicated by a cluster of sherds; it could not be uncovered.
Finds (from the top of the pit)
Rim, body and base fragments of pots; body and base fragments of storage jars; body fragments of thin-walled jugs.
Inv. nos 93.42.1-93.42.10.

L (1989) (*Pl. 117*)
Beehive shaped pit, on the dirt track traversing the site. A clay oven of the Árpádian Age, whose red burnt, hard firing plate was replastered twice, lay above it. The base of the oven sloped a little to the south, the Early Bronze Age pit actually lay under the mouth of the oven. Diameter of mouth: cca 220 cm, depth: -180 cm.
Finds
Fragments of various storage jars and pots (*198, 200-204, 206-209, 214-219*); fragment of a globular bowl decorated on its interior (*430*); rim fragments of globular bowls (*199, 205*); fragments of various bowls (*210-211*); fragment of a two-handled amphora; fragments of juglets; fragments of jugs and cups (*212-213*); fragments of animal statuettes (*402, 408, 415*); fragments of spindle whorls and of a clay wheel (*452*); cylindrical, perforated loom weight (*461*).
Inv. nos 93.43.1-93.43.57.

M (1989)
A little to the south but still in line with feature L, on the dirt track. Its greater part was destroyed by levelling, only a few sherds could be collected from the surviving bottom of the originally circular large pit.
Finds
Body fragments of large storage jars (*222*); neck fragment of a jug (*223*); fragment of a bowl with inturned rim, with the remains of a knob underneath (*220*); fragment of a small biconical bowl with a knob on its belly (*221*).
Inv. nos 93.44.1-93.44.6.

N (1989)
A roughly circular pit, almost completely destroyed by the levelling, on the western side of the dirt track, north of feature L. Only a few sherds could be collected from the bottom of the pit.
Finds
Fragments of an AD 16th century pot.
Inv. nos 93.45.1-93.45.6.

O (1990) (*Pl. 119*)
Circular, beehive shaped pit, in the middle of trench V. Diameter of mouth: 140 cm, diameter of base: 220 cm, depth: -205 cm. Infill, from top to bottom: black, of rich texture with ash and burnt daub fragments; yellowish clayey; reddish, of wet texture, with ash and burnt daub fragments; yellowish, with ash; reddish, compact, with burnt daub fragments; blackish, with ash and numerous sherds; a smaller intact pot was found at a depth of -166 cm; a broken pot with lug handles was found beside the southern wall at a depth of -180 cm, surrounded by numerous sherds.
Finds
Large storage jars (*322, 325-326, 364*); fragment of a storage jar with impressed rib and the remains of a handle (*246*); fragment of a large two-handled storage jar with a row of impressed punctates on either side, and symmetrically placed small knobs on the shoulder (*247, 250*); large two-handled storage jar, with thin, pinched rib on either side of the handle and a small knob on the shoulder (*249*); fragment of a storage jar ornamented with impressed punctates on its shoulder; fragments of various pots and storage jars (*233-240, 243, 248*); one-handled pot (*375*); two-handled pots (*354, 358*); fragment of a pot, with a row of impressed punctates encircling the shoulder (*244*); large two-handled amphora (*323*); fragment of globular bowl, with a small pointed knob on the shoulder, and decorated interior (*425*); body fragment of a bowl with incised ornamentation (*462*); fragment of a globular bowl (*231*); body fragment of a bowl decorated with a semicircular rib; fragment of a four-handled bowl; fragments of various bowls (*224-230, 232, 241*); jug (*374*); fragments of various jugs (*242*); fragments of large juglets, one with a small knob on the shoulder (*245*); fragment of a thin-walled cup or cylindrical flask; fragments of various cups; vessel open at both ends (*356*); thin-walled

one-handled cup with slightly funnel shaped neck (*333*); fragment of a vessel with constricted neck; oil lamp with broken rim (*370*); animal figurines (*399-400, 403-405, 407, 411-412*); spindle whorl (*444*); mould (*432*); clay wheels (*453, 455-457*); silex (*437*).
Inv. nos 93.50.1-93.50.118.

P (1990) (*Pl. 119*)
North of feature L, on the dirt track, its greater part destroyed by levelling. The beehive shaped Early Bronze Age pit with straight walls lay under a settlement feature indicated by Late Migration period and Árpádian Age sherds. Diameter of mouth, cca 130 cm, diameter of base: 170 cm, depth: -190 cm. A smaller cup and a larger, almost intact jug lay on their side, covered with a large stone, in the blackish, ashy layer between -80 cm and -100 cm.
Finds
Fragments of various pots and storage jars (*260, 263, 269-271*); storage jar (*360*), body fragment of a storage jar with an impressed rib (*259, 262*); body fragment of a pot, its shoulder encircled by a row of impressed punctates; fragments of two-handled pots (*265, 267*); one-handled pot (*357*); thin-walled biconical vessel with constricted neck (*353*); most of the pottery fragments came from cups (*332*), jugs (*339, 341, 343*) and juglets (*268, 347*); cylindrical flask with a small knob on either side (*329*); decorated body fragment of a jug; body fragment of a jug or juglet, decorated with bundles of incised zig-zag lines flanked by encrusted punctates (*429*); lid (*433*); body and rim fragments of biconical bowls with incised pattern on the shoulder (*251, 427-428*); globular bowl (*256*); fragments of various bowls (*253-255, 257-258, 261, 264, 266, 272-273*); rim fragment of a small bowl ornamented in its interior *(252)*; large bowl with incurving neck (*350*); animal figurines (*401, 406, 409-410, 413*); clay wheels (*445-446*); spindle whorl (*447*); clay spool (*435*); clay marble (*434*); trapezoidal stone axe (*458*).
Inv. nos 93.51.1-93.51.73.

Q (1990)
Circular shallow pit with straight walls and flat floor, in trench V. Diameter: cca 90 cm, depth: -46 cm. Infill: blackish, of rich texture, with burnt daub fragments and charcoal, but few finds.
Finds
Fragments of a pot with rim pinched into a lug handle, and a few indistinct Bronze Age and medieval sherds.
Inv. nos 93.52.1–93.52.10.

3 (1990)
A 20 cm wide and 62 cm deep trench with various extensions of unknown function. Infill: burnt daub fragments and charcoal.

Finds
A few indistinct body fragments; rim fragment of a bowl; fragment of a cylindrical loom weight.
Inv. nos 93.53.1–93.53.10.

4 (1990)
Two corners, roughly 7 m x 4 m, of the former watercourse were noted in the western end of trench V. Infill: blackish, of rich texture, with loam, burnt daub fragments and charcoal. Pebbles and a few medieval sherds were found at a depth of -180 cm.
Inv. nos 93.54.1–93.54.14.

5 (1990)
Small, 110 cm deep pit in the middle part of trench V. Infill: medieval sherds, ash and burnt daub fragments.
Finds
A medieval vessel could be reconstructed from the sherds.
Inv. nos 93.55.1–93.55.14.

6 (1991)
Roughly circular pit in the northern part of trench VI. Diameter: 250 cm, depth: -90 cm.
Finds
Fragment of a small animal statuette (*423*); clay wheel (*454*); fragment of a small cup.

7 (1991) (*Pl. 119*)
Pit with flat floor, 140 cm x 150 cm, in the western part of trench VI, beside the northern wall. Depth: -80 cm. Infill, from top to bottom : yellowish, with charcoal; reddish, with burnt daub fragments; blackish, burnt, with burnt daub fragments; and yellowish, with ash.
Finds
Rim, body and base fragments of various storage jars *(278, 388, 395);* fragment of a two-handled pot (*277*); base fragment of a pot with barbotine-like ornamentation; thin-walled, biconical vessel with constricted neck (*344*); body fragments of a juglet (*274*); fragments of various bowls (*275-276*); small bowl (*366*); fragments of various cups; intact cups (*331, 335*); intact female idol (*1*).

8 (1991-1992)
First noted as 90 cm x 100 cm large red burnt clay patch with numerous sherds on it in the western part of trench VI. The red burnt clay had probably been part of a plastered fireplace and it contained a few medieval sherds. A Somogyvár pit lay underneath the firing plate, and beside it lay a small, 80 cm x 60 cm large and 120 cm deep elliptical pit filled with ash, that had probably belonged to the medieval fireplace. The Early Bronze Age pit was a round, shallow pit; only its bottom part was pre-

served, its upper part had been destroyed by the medieval fireplace. Depth: -100 cm.
Finds
Mostly medieval sherds, and a few indistinct Somogyvár body fragments.

9 (1992)
Shallow pit with straight walls and flat floor beside the eastern wall of trench VIII. A cluster of burnt daub fragments in its northeastern corner. Only a part of the pit fell into the trench. Depth: -110 cm. Infill from top to bottom: 60 cm thick modern humus; blackish layer of rich texture with burnt daub specks and charcoal, a thin yellowish band with charcoal; yellowish virgin soil.
Finds
A few indistinct Bronze Age sherds and a few medieval pottery fragments.

10 (1992)
Round pit with straight walls and flat floor in trench VIII. Diameter: 80 cm, depth: -130 cm.
Finds
A few indistinct Bronze Age sherds and a few medieval pottery fragments in its upper part.

11 (1992) *(Pl. 119)*
A large red cluster of burnt daub fragments was noted in the middle of trench IX. Medieval sherds were recovered from the 25 cm thick blackish layer mixed with burnt daub fragments. We cut the fireplace in half, along a N to S section. A round pit lay underneath the fireplace. Diameter of mouth: 200 cm, diameter of base: 210 cm, depth: -140 cm.
Finds
Fragments of various storage jars and pots (*279, 283-286*); fragments of jugs; fragments of various bowls (*281-282*); small globular bowl *(369);* fragments of small cups (*280, 342*); base fragment of a cylindrical vessel (*330*); idol head (*2*); fragments of small animal statuettes (*416, 421, 424*); fragment of a clay wheel (*440*); silex (*436*).

12 (1992)
Pot fragments and part of a bowl were found at a depth of -52 cm in the northeastern corner of trench IX. Roughly beehive shaped pit, with a 20 cm wide croissant shaped deeper part (-170 cm) at its bottom. Depth: -160 cm. Infill: characteristic of the Early Bronze Age.
Finds
Fragments of various storage jars and pots (*287-289, 295, 387*); fragment of the lower part of a large amphora (*292*); body fragment of a vessel with constricted neck (*293*); rim fragments of cylindrical flasks (*290-291*); fragments of various thin-walled biconical bowls (*294*); bowls ornamented

with knobs on the shoulder *(351)*; fragments of juglets and cups.

13 (1992)
Elliptical pit with straight walls and flat floor in the northwestern corner of trench VIII. Infill: characteristic of the Early Bronze Age. Depth: - 160 cm.
Finds
None.

14 (1993)
Round shallow pit with straight walls and flat floor, and an extension to the northeast, in the eastern part of trench X. Depth: -65 cm.
Finds
A few indistinct Bronze Age sherds; a handful of medieval sherds in the upper half of the pit.

15 (1993)
Round pit with straight walls and flat floor, cca 150 cm x 130 cm in diameter, beside the northern wall of trench X. Infill, from top to bottom: burnt daub fragments with charcoal, mixed yellowish. Depth: -77 cm.
Finds
Fragments of various storage jars and pots (*300-301*); fragments of juglets; body fragments of bowls with incised ornamentation (*296-297*); fragments of various unornamented bowls (*298-299*); fragments of animal statuettes (*417-420*).

16 (1993)
A roughly rectangular patch was noted in the western half of trench X, probably another section of the former watercourse observed in the 1990 campaign (feature 4). Infill: burnt daub fragments and charcoal under the humus, with hardly any sherds, under which lay a wet blackish muddy layer. We uncovered it to a depth of -170 cm.

17 (1993)
A blackish patch with characteristic Somogyvár infill, with burnt daub fragment and many sherds, was noted in the southern part of trench XII. The pit was already outlined at a depth of -20 cm. Beehive shaped pit, with flat floor. A 40 cm thick black layer, of rich texture, with countless sherds lay under the humus, followed by a cca 15 cm thick yellowish layer with charcoal, which hardly contained any pottery fragments. Diameter of mouth: cca 130 cm, diameter of base: 150 cm, depth: -90 cm.
Finds
Fragments of various storage jars and pots (*302-305, 309*); body fragment of a large amphora (*310*); deep bowl (*372*); fragments of various bowls (*306-308*); fragments of clay wheels (*441, 443*).

18 (1993)
A roughly 10 m long and 2 m wide large patch with blackish infill mixed with burnt daub fragments was noted in trench XI. The cca 6 cm thick layer (humus, under which lay a mixed, yellowish loessy soil and a blackish strip with burnt daub fragments) did not contain any finds; neither could we observe postholes of floor remains. It is in all probability a modern feature.

19 (1993)
A large patch with burnt daub fragments was noted in the northern end of trench XII. In the middle of this patch, at a depth of -40 cm, we found a thick, E to W oriented cluster of burnt daub fragments, and underneath it, at a depth of -70 cm, perhaps the remains of a charred wooden beam. The base of pit was dug out into a bench or platform, and another depression could be noted in its northeastern corner at a depth of 100 cm. Diameter: 180 cm x 220 cm, depth: -152 cm.
(A few Lengyel sherds were also found in the plough zone, but these could not be linked to any specific feature.)
Finds
A handful of Lengyel sherds; storage jars (*316, 391*); various bowls (*311-312, 314-315*); four-handled bowl (*373*); fragment of the lower part of a cylindrical flask (*313*); fragment of a small cup; spindle whorl (*442*).

20 (1993)
We excavated the small depression in the northeastern corner of feature 19, and found a 150 cm x 130 cm large slightly beehive shaped pit. Depth: -123 cm. Infill: characteristic Somogyvár infill.
Finds
Fragments of various storage jars (*319-320*); fragments of pots (*317, 321*); fragments of various bowls (*318*); juglets; an almost intact jug (*336*); fragments of a large amphora (*327*).

APPENDIX

Sites of the Somogyvár-Vinkovci culture (*Fig. 19*)

Ajka (county Veszprém). — Stray finds, perhaps from a grave. *Bóna 1965* 41, Pl. XIII. 1; *Ecsedy 1979* 105; *MRT 3* site 2/3, Pl. 2. 1 and Fig. 2. 1-4.
Alsódörgicse (county Veszprém), see Dörgicse
Baksa-Kopárdűlő (county Baranya). — Stray finds from a settlement. *Baranya monograph* 70.

Balatonmagyaród-Hídvégpuszta (county Zala). — Settlement. *Kis-Balaton 1993* Fig. 13.
Balatonmagyaród-Szarkavári-sziget (county Zala). — Settlement. *RégFüz* Ser. I. 38 (1985) 6; *Kis-Balaton 1993.*
Batrovci (Croatia)* . — This site is identical with Gradina on the Bosut river, a site which has occasionally also been called Bosut or Gradina am Bosut. *Tasić 1968* 20-21, Figs 1-7; *Ecsedy 1979* 104; *Dimitrijević 1982a* 32., *Tasić 1984* Pls III - IV.
Becsvölgye-Barabásszeg, Fő u. 68 (county Zala). — Settlement. *Müller 1971* 24.
Belegiš (Yugoslavia). — Settlement (?). *Tasić 1968* 23, Figs 12-13; *Ecsedy 1979* 104; *Dimitrijević 1982a* 32.
Boda-Nyafastó-dűlő (county Baranya). — Settlement. *Baranya monograph* 70.
Boldogasszonyfa (county Baranya). — Stray find. *Baranya monograph* 70.
Bosut, see Batrovci
Börzönce-Temetői dűlő (county Zala). — Settlement, excavated by M. Bondár between 1988-1993, see in this volume.
Celldömölk-Sághegy (county Vas). — Stray find. *Bóna 1965* 42, Pl. XII. 7; *Ecsedy 1979* site 24 (only appears on the map).
Csabrendek (county Veszprém). — Grave (?). *Darnay 1899* Pl. XVII. 3, 6-7; *MRT 3* site 10/3-4. 49; *Ecsedy 1979* 105.
Csepreg (county Vas). — Settlement. *Károlyi 1972*; *Schreiber 1989* Figs 1 and 6, *Schreiber 1991* Fig 1.
Csertő-Szőlőhegy (county Baranya). — Stray find. *Baranya monograph* 70.
Dobanovci-Zigelei (Yugoslavia). — *Tasić 1968* 22-23, Fig. 10-11; *Dimitrijević 1982a* 32.
Dörgicse (county Veszprém). — Settlement. *Bóna 1965* 42, Pl. XIV. 13-15; *MRT 2* site 18/9, Pl. 6. 1-3; *Ecsedy 1979* 104.
Drljanovac (Croatia). — Grave. *Majnarić-Pandzić 1981.*
Dunaszekcső-Kálváriahegy (county Baranya). — Settlement. *Wosinsky 1896* 402; *Csalog 1942*; Baranya monograph 70.
Dunaszekcső-Várhegy (county Baranya). — Stray find. *Wosinsky 1896* 245, 402; *Patay 1938* 23; *Baranya monograph* 70; *Ecsedy 1985.*
Erzsébet- Tsz Major (county Baranya). — Settlement (?). *Bóna 1965* 43; *Ecsedy 1979* site 28 (only appears on the map); *Baranya monograph* 70.
Esztergom (county Komárom). — Stray find. *Bóna 1965* 41, Pl. XII. 10; *MRT 5* site 8/*** 226.
Esztergom-Szentkirályi földek (county Komárom). — Stray find. *Bóna 1965* Pl. XII. 8-9; *MRT 5* site 8/20, Pl. 9. 1.
Galambok-Öreghegy (county Zala). — Fortified settlement (?). *Horváth 1984* 20; *Horváth 1994* 97.
Geresd-római temető (county Baranya). — Settlement. *Baranya monograph* 70.
Gerjen-Váradpuszta (county Tolna). — Stray find. *Wosinsky 1891*; *Bóna 1965* Pl. 40. 4-5; *Ecsedy 1979* site 26 (only appears on the map); *Szabó 1992* 74.
Golokut, see Vizić
Gombosszeg (county Zala). — Settlement. *Müller 1971* 34
Gönyü-Tetűdomb (county Győr-Sopron). — Grave. *Bóna 1965* 40-41; Pl. XIII. 2, 4, *Figler 1994* Fig. 2. 22.
Gradac, see Vućedol-Gradac
Gradina am Bosut, see Batrovci
Győr-Ménfőcsanak, Szeles dűlő (county Győr-Sopron). — Stray find. *RégFüz* Ser. I. 44 (1992) 11, excavated by A. *Figler.*
Győr-Szabadhegy (county Győr-Sopron). — Stray find. *Bóna 1965* 41, Pl. XIII. 3; *Figler 1994* Fig. 2. 23.
Győrszemere-Kutyor (county Győr-Sopron). — Stray find. *Bóna 1965* 41, Pl. XII. 3; *Figler 1994* Fig. 2. 25.
Győrszemere-Tóth tag (county Győr-Sopron) — Settlement. *Figler 1994* Fig. 2. 24.
Homokkomárom-Templom mellett (county Zala). — Settlement. *Horváth 1994* 97.

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Illmitz (Austria). — Grave (?). *Bóna 1965* 41; *Figler 1994* Fig. 2. 31.
Ilok/Újlak (Croatia). — **Settlement.** *Tasić 1984* Pls. I and II.
Ivánbattyán-Dögkút (county Baranya). — Settlement. *Baranya monograph* 70.
Kajárpéc-Pokolfadomb (county Győr-Sopron). — Two graves. *RégFüz* Ser. I. 40 (1987) 15, excavated by A. Figler; *Figler 1994* 22-23.
Kajárpéc-Miklós major (county Győr-Sopron) — Stray find. *Figler 1994* Fig. 2. 27.
Kemendollár-Várdomb (county Zala). — Stray find. *Bóna 1965* 42, Pl. XVI. 10; *Ecsedy 1979* site 23 (only appears on the map).
Keszthely-Fenékpuszta (county Zala). — Grave (?). *Bóna 1965* 42, Pl. XIV. 1-3, 5; *MRT 1* site 21/23, Pl. 7. 5-11; *Ecsedy 1979* 104; *Schreiber 1989* Fig. 4; *Schreiber 1991* Fig. 5. 1-6.
Keszthely-Halászcsárda (county Zala). — Settlement. *RégFüz* Ser. I. 27 (1974) 11; *Kis-Balaton 1993.*
Keszthely-Lehenrét (county Zala). — Grave. *MRT 1* site 21/56. Pl. 12, 14; *Schreiber 1989* Fig. 4; *Schreiber 1991* Fig. 5. 11-12; *Kis-Balaton 1993.*
Keszthely-Újdűlő (county Zala). — Settlement. *MRT 1* site 21/60; *Kis-Balaton 1993.*
Keszü-Berekalja (county Baranya). — Settlement. *Baranya monograph* 70.
Kéthely-Baglyas-domb (county Somogy). — Stray find. *Bóna 1965* Pl. XIV. 6, 9-11; *Ecsedy 1979* 104; *Schreiber 1989* Fig. 4; *Schreiber 1991* Fig. 5. 7-10.
Kétújfalu-Szentmihályfa (county Baranya). — Stray find. The site known as Szentmihályfa in fact lies at Kétújfalu-Szentmihályfapuszta. *Bóna 1965* 44, Pl. XVI. 12-13; *Ecsedy 1979* site 32 (only appears on the map); *Baranya monograph* 72.
Kisjakabfalva (county Baranya). — Settlement. *Baranya monograph* 70.
Klinci (Yugoslavia). — Grave. *Bóna 1965* 45; *Garašanin 1958* 13-14.
Komlósd-Szőlőhegy (county Somogy). — Settlement. *RégFüz* Ser. I. 44(1992) 18. Excavated by Sz. Honti.
Koprivnica-Rudina (Croatia). — Settlement. *Tasić 1984* Pl. II. 1-2.
Koroncó (county Győr-Sopron). — Stray find. *Bóna 1965* Pl. XII. 1-2.; *Figler 1994* Fig. 2. 28.
Kozármisleny-Öregszőlődomb (Baranya). — Settlement. *Baranya monograph* 70.
Kökény (county Baranya). — Settlement. *Bóna 1965* 43; *Ecsedy 1979* 104; *Baranya monograph* 70.
Környe (county Komárom). — Stray find. *Bóna 1965* Pl. XII. 4.
Lánycsók-Bácsfapuszta (county Baranya). — Settlement. *Baranya monograph* 70; *Kalicz — Ecsedy 1978-79.*
Lánycsók-Égetthalom (county Baranya). — Settlement. *Baranya monograph* 70; *Ecsedy 1978a*; *Ecsedy 1978b*; *Ecsedy 1979* 104.
Lengyel (county Tolna). — Settlement. *Wosinsky 1886* Figs 197 and 225; *Wosinsky 1890* Figs 89, 121, 135, 170 and 195; *Bóna 1965* 42-43, Pl. XV. 1-19; *Ecsedy 1979* 104.
Letenye (county Zala) — Settlement. *Kalicz 1970.*
Ljubljana (Slovenia). — Settlement. *Bóna 1965* Pl. XVII. 1-13, 18.
Lovas-Kálvária (Croatia). — Settlement (?). *Dimitrijević 1982a* 32.
Lovasberény (county Fejér). — Stray find. *Bóna 1965* 44.
Magyarszerdahely-Homoki dűlő (county Zala). — Settlement. *Horváth 1994* 97.
Majs-Kossuth L. u. 294 (county Baranya). — Stray find. *Ecsedy 1979* 104; *Baranya monograph* 70.
Majs-Vuka Baba (county Baranya). — Stray find. *Baranya monograph* 71.
Mágocs (county Baranya). — Settlement. *Bóna 1965* 43; *Ecsedy 1979* site 30 (only appears on the map); *Baranya monograph* 71.
Markovica (Yugoslavia). — Grave. *Bóna 1965* 45.
Martinac (Croatia). — *Dimitrijević 1961* 60, Pl. XIX.154-157; *Ecsedy 1979* 104.
Monostorapáti (county Veszprém). — Grave. *MRT 1* site 30/^{xxx}.
Nagyárpád, see Pécs-Nagyárpád, site 78.
Nagyatád-Simongát (county Somogy). — Settlement. *Bóna 1965* 43, Fig.1. 6-7; *Ecsedy 1979* site 27 (only appears on the map).
Nagygörbő-Várhegy (county Veszprém). — Settlement. *Nováki 1965*; *MRT 2* site 39/1; *Ecsedy 1979* 105.

Nagykanizsa-Inkey kápolna (county Zala). — Settlement. *Horváth 1984* Fig. 5; *Schreiber 1989* Fig. 3; *Schreiber 1991* Fig. 3, *Horváth 1994* 95. Fig.8.
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Sármellék (county Zala). — Settlement. *MRT 1* site 40/12.
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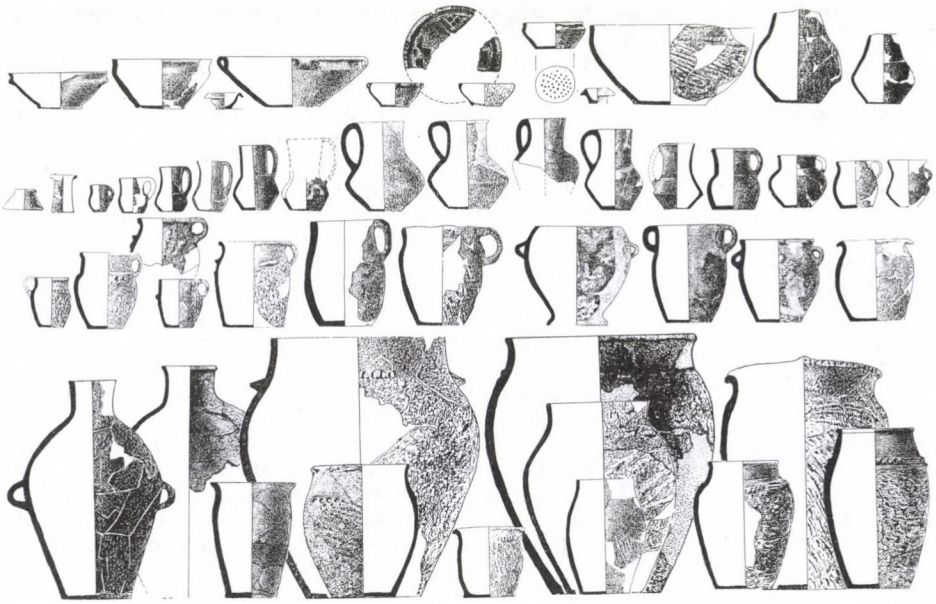

Fig. 12. Börzönce-Temetői dűlő. Pottery finds.

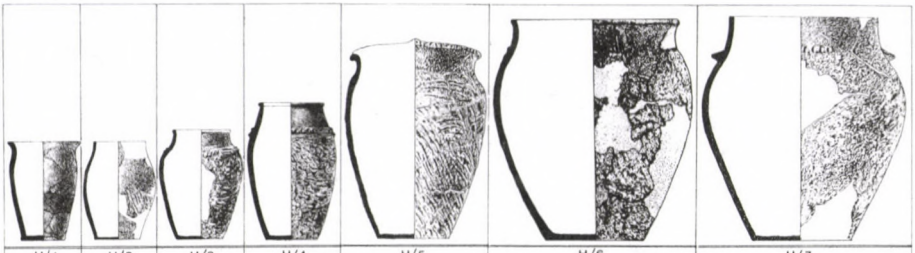

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Fig. 13. Börzönce-Temetői dűlő. Type chart.

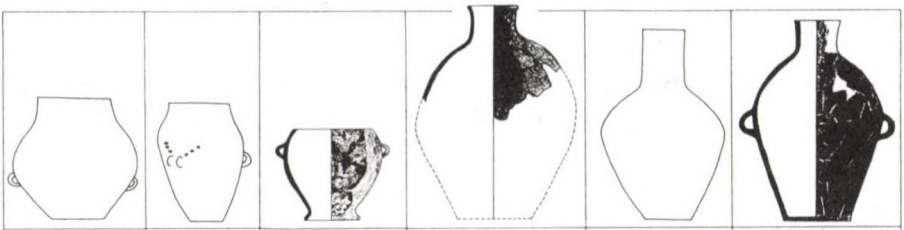

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Fig. 14. Börzönce-Temetői dűlő. Type chart.

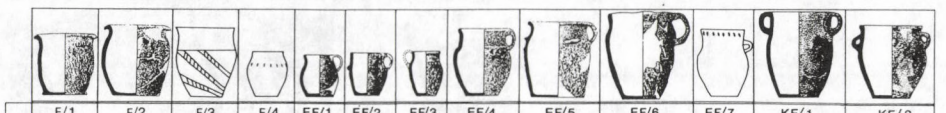

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Fig. 15. Börzönce-Temetői dűlő. Type chart.

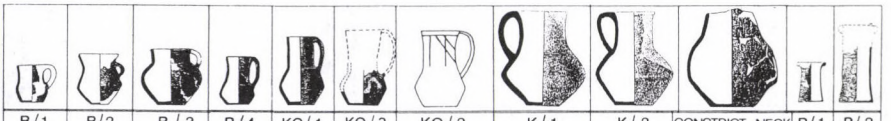

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Fig. 16 Börzönce-Temetői dűlő. Type chart.

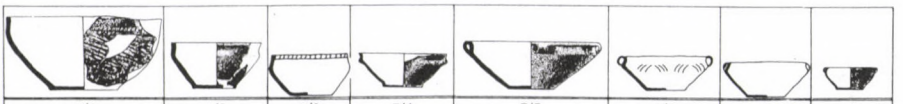

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Fig. 17. Börzönce-Temetői dűlő. Type chart.

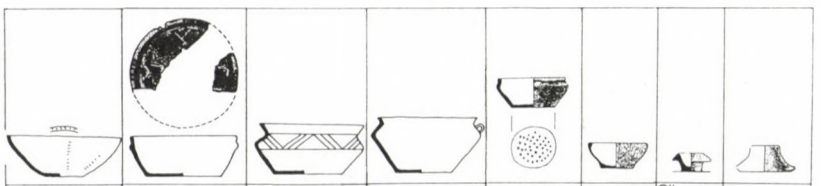

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Fig. 18. Börzönce-Temetői dűlő. Type chart.

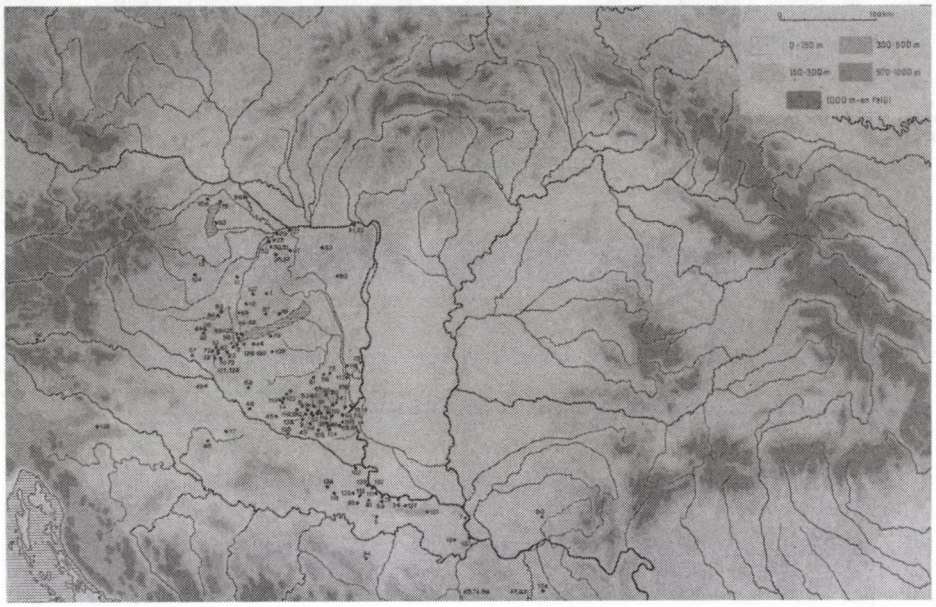

Fig. 19. Distribution of the Somogyvár-Vinkovci culture. Sites:
1. Ajka; 2. Baksa-Kopárdűlő; 3. Balatonmagyaród-Hídvégpuszta; 4. Balatonmagyaród-Szarkavári-sziget; 5. Batrovci; 6. Becsvölgye-Barabásszeg; 7. Belegiš ; 8. Boda-Nyafastó-dűlő; 9. Boldogasszonyfa; 10. Börzönce-Temetői dűlő; 11. Celldömölk-Sághegy; 12. Csabrendek; 13. Csepreg; 14. Csertő-Szőlőhegy; 15. Dobanovci-Zigelei; 16. Dörgicse; 17. Drljanovac; 18. Dunaszekcső-Kálváriahegy; 19. Dunaszekcső-Várhegy; 20. Erzsébet; 21. Esztergom; 22. Esztergom-Szentkirályi földek; 23. Galambok-Öreghegy; 24. Geresd-római temető; 25. Gerjen-Váradpuszta; 26. Gombosszeg; 27. Gönyü-Tetű-domb; 28. Győr-Ménfőcsanak, Szeles dűlő; 29. Győr-Szabadhegy; 30. Győrszemere-Kutyor; 31. Győrszemere-Tóth-tag; 32. Homokkomárom; 33. Illmitz; 34. Ilok; 35. Ivánbattyán-Dögkút; 36. Kajárpéc-Pokolfadomb; 37. Kajárpéc-Miklós major; 38. Kemendollár-Várdomb; 39. Keszthely-Fenékpuszta; 40. Keszthely-Halászcsárda; 41. Keszthely-Lehenrét; 42. Keszthely-Újdűlő; 43. Keszü-Berekalja; 44. Kéthely-Baglyas-domb; 45. Kétújfalu-Szentmihályfapuszta; 46. Kisjakabfalva; 47. Klinci; 48. Komlósd-Szőlőhegy; 49. Koprivnica-Rudina; 50. Koroncó; 51. Kozármisleny-Öregszőlődomb; 52. Kökény; 53. Környe; 54. Lánycsók-Bácsfapuszta; 55. Lánycsók-Égetthalom; 56. Lengyel; 57. Letenye; 58. Ljubljana; 59. Lovas-Kálvária; 60. Lovasberény; 61. Mágocs; 62. Magyarszerdahely-Homoki dűlő; 63. Majs-Kossuth L. u.; 64. Majs-Vuka Baba; 65. Markovica; 66. Martinac; 67. Monostorapáti; 68. Nagyatád-Simongát; 69. Nagygörbő-Várhegy; 70. Nagykanizsa-Inkey kápolna; 71. Nagykanizsa-Sánc; 72. Nagykanizsa-Palini halastó; 73. Nagyvejke; 74. Negrišori; 75. Nezsider; 76. Olasz-Luka dűlő; 77. Oltárc-Márkihegy; 78. Opatovac; 79. Ordacsehi-Kécsimező; 80. Orešac; 81. Orolik; 82. Ostrikovac; 83. Pécs-Jakabhegyi ú.; 84. Pécs-Keletihegy; 85. Pécs-Makárhegy; 86. Pécs-Málom, Lőtér; 87. Pécs-Nagyárpád; 88. Pécs-Üszögpuszta; 89. Pécsudvard-Babos dűlő; 90. Pécsvárad; 91. Pellérd-MÉV, Ércdúsító üzem; 92. Petrikeresztúr; 93. Pókaszepetk; 94. Priboj; 95. Privlaka; 96. Rajka-Modrovich-puszta; 97. Ravazd; 98. Robaje; 99. Sármellék; 100. Sármellék; 101. Sármellék; 102. Sarvaš; 103. Sátorhely-Törökdomb; 104. Sé; 105. Siklós-Göntér; 106. Somberek-szőlő; 107. Somlóvásárhely; 108. Sommerein; 109. Somogyvár-Kupavár; 110. Somogyviszló-Bodonya; 111. Sotin; 112. Stari Jankovci; 113. Stari Mikanovci; 114. Szava; 115. Szederkény; 116. Szedres-Gencspuszta; 117. Szekszárd; 118. Szemely-Poljanak-Törökdomb; 119. Szentlőrinc-Melegoldal; 120. Szentlőrinc-Újhegy; 121. Szepetnek-Kispityer; 122. Szepetnek-Középtábla dűlő; 123. Szulimán-temető; 124. Villány-Virágos; 125. Vinkovci-Tržnica; 126. Viškovci; 127. Vizič-Golokut; Vörs-Battyáni disznólegelő; 129. Vörs-Borzás, dél; 130. Vörs-Nyires; 131. Vrdnik-Pečine; 132. Vučedol-Gradac; 133. Vukovar; 134. Zabari; 135. Zaláta-Hetenye dűlő; 136. Zarub; 137. Zemun-Šljunkara; 138. Zók-Várhegy.

Ferenc Redő

ROMAN VILLA AT ALSÓRAJK-KASTÉLYDOMB 1987-1993

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1. The site

The site is situated at the eastern edge of the Hahót basin, west of the village of Alsórajk, at the crossing of the dirt-road to Hahót and the railroad connecting Nagykanizsa and Zalaegerszeg. At this point, the railroad runs on the edge of the one-time bank of the lake, a few metres above its surroundings. East of it, the contemporary stretch of water can be retraced in the deep, moist area, which is used to date as a pasture and from which drier ribs like islands emerge. One of these nearby dryer spots is built of sandstone.

There is a hill on the one-time bank, W of the railroad, which gently rises all around 4-5 m higher than the lowest area. Land-survey revealed that its only connection to the N-S directed rib E of it is a "straight" towards the SE. The present villages between Nagykanizsa-Palin and Pacsa settled on the edge of this rib. Prior to water regulation, this hill must have been a peninsula bound by water from the W, the N and even the E and it was connected to the land only on the SE. On the W edge of the

peninsula, traces of structures from the Roman period and the Middle Ages were found during field walks.[1]

The church and monastery with the cemetery around them, which used to stand on this hill, was obviously built on the Roman period layers and cut them as well. Consequently, these latter could be observed on a greater surface only outside the medieval structures. Beside the medieval church and the cemetery, contemporary or even later disturbance shattered the earlier layers. Railroad construction and agricultural cultivation highly abraded the earlier much more emphasized hill on the bank (*Pl. 182*). Here, a few interesting structures were found from the Roman Period.[2]

2. Topography

The Amber Road runs about 35 km W of the site. The closest of the towns along it are Salla to the NW and Halicanum to the SW. The road, which runs along the Balaton (either its N or S bank) towards Aquincum, must have been in the vicinity of the site, probably somewhat to the S. A few kilometres to the SW, the tombstone of an Italic family was found at Magyarszerdahely[3] and the remains of a Roman villa were unearthed at Nagykanizsa.[4] If our site is grouped among the villa manors N of the Balaton, it is situated at the W border of their distribution area.

2.1. Stone buildings

Before describing the individual buildings, some words should be said about the state of the walls and floors, their authenticity and the periodisation of the buildings. The situation of the vertical walls of the rooms may be deduced from the followings:

1. Very few vertical walls have been preserved. Even these rose about 5 to 10 cm above the floor level usually independent of the preserved floors. In these cases the vertical walls were made of horizontally placed roughly dressed sandstone slabs.

2. In other cases the walls were preserved to the top of the foundation, which, however is still in its original state. Here the locally quarried,

[1] Firstly F. Rómer mentions the site (*Rómer 1963* 390-391) in his archaeological letters in 1863, then L. Bátorfi quotes him in 1877. The newest research (*Redő 1994* 8-10) was carried out by contributors of these volumes. They have organised an exhibition, and published a small catalogue about the sites. The last mention of the villa in connection of some paralells: *Gabler — Redő 1995* 292.

[2] A Roman villa was settled in the same way in Ferpicloz: *Drack — Fellmann 1988* 394-395. Other parallels of settlement characteristics were observed in connection of the Roman villa in San Potito: *Gabler — Redő 1995 292.*

[3] *RIU* 290; *Mócsy 1976* 24. The stone from Magyarszerdahely mentions a certain Caius Iulius, the earliest imperial denotion.

[4] *Horváth 1983* 15-23.

poor quality tabulated sandstone is stacked in an *opus spicatum* format.

3. In most cases, everything, even the sandstone of considerable size were removed leaving a stratum of sandstone fragments which filled the lowermost 15 to 20 cm of the foundation ditch. At other sites, pebble or gravel were used, here, however, the by-product of sandstone quarrying was at hand. All these can be deduced from traces left by the Roman constructors.

4. Finally, there are wall segments where a hypothetical foundation ditch can be reconstructed after the digging of debris that replaced the removed original materials.

This latter seems to provide the least pieces of information, because, in this case, the edge of the ditch does not necessarily overlap that of the foundation ditch of the original wall. The data type No. 3. is more reliable, although it does not unilaterally reveal the situation of the vertical wall.

At Roman stone buildings, it is not a rare phenomenon that the vertical wall flags from the foundation even as far as 10 to 20 cm. Data type 2. bears greatest authenticity concerning the situation of the original walls.

It was important to tell all these, since the structural analysis of the ground plan may also lead to conclusions. Comparing it to the situation of the foundation ditches it is advisable to know the value of the data.

Floors were even rarer. They were unearthed directly under the uppermost ploughed soil level. The surface of the nicest mosaic still mirrors the direction of ploughing. At some spots there were terrazzo floor surfaces and a single threshold was also identified. It was observed, that the levels were thicker in the E side of the site than in the W, while the situation was the worst in the NW corner.

2.1.1. Building A

In the SW corner of the site, a high quality although relatively thin terrazzo surface was discovered right under the humus. Further excavation in its vicinity revealed the remains of a stone building. (*Pl. 183*)

The main bulk of the building was 13,70 x 12,90 m, the longer side was E-W oriented. There was a regular semicircular apse practically in the middle of the S side, which jutted out 3,20 m from the S wall-face. (*Pl. 184.1*) The foundation of this wall did not stop at the apse but ran on in a straight line. A smaller apse jutting out 1,6 m was also attached to the W wall. This, however, is not in the symmetry axis of the side but slightly closer to the SW corner. Concerning the inner arrangement of the building, parallel, N-S directed walls could be observed to cross the space starting from the junctions of the S apse. Another, E-W directed inner wall cut off the N third of the central room. The NW corner of the ground plan is not yet clear.

These walls outline an oblong-shaped central room with the larger apse at its S end and smaller rooms along the E, W and N sides. Practically all the walls of the building were removed, only a few rows of thin sandstone survived under the floor level around the SW apse. The crushed

sandstone foundation was left at some places, but mostly it was also missing. Terrazzo floor covered the S apse, the room in the SW corner of the building and the attached apse. In the other rooms, no floor was found.

It is important, at the same time, that the floor of a 90 cm broad, well built heating canal was unearthed in the longitudinal axis of the central room. Even a small fragment of the vertical wall of the canal was preserved at the E edge of the floor, and the *hypocaustum* columns could also be located (*Pl. 184.2*). The traces and sometimes the reddish colour of the lowermost *hypocaustum* bricks were left in the limey mortar used as an adhesive. The canal started from the foundation of the S wall. In the N third of the room, it branched into two thinner sections which run East and West to the walls (*Pl. 185.1*). The total breadth of these latter ones equals that of the main canal. They obviously divide its heat quantity.[5] There is no unambiguous indication about the continuation of the heating system northward from the wall. Since the E-W wall itself is dug out, as well as the probable continuation of the canal, we can not make sure of the place of *praefurnium*. It is interesting to note that the short section of the preserved vertical wall might have intentionally been broken. It is also important that the terrazzo floor of the apse is about 10 to 12 cm lower along the S wall than the floor of the heating canal joining at the same place.

Consequently, it can be hardly supposed that the central room was in fact heated from here. It does not display the shape of a *praefurnium* and no traces of burning could be detected. The heating canal can be reached from N, too and it is altogether very small. There was a significant difference in the level of the floor of the central room and that of the apse, even the floor of the heating canal was higher (*Pl. 185.2*). Calculating with the minimal column height and floor thickness, the difference between the two floors is 60 cm. This difference would not be unexpected as the *frigidarium* of a bath is necessarily lower than the heated rooms. It is also frequent that the *frigidarium* is placed in an apse. The brick series starting from the wall of the apse towards SW was certainly the foundation of a canal with natural sloping in the direction of the open water. Not even a step is needed to lead to the *frigidarium*.

Hardly any finds were uncovered in the structure what is no wonder since the whole surface was worn off under the floor levels. Generally, the bright yellow sandy, clayey virgin soil came to light from under the ploughed humus (*Pl. 186.1*). The only find unit worth mentioning is the painted plaster in red, green, yellow, black and white colours. No item displayed figural decoration. The majority was found in a great mass in the filling that replaced the removed wall of the S apse.

[5] T-shaped heating canal is a frequent phenomenon, e.g. at Keszthely-Fenékpuszta, building 7.; Baláca, room I/23, Budakalász, room 2; Csúcshegy, rooms 9 and 10; Parndorf, rooms 1, 8, 10, 24, 25, 26, 28, 31, etc.

I would reason that this wall was the only one to be removed and refilled in the Roman Age, which suggests that the building had two periods. The first one can be characterised by the S apse, the floor heating, the painted plasters. The bigger part of the building was demolished in the second period, and only the SW quarter remained, completed with a smaller apse on its W side. This small outbuilding had also a terrazzo pavement in the floor level of the former heating system, but its quality is far from the other.

The shape of the building of the first period resembles smaller villas (Budakalász,[6] Békásmegyer,[7] Tüskevár[8]) but the apse and the canal starting from it implies a bath (*Pl. 187*).

Since this house can be regarded as an annex to the villa complex, its function may be defined as a permanently working bath.[9]

This function came to an end by the time of the second period.[10] Neither the poor quality and thin terrazzo floor practically without foundation, nor the wall around it, which was built of stone layers with very little mortar and which is thinner than the rest, are characteristic of a bath. Its shape and measurements also do not form an organic part of the bath building. The graves of the medieval cemetery seem to be going round its NW corner, which could mean, that its ruins were visible also in the Middle Ages (*Pl. 186.2*). Regrettably, it was built on the edge of the site that slopes to the bank and, in our day, is bordered by the E ditch of the railway substructure. The observed features appeared directly under the grass in a highly worn state.

2.1.2. Building B

Ten metres NE of the above described building, the traces of another Roman stone structure were observed. This is the place where the medieval church stood and only sporadic fragments could be identified under it. Graves, dug under the Roman floor, were found on the W, E and S side of the church. They severely destroyed the foundation of the Roman stone walls.

It should be mentioned that the formation of the building which we are going describe below can be divided into two phases (1 and 2). They did not denote separate floor levels, and wall differences are also rare. It means that the overall picture of the building changed slightly, while its function remained the same in the course of the rebuilding. Consequently,

[6] *Nagy 1948* 92-113.

[7] *Póczy 1971* 85-102.

[8] *Kiss 1967* 54-57.

[9] The baths constructed independently from the main building is taken into consideration as indication of the richness: *Mócsy 1974* 171. On the other hand it can be a method against the fire risk: *Plantagenet 1984* 220-221.

[10] By the end of the 2nd century the bath-complex have been built in the main building in Britain: *Plantagenet 1984* 222.

the differences are considered to belong to two phases of the same period.

Only 30 cm under the eroded surface, at the bottom of the ploughed humus, a mosaic floor was reached a few metres from the N tower of the church. The cleaning of the surface revealed that the plough had torn up a large part of the mosaic, which was not protected by vertical walls. They had mostly been removed until the depth of the foundation, and were rarely preserved up to the medieval soil level.

The geometric patterns of the mosaic tell that the walls of this building have a different orientation than the previous building. They are ENE-SWS directed and perpendicular to it. For the sake of easier handling, the walls will be characterised in the followings with the four main cardinal points.

The building is 41,8 m long in E-W direction and 45 m in N-S direction (*Pl.188*).

2.1.2.1. Facede and the S wing

The main facade and the entrance faced South. This facade and the arrangement of the rooms behind it show a symmetrical structure. There is a 6 m broad gate in the axis of the facade bound by 1,80 cm thick wall sections on both sides. The gate and the flanking walls jut out 60 cm from the wall-face of the facade. A 50 cm broad threshold used to belong to the gate, the foundation ditch of which was deepened 12-15 cm under the floor level (*Pl. 198*).

The further sections of the facade were constructed of symmetrically arranged porticos on both sides. They were 15,40 m long and 3 m deep disregarding the thickness of the wall. Octagonal shaped bricks were found a few metres from the W end of the portico already in 1987 (*Pl. 190.1*). At that time, they could not be interpreted. Finally, in 1993, several pieces were found in the E wing fallen down from their original places (*Pl. 190.2*). The columns were built of these shaped bricks. Unfortunately, the distance between the columns could not be measured since their band foundation had totally been removed in the Middle Ages.

Behind the 6 m broad gate, there is a spacious gateway (*fauces*) (I), which measures 12,90 x 8,40 m. It was obviously suitable for the passage or temporary keeping of carts. Since the other parts of the building do not indicate definite agricultural function, the big gateway seems to have been a luxury for civil convenience. In the case of lonely villas, special buildings were erected for economic purposes.

The building itself is divided into two main parts. The S third in the two wings E and W of the gate contained a block of rooms with various functions. North of it two thirds of the building were occupied by a central yard and the encircling *peristylium*. The courtyard is bordered by each a row of rooms on both the E and the W side. On the N side, the row of the rooms is not continuous but the building is closed by an encircling wall. An *exedra* of probably representative function, bordered from three sides jutted out from this wall.

The main walls of the rooms in the S wing comply with the symmetry of the facade. It means that the regularity is only broken by smaller partition walls E and W of the gate in accordance with their function.

Room No. IX, situated E of the gateway, was covered with a black-and-white geometric mosaic floor on a triangular surface of appr. one square metre. Beside this area, there was only a palmful of it fallen into the place of the removed wall in the E corner. The mosaic was fit into a limey foundation layer followed by another layer with brick powder, which was founded with horizontally laid sandstone (*Pl. 191*). It was taken up in three sections.

The room may have been used by the owner or his family. It measured 4,00 x 4,20 m. Its place inside the building does not indicate a representative function, it might rather have been a working place, a study (*tablinum*).[11] There are even less data referring to the function of other rooms. Local storage rooms, larders, bedrooms could have been around the room with mosaic floor.

The two wings (*alae*) of corridor No. XVIII lead, in a traditional manner to side-entrances.[12] In this case, it is impossible in the W wing but with high probability there was a side entrance at the end of the E wing.

There are two rooms West of the gateway, No. XII and the S part of No. XVII where *hypocaustum* columns were found (*Pl. 192.1*). It seems to be the bath inside the building. The columns were built of 18 x 18 x 8 cm large bricks. Their height is not known, the most what we could find in original place were 4 bricks on each other. Inside the two mentioned rooms, there are two E-W directed walls which are thinner, i. e. only 35-40 cm, than the rest. In a room with a *hypocaustum*, such walls may be the dividing walls of the heating under the floor.[13] If the vertical walls would be present, they would also mirror the arrangement of a bath with several rooms.

Outside the W main wall of the building, there are two brick *praefurnia* (*Pl. 192.2*). One is attached to room No. XVII and only its S wall has survived. The other one N of it, attached to room No. XXV, is much better preserved. It provides a good analogue to the reconstruction of the former. A thick layer of ash was found in this *praefurnium*. In the adjacent room No. XXV, traces of a terrazzo floor were unearthed. These structures are in the elongation of the W wing of corridor No. XVIII. Thus, no side entrance can be supposed on this spot. If the topographical situation of the villa, its location on the bank of the lake is also considered, it is clear that one could not enter the house from the direction of the water.

[11] Traditionally, this type of room is placed between the *atrium* and the *peristylium* across the entrance as in Pompei e.g. Casa di Sallustio (*Mau 1908* VI, 2, 4), Casa di Pansa (*Mau 1908* VI, 6, 1), Casa del Fauno (*Mau 1908* VI, 12, 2-5). In the case of the villa in Alsórajk, it was rather the functional reasoning that lended this name to room No. IX.

[12] In general: *Castiglione 1973* 24. In strict sense: *Bíró 1974* 41, on early villas with peristyliums (e.g. Baláca I.).

[13] E.g. Baláca building II, room 8.: *Palágyi 1991* 96.

We have very scarce knowledge of the partition of the bath. The two *praefurnia*, however, suggest that two hot water rooms must have been in the bath of building B, the rooms adjacent to the *praefurnia*.

Room No. XVII is relatively large (9 x 6.40 m), divided into two by the above mentioned thin wall. S of this wall, floor heating can be attested to in an area of 3.10 x 6.40 m. N of it, we run under the Medieval church and the Roman layers are much more eroded here than outside it. It cannot be taken for certain that here there were *hypocaustum* columns as well. Even if there were, the N side of the room is cooler than the S one since the *praefurnium* is directly attached to this smaller, delimited area.

E of the *hypocaustum* part of building XVII, there is another room (XII) where floor heating can be attested to. This room is also divided into two parts. An area of 1.80 x 4.20 of the total surface of 4.60 x 4.20 m was heated. The partitioning wall is 40 cm similarly to the former one.

The question arises where the *hypocaustum* of room XII could be heated from. There is an adjacent very small room No. XV, it still does not seem to have been a *praefurnium*. As compared to bath complexes with similar measurements it would be an exaggeration to suppose a third *praefurnium* inside the building. Its construction is also different from the others: they are outside the main wall of the building, while this would be wedged in between other rooms causing danger of a fire. It does not either have direct contact with the *hypocaustum* part of room XII. It seems to be more probable that hot air heating this room reached here through a hole under the floor from room XVII. The quantity of heat could not be the same as in room XVII but gradual cooling was a part of Roman bath technology.

Room XXV got direct heating a surface of 2.80 x 4.20 m. This room also contained a thin partitioning wall which cut off an approximately square shaped portion of the oblong room (2.60 x 2.80 m). This time, it is a greater space which has a direct contact to the *praefurnium*. It is important to note that this *praefurnium* most certainly served the heating of this single room. In the rooms N of it, there were no traces of heating while East of it the W end of the ala was found. It implies that the heat quantity of the *praefurnium* of room XXV concentrated on a very small area (7.3 m^2), while that of the other *praefurnium* S of it is divided between the *hypocaustums* of rooms XVII. and XII (26.9 m^2).

It seems to be a general phenomenon that the heated rooms are partitioned, probably under the floor, with the aim to concentrate the heating to a certain part of the rooms, maybe the basin or the tub. It is interesting to observe that in rooms XVII and XII the heated area is a smaller fragment of the total surface while in room XXV, it is nearly the half.

All this can be evaluated in the following way. Room No. XXV of the bath complex was a *sudatorium*, i. e. a sauna, which was operated relatively independent of other rooms from its own *praefurnium*. Room XVII adjacent to the other heating apparatus was the *caldarium* which was not

as hot as the previous room since the *praefurnium* heated a larger area and part of its heat quantity was led further into the next room No. XII. This was the *tepidarium* with lukewarm water.

Its E neighbouring room XIII was the *frigidarium* which, obviously, was not heated. As its walls were removed, its floor has not been preserved (it was totally under the medieval church), the only justification of the above supposition may be that it had exactly the same measurements as room XII and its position within the bath complex implies this function. All the rooms in the neighbourhood (XIV, XV, XVI) are inappropriate of this task. They are either too small or isolated from rooms certainly belonging to the bath.

A dressing room (*apodyterium*) must also have belonged to the bath complex which might have been in room XVI since this was not a public bath.[14] The inhabitants of the villa could not need a larger room for this aim. Cisterns can often be found near baths, here, however, it is missing and would not be logical since open water was a few steps from the walls. The third unit attached generally to baths was the kitchen (*culina*).[15] It was furnished near the bath due to its water and hot water demand. Either room XIV or XXVI might have been suitable for this purpose.

The E-W directed corridor No. XVIII was already mentioned several times. It was 36.80 m long and 2.50 m broad, and it was closed like a passage (*alae*) probably only at its two ends. The 25.20 m long stretch bordering the inner yard must have been a *peristylium* with columns. Regrettably, neither columns, nor even their bases were found, so their proportioning around the inner yard could not be stated. They certainly did not stand on single foundations but on a band foundation since a shorter part of it could be observed in the SW corner of the yard and the ditch left after its removal could be followed all along its length. In the SE corner, where it was removed, the band foundation was much shallower than the foundation of the vertical walls. In the covered E end of the corridor, its floor could also be detected. It was a yellow stone-powdered walking surface on a loose stone foundation, which could also be observed outside the building right at the E wall around the supposed side entrance.

Corridor No. XVIII is an end-part to the closed structure of the symmetrical S bulk of the building defined by the facade and the gateway, and forms, at the same time, a transition towards the *peristylium* and the row of representative rooms along its E and W sides.

[14] S. Sorti: L'apodyterium. in: *Pasquinucci 1987* 28.

[15] C. Massimetti in: *Pasquinucci 1987* 94, Fig. 69.

2.1.2.2. Eastern wing

The inner arrangement and original walls of the E wing characteristic of phase 1 can be observed at two points. One is the E side of the *peristylium*, the other is the wall bordering rooms XIX and XX.

The E side of the *peristylium* is indicated by two parallel traces of removed walls which were not contemporary. Stratigraphy reveals that the about 40-45 cm thick W wall was earlier and also deeper than the other 50-55 cm thick one (*Pl. 193.1*). They were 30 cm from each other, what would have no sense if they were contemporary. The distance of the earlier (W) wall from the E wall of the wing is 9 m, which is equal to the width of the W wing (to be analysed later). It was already mentioned earlier that the band foundation of the *peristylium* is shallower than the wall foundations, and that it could be observed in the SE corner of the yard. It can also be proved from the same spot that the earlier (W) of the examined parallel walls could not have been the foundation of the column as its depth was identical with that of the vertical walls.

There are two walls bordering rooms XIX and XX. The one more to the S is the wall of an apse attached to room XIX. 90 cm N of it, the foundation of an E-W directed wall was uncovered (*Pl. 193.2*). They cannot be understood together but their stratigraphical position suggests that the apse was built later. There is an undisturbed yellow, very sandy clay layer above the earlier E-W directed wall which separates the uppermost Roman layer observed here (the floor of the room with the apse) from this wall foundation. Consequently, the first room of the E wing must have been approximately square-shaped and measuring 8.80 x 9.00 m in phase 1.

Further arrangement in this wing during phase 1 is not unilaterally attested to since the rest of the separating walls existed in the next phase, too. They may have been characteristic of either both phases, or just phase 2.

From the parallel walls along the E side of the *peristylium*, the one more to the East characterises only phase 2. Its foundation is shallower than that of the other one and its was 2.30 m from the W wall of room No. XIX with the apse. This is equal with the width of the portico along the S side of the *peristylum*. So it can be stated that room XXIII played the same role in this phase on the E side of the *peristylium* as No. XVIII on the S. It was a portico that connected the row of rooms of the E wing with the inner yard.

So much had to be told about the construction phases to understand the topography. Now, we may return to the description of the rooms.

Room XIX with the apse belongs to phase 2. Its main axis is N-S directed, its width was 5.10 m, its length 7.10 m. The width of the apse at its N end is the same as that of the room. The wall of the apse is 60 cm thick just as the main wall, its foundation, however, is somewhat shallower. (It may also imply that the apse was built in the second phase.) The technique of the mosaic floor is also slightly different from that in

room IX. The mortar layer with brick powder is missing and the stone slabs in the sandstone foundation are not horizontal but slanting as if it were the half of an *opus spicatum* (*Pl. 194*). The walls were 60 cm thick. The pattern of the mosaic, to be discussed later in details, reveals unambiguously that the entrance opened from the corridor (No. XVIII) S of it, the same place from where the other room with mosaic floor (IX) opened. A coin of Constantine the Great from between 313 and 318 was found on the floor.

Very little can be said about rooms XX and XXI. A wall of the W wing, characteristic of only the second phase is aligned with their dividing wall. This, however, is not sufficient for an exact dating.

The row of rooms in the E wing is closed by room XXII in the NE corner of the building. Its terrazzo floor and also an entrance (1.30 m) to it with a threshold in the SE corner could be observed. A channel runs under its floor towards North, that is the shortest way out of the building, which is covered with 40 x 40 cm large brick plates. It tells that room XXII or a nearby room must have used water.

An apse attached to the E wall of the building is a problematic point in the ground plan of the E wing. Namely, this structure certainly belonged to the building, still there are no walls in E-W direction starting from the junctions. It cannot be attributed to phase 1, because none of the walls of that period can be connected with those of the apse or the space enclosed by it. It does not either belong to phase 2, since the structure does not really point to the existence of a room with an apse. The wall of this apse is somewhat thinner than that of the apse of phase 2, its foundation started 15 cm higher and it is more vaulted (its width was 5.70 m, depth 3.15 m, more than a semicircle). It means that this apse cannot, for the moment, be interpreted together with the other parts of the building in either phase. At the same time, there are no more phenomena that could be related to it and it does not seem to be justified to introduce a third phase based on a single structure.

2.1.2.3.Western wing

Before the analysis of the W wing, the construction phases must again be separated. The traces of the two phases can be observed in room No. XXIX.

Room XXVIII was 6.90 m long in N-S direction in phase 1, the N wall, however, was covered with the same clear, yellow, very sandy layer that could be observed in phase 1 of room XIX *(Pl. 195.1).* This wall separates the rooms XXVIII and XXIX. The latter was 7.50 m in N-S direction and its N wall was also covered with the clear, yellow sandy layer. These walls undoubtedly belong to phase 1 and it means that room XXIX could have existed only in this phase.

It leads to the conclusion that all the structures in the area of room XXIX (between its N and S walls) characterise exclusively phase 2. The wall that runs in an E-W direction, which is concurrent with the wall between rooms XXI and XXII, was certainly needed to close room XXVIII

after the abandonement of room XXIX. Thus the former became somewhat larger. The channel can run N of this wall since it is no more an inner space, it is outside the rooms (See *Pl. 195.1*).

The S rooms in the row of rooms in the W wing (Nos XXVI. and XXVII), at least room XXVI certainly belonged to the bath complex. Their joint width is 9 m which characterized phase 1 in the E wing. It was already mentioned that there were no traces of floor heating. Room XXV, described as a *sudatorium*, however, is so closely connected that it cannot be interpreted independent of the bath. Most probably this was the kitchen (*culina*), because this room was the closest to the hot water supply. The exact position of the wall of the projection at the SE corner of room XXVI cannot be told since the N side of the medieval church cuts this area. It cannot be proved that walls surrounded the scarcely 1 m^2 small space or it was only closed from three sides. Anyhow, it was suitable to take part in the hot water supply of the kitchen.[16]

Room XXVIII, N of the former ones, occupies the whole width of the wing. No floor could be detected here since the W wing was eroded about half a metre deeper than the E one. It was, however, certainly covered with a mosaic floor as a great number of white and black, prismatic mosaic pieces (10 x 10 x 20 mm in average) were unearthed in the place of the removed wall. Sometimes, several of them were sticked together. The two-colour-pattern and the relatively rough size suggest a bath.[17] This secondary position does not contain too much information. The size and shape of the stones reveal, however, that they could not belong to the mosaic floors of either room IX or XIX and the building must have had yet a third room with mosaic floor.

Not a piece of mosaic stones was found around rooms unquestionably belonging to the bath. In XXV, which was decidedly part of the bath, a terrazzo floor was uncovered on a small surface. So the mosaic pieces do not necessarily belong to the bath of the building. In richer villas where the bath is covered with mosaic floor, its surface is not always decorated whereas our stones definitely came from a decorated floor. Consequently, it may be assumed that the mosaic could have decorated the floor of room XXVIII. Several hundred pieces were unearthed from the removed E wall of this room. The room itself must have been a dining room (*triclinium*), one of the largest rooms in the building. The unexpectedly large size of the stones may have been determined by the surface they had to cover.

Room XXVIII was elongated towards North with 2.60 m in phase 2. Prior to it, there had been another room, No. XXIX, with N-S measure-

[16] Similarly to the bath in Kerkouane, Tunis, where small rooms are attached to the bath: *Pasquinucci 1987* 96, Fig. 70.

[17] It was observed at the excavations of the Imperial villa at San Potito that from the nine rooms with mosaic floor it was only the mosaic of the bath that contained prismatic stones of this size. In other rooms the stones were cubic even if no pattern decorated the floor.

ment of 7.50 m. Its N closing wall was concurrent with the dividing wall between rooms XXI and XXII and also the N closing wall of the building itself. Nothing can be learned about its function.

After it was abandoned, a stone channel ran here in an approximately NW-SE direction (*Pl. 195.2*). In the area of the earlier room XXIX, its vertical walls were preserved. It diagonally cuts the E wall of the W wing directed towards the centre of the inner yard. There must have been a cistern in the centre of the courtyard, as it is attested to by a stone foundation of more than 3 m width (*Pl. 196.1*). Nothing more can be said, for the time being, about this structure since it is known only from details, and it could not be interpreted during the excavation. Its function seems to be more comprehensible since it is known to have been situated in the centre of the courtyard, and that a channel was directed towards it.

The fact that the highest, preserved section of the channel was found in the area of room XXIX seems to suggest that, at that time, it was already outside the building. In other words, it ran towards the bank of the lake along the shortest way around the NE corner of room XXVIII of phase 2 as economically as it was possible.

The row of rooms of the W wing ends here, or rather there is yet another room (No. XXXII) which, similarly to room XXII closing the E wing, is situated outside the closing wall of the building. Contrary to the other side, this room is not in the elongation of the row of rooms but somewhat shifted to the E. Its W wall is aligned with the E wall of the row of rooms, the arrangement of the other walls, however, cannot be related to any other structure inside the building (see *Pl. 195.1*).

Before summarizing what can be known about the construction phases and the row of rooms that constitute the W wing, let us not forget that the deepest point of the building was the NE corner. It cannot be told how high the water level was at the time of the construction of the villa and during its later history. It is, however, certain, that this was always the part of the building to lie the closest of the water.

Accordingly, the following reconstruction is suggested. During the earlier, first phase of the building, the W wing consisted of the two smaller neighbouring rooms Nos XXVI and XVII, the 6.90 m broad room No. XXVIII North of them and the 7.50 m broad one (No. XXIX) North of the latter. Another room may also be supposed (No. XXXII) with a similar arrangement as No. XXII in the E wing. Later, maybe due to a constant slow elevation of the water level, this corner, so close to the bank, had to be cut off in phase 2. Room No. XXIX was given up and room No. XXVIII was elongated towards the South. The corner room, which was located parallelly to room No. XXII was shifted towards East along the N main wall, farther from the water. A new room was constructed with the preservation of the original E wall. It was somewhat shorter in E-W direction but longer in N-S direction than its pair: 2.90 x 2.90 m.

2.1.2.4. Exedra and peristylium

Nothing has yet been said about the structures in the N part of the

courtyard. Regrettably, disturbance of the modern period renders observation difficult here. Still, there is some hope that a future excavation may uncover surfaces which are suitable for examination (*Pl. 196.2*). Anyhow, it seems to be certain that an *exedra*, an oblong shaped protrusion can be found on a surface of 6.60 x 5.50 m on the N side, in the axis of the courtyard. It was a representative area closed from three sides and open from the South which broke the main wall of the building.[18] In front of it, a portico may be presumed (XXXIV) which closed the *peristylium* from the North. Its width is greater here than on the other three sides: 4.40 m.

After the analysis of the two wings, we may evaluate those parts of the building where the two phases could not be differentiated and discuss the building itself as a unity.

The symmetry of the original building must have been as strict as that of the frontal part (*Pl. 197*). There were each a row of rooms in the E and W wings. Their width was 9 m, the length until the N closing wall was 21 m. The same 9 m width (30 feet) could also be observed in the S third of the building. This is the width of the S part without the portico in the facade. Phase 1 is characterised by the strict symmetry of the main walls and the room complexes. The E and the W wings were built in identical distance and width left and right of the gateway, and they flank the inner courtyard. In phase 2 the symmetry of the wings on the two sides of the *perystilium* broke as the E wing becomes narrower (*Pl. 198*). Even the inner arrangement becomes asymmetrical on the two sides.

We can not determine precisely what kind of portico was around the *peristylium* in phase 1 since it would overlap the band foundation of phase 2 in the S and W wings and it could have been registered only in a short, 2-2.5 m long, highly disturbed stretch in the E wing. It was certainly not noted. It is possible that the portico of the first phase did not have a band foundation but as set in individual foundations. If the porticos of the two phases had the same width, the traces of these latter may have been destroyed by the band foundation on the W and S sides. Another possibility is that the band foundation of phase 2 did not only support column but also a three meter high vertical wall proportioned either by smaller column or windows, that is it could be the remains of a *porticus fenestrata.*[19] This hypothesis would solve the problem why we could not find the columns of the first phase in the E side and it would also explain the alteration in the construction technique of the *peristylium.* It is unlikely, at the same time, in the two phases.

[18] Although the shape and the position of this room is very similar to the *tablinum* in the Casa di Sallustio (*Mau 1908* VI, 2, 4) in Pompei, it was rather the room in the villa at Eisenstadt with a similar arrangement that suggested the representative, perhaps cultic function.

[19] This structural solution is generally accepted as an innovation of the northern villa construction as opposed to the open porticos in the Mediterranean: *Bíró 1974* 41.

Anyhow, the result is that the *peristylium* of the first phase is in the symmetry of the whole building, while that of the second phase is somewhat shifted towards E.

It is highly improbable that the exedra would have been constructed in the 1st phase because it would be a gross offence against the symmetry of the building. On the other hand, it exactly fits the symmetry of the *peristylium* of the second phase. The situation is the same with the basin or well in the centre of the *peristylium*.[20]

The construction works in phase 2 were probably necessitated, among other reasons, by a change in the water level (and the consequent rise of the ground water plane). The main task was to move the walls farther from the water with cutting off the NW corner of the building. Hydrological researches should be very useful from the point of wiev of the history of this area.[21] Our reconstruction of the shoreline based on the contour lines is only a very rough approach (see *Pl. 182*).

This necessity upset the symmetry. It was probably the time when the *peristylium* with the portico had to be reconstructed together with the *exedra*, which together constitute a close structural unit, and which latter itself is East of the original axis of symmetry. These forced solutions, however, did not disturb the original inner harmony of the building. The porticos along the E and W sides of the *peristylium* are of equal breadth and the *exedra* is placed in the axis of the *peristylium*. It means that viewed from the inner yard, the peristylium and the surrounding rooms seemed just as symmetrical as the facade.

Here I have to point to the aforementioned parallelism between the villa in San Potito and our construction.[22] The two wings bordering the inner courtyard of the mentioned Italian villa are asymmetric in the same way as the Alsórajk one. The same picture can be observed in Etruria: Settefinestre,[23] however, we can not find any rebuilding in the last two cases, which could prove the original symmetry, or offer a reason for the asymmetry. This phenomenon raises two questions: what is the reason for asymmetry in the Italian villas (1), and, is there any other reason of the rebuilding of the villa at Alsórajk besides the previously discussed ones (2)? The other parallelisms between San Potito and Alsórajk: the placing of the bath in the SW corner of the residential part, the location of the representative reception hall with mosaic pavement in the SE corner

[20] The presence of water is indicated by the channel. The stone foundation, which is not totally unearthed, could not have been larger than 3 x 3 m if it is supposed to have stood in the centre of the *peristylium*. It might have been the foundation of a well statue. Similar ones are known from Pompeji and a similarly small stone foundation was found in the *peristylium* of the villa at Eisenstadt.

[21] Roman research uses this method rarely, however, it produces good results in prehistoric archaeology (*Gillings 1995* 67-84).

[22] *Gabler — Redő 1995* 292-293.

[23] *Carandini — Settis 1979* pan. 21.

of the courtyard, the construction for cultic use in the axe of the N part of the courtyard, as well as the same principles of the orientation, supporyt this hypothesis too.

Room No. XVIII between the two parts of the building, which is partly the S side of the portico, partly the passage (*alae*) to the baths, the side entrance, the main entrance and other important rooms, connects and, at the same time, separates the two parts of the building with different axes. As a passage it connects the important units and as a buffer area that runs along nearly the total width of the building, separates the asymmetrical parts of the building.

2.1.2.5. The mosaic pavements

The majority of the floor surfaces of building B have been destroyed. A smaller portion is preserved in fragments right at the lower border of the ploughed humus and it was further deteriorated in the course of the Medieval period. It means that the Roman period finds got mixed with Medieval ones. They cannot be characterised with materials unearthed from closed Roman period layers. It is only the floors themselves that can be attributed to the structures with a full certainty. They will be discussed in the following.

Not too much can be said about the mosaic floor of room IX. According to the remaining small fragment, it must have been made of black and white stones (*Pl. 199.1*).

It had an at least 70 cm but not more than 90 cm broad frame where 10 mosaic stones were laid in 12 cm. From the edge of the room, a geometric pattern ornamented the frame. (The usual diagonal introductory white, undecorated patch was missing here.[24]) This pattern consists of a network of diagonally crossing bands of alternating whole and half width (12 and 24 cm) (*Pl. 199.2*). This is the so-called *Bandkreutzgeflächt,* one of the essential elements of the structure of the geometric mosaic pavements.[25] The colour of the fields is alternating black and white. The oblongs and smaller squares forming the network are empty, the inside of the larger squares are decorated with various patterns. (*Pl. 200*)

The basic structure of the pattern is known from Trier, the 'Procuratoren-Palast', from the imperial baths[26] and also from the site of Orbe in Switzerland.[27] Two similar floors were uncovered at Baláca with an inversed colour pattern.[28] Another variety, where two halfwide bands alternate with one whole-breadth is described from Aquincum, the villa in

[24] All the decorated mosaic floors of the villa in San Potito, except for one, were made with the diagonal introductory patch: *Gabler – Redő 1994* 163, 168. The mosaic at Alsórajk is similar. This pattern corrects the possible defects of parrallelism and verticality between the wall and the frame of the decoration.

[25] *Salies 1974* 3.

[26] *Parlasca 1959* Pls. 1/2 and 2/6.

[27] *Gonzenbach 1961* Pl. 67 (Herbst).

[28] Baláca rooms 8 and 31 in: *Kiss 1973* 25, Pls. 16, 27 and Pl. 18.

Meggyfa Street,[29] and from Yvonand-Mordagne.[30] The white diamond shaped ornamental element is one of the most general motifs among the squares with whole-width. The other type made of inwrought quarters of a circle is much more scarce, it is present only at Baláca in room 10[31] and at Kloten.[32]

Inside the frame motive, there is a main picture field in a situation similar to an emblem of which only the corner is known. A significant difference from the frame is that 10 mosaic pieces occupy only 9 cm length, i.e. it is of much finer proportioning. The mosaic size under 1 cm is very small in the real sense of the word, so probably the elaboration of the emblem needed a much finer execution. Regrettably the object of the emblem is unknown. What can be seen of it implies a geometric pattern which does not really differ from the finer fragments outside the frame. The inwrought square with curved sides, similar to a lacework, has its exact analogues in Nyon. Here we can observe it like decorative element in a frame motive of swastika-meander around a marine *thiasos*.[33]

The listed analogues date this floor to the end of the 2nd or the first half of the 3rd century.

From the remaining fragments of room XIX with the apse, the decoration structure of the floor can be reconstructed. The stones of the polychrome mosaic are practically the same size (10 stones in 10 cm). Smaller pieces can be found in the figural sections suited to the pattern (*Pls. 201, 202, 213.2*).

Inside the diagonally laid patch along the wall, there is a threshold part with a black-and-white decoration reminding of a rush mat. The entrance was on this side (*Pl. 203.1*). This pattern is the exact analogue to a floor in Belgium made with *opus signinum* technique with the difference that there the direction of the lines is diagonal.[34] More decorated varieties, divided into panels are known from two rooms of the villa in Meggyfa street,[35] from Munzach and Seengen in Raetia[36] and the floor of Saint-Romain-en-Gal in Narbonensis.[37]

It is followed by the square shaped main field also decorated with a row of black-and-white swastika-meander pattern (*Pl. 204*).[38] It is characteristic of this decorative motive that the two colours have a nearly equal role. Its analogues with identical role and execution are known from the

[29] *Kiss 1973* 21 Pl. 14.
[30] *Gonzenbach 1961* Pl. D.24, 25.
[31] *Kiss 1973* Pl. 10.
[32] *Gonzenbach 1961* Pl. 30.
[33] *Gonzenbach 1961* Pl. 68.
[34] *Stern 1979* Pl. XX/69.
[35] *Kiss 1973* Pl. VII/3, VIII/1.
[36] *Gonzenbach 1961* Pl. 4 and Pl. E/30, 31.
[37] *Lancha 1981* Pl. LXIX/405.
[38] *Salies 1874* 3.

'Prokuratoren'-Palast in Trier[39] and in Woodchester.[40] The earliest variations can be found naturally in Italy, e. g. the pavement in Teano (Caserta) dated to the late republic period. The black-and-white frame motif of swastika-meander encloses a policrome emblema also in this case.[41]

Inside the swastika-meander, a 75 cm broad series of motifs frames the 160 x 160 cm large emblem. There is yet another frame motif which is a multicoloured variety of the rocker pattern (*Pl. 203.2*). The real picture field measures 108 x 108 cm which is 4-5 % of the oblong part of the floor. Practically nothing is known of the contents of the picture field, although it was certainly a figural ornament with white, black, yellow and green stones.

The series of motives in the frame, however is very interesting. Heptagonal figures composed of double guilloches somewhat elongated along the length of the room frame the central square-shaped picture field (*Pl. 205*). There are four of them each on the NE and SW sides and three on the SE one. Those at the corners are of course shared. The N side is not known, probably it was identical with the parallel side. The figures touch on the E and W sides, so they only cut small isosceles triangles from the frame patch. On the S and probably also on the N sides, larger, facing isosceles trapezes formed between the hexagonal figures. Different pictures occupy the hexagonal and trapezoid fields: stylized plants (*Pl. 206.1*), flowers (*Pl. 206.2*), a little bird (*Pl. 207.1*), a seated panther (*Pl. 207.2*) and the bearded head of a water deity with floral garland (*Pl. 208*). The applied colours are, beside white and black: grey and yellow in the double guilloche, pink, red, orange and green in the figures.

I have not found an exact analogue of the above-described structure. I would rather speak of identical construction theory. It means that a threshold part shortens the longer side in an oblong shaped room with an apse. In the remaining surface figural panels, which are emphasised nearly as strongly as the emblem, encircle the central picture field. The arrangement, shape and size of these panels are defined and realized by a network of guilloches becoming thus the third emphasized element of the composition (*Pl. 209*). The most mature shape of these construction theories is the so-called 'Bildmosaik', while the most perfect variety is, e.g. the floor in Trier made by Monnus.[42]

Our mosaic belongs among them. Regrettably, we cannot tell the topic of the central picture field although this defines the contextual organisation of the whole surface. Further emphasized elements are the four corners of the composition. One of them is known. The original version of the head with widely waving beard and the forehead decorated with green plants is an Okeanos-mask. The head of the titan still with

[39] *Parlasca 1959* Pl. 15/3.
[40] *Parlasca 1959* Pl. 50/1.
[41] *Gasperetti 1991* 138-139.
[42] *Parlasca 1959* Pl. 42/1.

crab claws in its thick hair, emerging from the sea to the chin is a frequent motif of mosaic art.[43] The grade of stylization present on our floor can also be observed in a mosaic from Vienne.[44]

The contents of the other three corners are unknown. (On the floor from Vienne there are three Okeanos heads.) It seems, however, certain that the other motifs are only decorative patterns without context. It is not alien in the average of Bildmosaiks in Gallia and Germany. On the side of the entrance, there were probably only animals. The little bird and the seated panther have analogues on floors from the Narbonensis (Saint-Romain-en-Gal,[45] Sainte Colombe[46]). The analogues of the parallel, stylized flower motifs can also be found here,[47] in Trier[48] and also in Amiens in Belgica,[49] as well as In Verulamium.[50] The stylized tree branch motif is similar to room 31. of the villa at Baláca.[51]

The cited analogues date the floor to the period of the Severi or somewhat later. It means that the two mosaics from Alsórajk are contemporary. The obvious differences between them may be due to the function of the rooms. Although there are elements connecting them to villas in both Baláca and Aquincum, the contact is no closer than the one with more distant provinces. It is especially true in the case of the polychrome mosaic. This supposes the importation of the master rather from a W province than from Aquileia.[52]

Before plunging into the problems of periodisation, another stone building must be described.

2.1.3. Building C

It seems as if it were located inside the above analysed larger building B (*Pl. 210.1, 2*). Its walls, however, cannot be fit to those. Their orientation is different (NNS-SSW and diagonal to it) and they are also much better preserved. The vertical walls were made with *opus spicatum* technique, but about 30 cm above the floor the surface was finished, smoothed with horizontally laid stone slabs (*Pl. 211.1*). The further parts of the vertical walls were probably made of daub or some other organic material.[53] A high quality terrazzo floor belonged to these walls and fragments of many-

[43] *Ilid 1970* 4; *Dunbabin 1978* Pl. A; *Drack -- Fellmann 1988* 218 and Pl. 11.
[44] *Lancha 1981* Pl. XIX/a.
[45] *Lancha 1981* Pl. CXXV/a, b.
[46] *Lancha 1981* Pls. LXXXV/e, LXXXVI/c, LXXXVIII/e, f.
[47] Sainte Colombe: *Lancha 1981* Pls. LXXXIV/b, LXXXV/f.
[48] *Parlasca 1959* Pl. 50/2.
[49] *Stern 1979* Pl. XXI/86B.
[50] *Ilid 1970* 17.
[51] *Kiss 1973* 27, Pl. 18.
[52] The Aquileia samples, even if there are identical motifs (e.g. the little bird sitting on a branch) are much younger.
[53] A similar technique of timber construction could be observed in Salla, in section K/3.: *RFiZ 1978* 383-384.

coloured (red, yellow, green and black) although only geometric wall painting could be observed at the edge of the floor where it was destroyed by a later pit (*Pl. 211.2*). For the time being, two parallel, 4 m broad and probably 9 m long rooms could be located in this structure. Building C ends outside its E wall. Although not too many pieces of information can be gained from the remains, it is obvious that it served as a flat, its technical execution is solid with certain esthetic demands.

2.2. Buildings with timber foundation and earth floor

Under and beside the Roman Period stone buildings, fragments of timber structures were also uncovered (*Pl. 212*).

2.2.1. The 'protovilla'

Some of them certainly were under the stone buildings dating from an earlier building phase. Such is the timber structure found under the E wing of building B and some traces of timber structures in the long research trench E of building A. Another part of these structures were found at stone buildings in a stratigraphical position that does not exclude their contemporaneity. Such are the timber structures farther from the stone buildings that were uncovered in the initial phase of excavations in the long, E-W directed research trench.

Let's start with them.

The E part of the stone building was disturbed by the graves of the medieval cemetery and a few medieval pits. There are very few early Roman structures there: a short trace of a plank in E-W direction and another one outside the E wall of the stone building, which latter apparently cuts the timber wall (*Pl. 213*). E of it, however, under the medieval graves, traces of several planks could be detected with an orientation only slightly diverging from that of the wall of the stone building, with series of post holes along them. These traces do not allow to tell about the timber structure house and its rooms, only perhaps the walls can be described.

Three wall corners with identical orientation were found in the E-W directed trench. It was the traces of the E-W directed planks that could be followed the longest. Two of them are so close to each other that they must represent two different construction phases. At the junction, corners of the not really regular plank traces, post holes were observed. One of the N-S directed plank traces is densely followed by alternating post and stake holes. It seems to have been one of the main supporting walls of the house. The inside of the house was W of it. E of it we are outside the building. The other wall corner of identical orientation tells about a building only a few metres W of the previous one (see *Pl. 213*).

It may perhaps be contended that settlement logic or regularities, construction purposes must have functioned in the same way at the time of the timber structure buildings since the buildings following each other do not really differ from each other.

Although the greater part of the plank traces were not under stone

buildings, the relation of the two is obvious in the case where the walls of building A cut the plank traces.

The stratigraphical position is also clear under the NE part of building B. and also partly in the case of walls and post traces outside the building. The largest coherent part of this structure suggests a dwelling place with a different orientation than the earlier timber walls. Under the mosaic floor with an apse (room XIX), the post holes and the walls parallel to them are arranged in a pattern suggesting the corner of an inner yard with *peristylium*. A NE-SW directed corridor and attached rooms lead to this corner (*Pls. 214, 215.1, 215.2*).

In order to get a better view of the whole construction, a larger excavated surface would be necessary. The largest measurement of the *peristylium* can be estimated from the traces of the timber wall north of this point, outside the stone building (the facing porticos may be 11 m from each other, the walls 14 m). The NE-SW directed corridor that leads to the S corner of the *peristylium* was 2,30 m wide. The wall fragments outside the NE corner of building B seem to have belonged to the NW-SE directed corridor and rooms in the NE part of the wooden building.

The scattered elements, observed at larger distances prove that this was not an industrial or other economic unit. It was a dwelling and as such, it represented a higher standard. The inner space of *perystilium*-shape enclosed by rooms, the well discernible system of rooms and corridors show a villa-type living building made of wood. We may say that it is a very modest forerunner of building B of the stone building period.

The literature mentions sometimes a wooden forerunner of villas. They were under the villa, which does not necessarily mean buildings with identical purposes. If the author wants to give it a special regard, he calls it a "protovilla".[54]

The above described structure is a typical "protovilla". The only difference as opposed to similar structures is that its orientation does not fit to that of the overlying stone building. This, however, does not exclude the possibility of their close relation in regard to the continuity of villa construction. The change of the bank of the lake can explain this difference.

There were also timber structures with postholes farther from the stone buildings where no direct stratigraphic relation could be observed between constructions of various techniques. Such a structure was found in the first long E-W directed trench. At two spots, where important find units appeared, the trench was enlarged.

[54] *Neal 1990*, quoted by *Creighton 1992* 349-351: "a tiber 'protovilla' was construced before the conquest..." which was rebuilt in stone at the turn of the 1st and 2nd centuries; similarly the Ditchley and the Lockley villas: *Plantagenet 1984* 335 and 386. Similar 'protovillas' are in Switzerland, Hölstein: *Drack – Fellmann 1988* 409-410, Pl. 381, and Laufen-Müschhag: *op. cit.*: 420-421, Pl. 391.

2.2.2. Metal melting oven

Under a grave of the medieval cemetery, there was a metal melting oven. The grave seriously disturbed the spot so only about the half of the oven could be found in a relatively intact state *(Pl. 216)*. It appeared as a small, circular patch with a diameter of 45-50 cm in the sooty black soil with burnt clay rubble. In the centre, there was yellow clay encircled with a red burnt clay frame. The oven was obviously destroyed by some disturbance prior to the cemetery. At that time, its top collapsed and it got filled with clear yellow clay. After having removed this clay, the sooty black bottom of the oven appeared (*Pl. 217.1*). Its half had already been removed by the medieval grave. Its wall was 5-12 cm thick. Around it, red burnt stripes ran diagonally in the clayey soil. Beside it, the fragment of a big jug with a handle and a nearly intact dish were found (*Pl. 217.2*).

What makes this unit especially interesting is a few kg of bronze found in its direct vicinity. This contained bell-shaped ornamental nails of a box (40 smaller, 12 larger ones), a bronze handle with dolphin decoration, various fragments of bronze plaiting and also iron elements of a box: hinge, lock fragments. These finds were in one heap, that is not as the surviving elements of a box but as the removed and collected pieces of several, earlier perished boxes (*Pls. 218, 219.1, 219.2, 220*).

The analogues of the handle are known from Brigetio, Aquincum and Intercisa.[55] The bell-shaped nails are also common in our territory. It is identical with the type m of D. Gáspár. It was connected by Radnóti to a group in Intercisa and dated to the second half of the 2nd c. and the first half of the 3rd.c.[56]

At the same place, five big bronze coins were also found molten together with a piece of lead of the size of a nut (*Pl. 221.1*). Two of the coins belonged to Alexander Severus, one to Commodus, one perhaps to Julia Mamaea, while the last one cannot be identified. Without being able to go into details, I suppose that this find unit refers to secondary metal melting and the bronze and other metals would have been used as raw materials.[57]

Some structure must have stood above and around the oven, since traces of a wall of parallelly placed timbers were found hardly 1 m W of it (*Pl. 221.2*). They were different from the ones in the W end of the trench. These latter were bordered by a relatively dense row of post holes, while here, there were no postholes in the vicinity.

[55] *Gáspár 1986* I. Nr. 1219 Pl. CCXCIII; Nr. 303 Pl. CCXCII; Nr. 426 Pl. CCXCII.

[56] *Gáspár 1986* I 57.

[57] I have to thank Róbert Müller for the information that the lead implies remelting. It is based on the depot with similar constitution of finds that he unearthed. The heavier lead with lower melting point sinks to the bottom of the vessel providing a bath for the bronze to melt.

2.2.3. Baker's oven

60 m E of this place, at the SE edge of the site, there was a baker's oven encircled by a few post-holes 40 cm deep under the humus, in the undisturbed yellow sandy clay (*Pls. 222.1, 222.2*). Its surrounding was less burnt than at the former oven, it occupies, however a much larger area. Part of its wall and its mouth were built of stone. This material fell into the oven when it perished. After its removal, the bottom of the oven could be found. It was made of brick, among them *hypocaustum* bricks of characteristic shape and measurements (*Pl. 223*).

A few metres from the oven a scattered coin from the 4th century was found. The *hypocaustum* bricks in the structure undoubtedly render it contemporary to the stone building periods or even later. Around the oven, there were no traces of a timber wall, there were only the above-mentioned post holes. This bakery did not probably have a separate building, although it may have been covered with a roof to protect it from the calamities of weather.

A common characteristic of the above structures is that they are not under a stone building and they yielded finds of dating force, which attest to their contemporaneity with the stone buildings. Such are the highly worn bronze coins of the Severan period from around the metal melting oven and the *hypocaustum* bricks built in the bottom of the baker's oven. The large bronzes cannot be older than the last quarter of the 3rd c. since partly they are very worn, partly they were found in a find unit which points to their remelting. It means not only that they became practically inappropriate for participating the coin circulation, but also the loss of theoretical value. These coins rarely occur in the coin circulation from the time of the sole reign of Gallienus and they could not be used after the monetary reform by Aurelianus.[58]

Regarding the *hypocaustum* bricks in the baker's oven, they do not necessarily indicate the destruction of rooms with floor heating but were rather connected to their construction. Theoretically, they could have been used any time after the construction of rooms with floor heating. Still, the overall picture of the floor of the oven suggests that its basement was not constructed following a plan including the use of hypocaustum bricks but simply a way to make use of the scrap of the demolition of a house with bricks and stone in it.

The above considerations impart that the two constructions of domestic industry independent of the fact that they were timber and post structures, can be attached to one of the stone building periods. During the functioning of building B, the melting oven would imply that 15 m

[58] The monetary reform in 274 introduced the double denarius which, theoretically has a value five times bigger than that of the sestertius. Practically it was a bronze coin of poor quality. In such circumstances there was no sense to mint the former bronze denominations any longer.

from the W porticus of the main facade, in front of it, there was a smith's shop which does not really fit to the elegant execution of the gate and the main facade of the building. The baker's oven is not so close the building B but it would also have been placed beside the road leading to the main entrance, about 35 m from the gate if they were really contemporary.

3. Stratigraphy

Cross sections at various parts of the site delineate the following general picture (*Pls. 224.1, 224.2*).

On top of the yellow virgin soil, the floor level of the Roman wooden construction is indicated by a greyish tint. The destruction layer of this period is a greenish clay which became a compact silt in result of an elevation of the water table. There is practically no trace of burning in it except for the patch of a hearth. Obviously the destruction was not caused either by fire or flood. (The hydrological circumstances do not really allow it.) More probably, it was the elevated water table in a moister climatic period that put an end to the wooden predecessor of the villa. It is followed by another construction phase this time based on stone. It is started by the levelling and filling of the soil with the local yellow clayey sand. This, sometimes half a metre thick layer, of course, is sterile. It seems to be the same material as the virgin soil. Most likely, it was used to raise the floor level of the area in compliance with the vicinity of the water.

The two phases of the first stone construction period cannot stratigraphically be set apart since in most cases the floors and floor levels were in continuous use. This was the flourishing time of the site during the Roman Period. Neither traces of fire nor of a flood indicate its destruction. Under the terrazzo floor of the next Roman stone construction phase there is a loose greyish brown soil mixed with lime, bricks and sandstone rubble. This is the destruction layer of the classical stone construction period without anything to point to its reasons.

This second stone construction period, however, as it was already mentioned earlier, did not occupy the whole area of the site but only the surroundings of the *peristylium*. Timber and post constructions may also be attached to this period.

The destruction layer of this late stone construction period was mostly removed by the overlying medieval church and cemetery the graves of which are dug under the Early Roman layers from the same limey floor level with sandstone and brick pieces. That part of the floor of the church which was higher than the floor level of the churchyard could not be observed. It seems that the material for the railway bed at the W edge of the site was taken from this spot. Further destruction of the site is due to the agricultural activity. The parallel traces of the plough are clearly visible on the mosaic floors of the first stone construction period.

Beside the generally characteristic stratigraphy, the layer series has to be examined separately at some special points. Such are the two overlapping buildings with different orientation, the stratigraphy of the area between buildings B and C.

Under the 6-8 cm thick terrazzo floor of building C, which obviously ended at the E wall of this building, there was another, frag-mentary but thicker, 15-20 cm thick terrazzo floor (*Pl. 225.1*). It reached over the above-mentioned wall and stopped only at the next, removed wall. This is the trace of the removed band foundation at the E border of the *peristylium* of building B. Thus, it seems unambiguous that this building C was younger than B and it was built only when the other one had already disappeared or was in ruins otherwise they would have considered its endowments.

The same stratigraphy reveals that from among the parallel walls of building B, the E wall was built in the place of the removed W wall, that is, it was younger than the W wall. At the same time, the above mentioned 15-20 cm thick fragmentary terrazzo floor could have belonged to either of them, since at the level of its original junction the trace of the wall removal was already undivided.

A yellow layer with mortar and stone powder is characteristic only of building B and its direct vicinity. Its thickness varied between 2 to 12 cm.

It could be ascertained that it covered the floor level of the *peristylium*, the *porticus* and *ala* (room XVIII) on its S border and the area just outside the walls or more exactly the surfaces that border the main wall from the E. It is a general characteristics of these rooms that they are totally or partially open or even outside the building. They can by no means be attributed to the closed space of a room. This explains the significance of the fact that this floor level can be found in the layer series of the apse that joins the E wall of building B and which cannot be attributed to either construction phase of the building. This level appeared here, most probably, because the apse was added later to the E main wall (see *Pl. 224.1*). Prior to it, the cover level with mortar ran along the wall as in all the open areas S of the apse and the surroundings of the assumed side entrance.

The stratigraphical data observed at the NW corner of the *exedra* (room XXXI), above the N wall is even more isolated. At this point, a 15-20 cm section of the vertical wall has remained with a terrazzo floor stratified on its top (*Pl. 225.2*). The floor surface is no more than 1/4 m^2. Its shape is irregular, its thickness is 8-10 cm, its colour is pale pink. Both the material and the quality imply the Roman Period. It cannot, at the same time, be attributed to any wall in its surroundings.

These stratigraphical data prove that there was an earlier period even after the periods of building B, and, together with the data concerning building C, the Late Roman structure which might be assumed here must have been NW-SE directed and at least 20 m long.

A pit in the S end of room XXIII is a similarly isolated phenomenon (see *Pl. 212*). The pit with a diameter of 3 m was cut by the NW-SE directed trace

of a timber of the early wooden house. This stratigraphy renders the pit the earliest structure of the site. It contained animal bones in a quantity that is significant as compared to the whole of the site. There was no other find to help the dating of the pit. About 150 m E of the excavated part of the site, there were scattered sherds from the Celtic period.

In respect of the melting oven, it was already mentioned that it was found right under the cemetery. The floor level beside it is separated from the level of the medieval graves by the loose layer with detritus and mortar that also covers the Roman stone buildings. A similar destruction layer is characteristic of the second phase of building B and also of building C. Nevertheless, the yellow, sandy-clayey, archaeologically sterile layer, which was so characteristic of the levelling between the two phases in building B is missing (see *Pl. 221.2*). Although this part of the site is far from the area where the most complex stratigraphy could be observed (E part of building B), the above arguments seem to attribute the oven to building C.

The baker's oven raises even more problems. Namely, this is even farther from the other structures. Stratigraphy is thin. The yellow virgin soil appears 40-45 cm under the surface, just a few centimetres under the ploughed humus. The traces of the post holes, pits and the oven were outlined in this layer (see *Pl. 222*). This is the easternmost spot of the excavated area and perhaps the one situated the highest. The hill rising above the water table must have had more distinctive features during the Roman period which was obliterated, destroyed or filled up, later by construction works in various ages. The stratigraphy does not help to attribute this region to any other part of the site.

4. Periodisation, chronology

The above-described stratigraphy provides a firm base for the periodisation of the central area around building B.

There were three stone construction phases in the area. The two in building B are two phases of the same period, dated by the finds, first of all the mosaic floors to the end of the 2nd and the first third of the 3rd c. There are no data for the dating of the reconstruction of building B, i.e. the chronological separation of the two phases. The mosaic floors certainly belonged to the second phase so the first phase must be dated earlier than the end of the 2nd c. There is only one floor that was unquestionably made in the 1st phase (the floor of the S apse of building A) but this one was not cut.

In the layers underlying the intact floor surface there were relatively few Samian ware pieces from Domitian to Antoninus Pius, the same dating was implied by the mosaic floors (*Pl. 226*).[59]

[59] I would like to express my thanks to Dénes Gabler for the determination of the Samian ware.

The problem of the apse attached to the E main wall was touched upon several times. We may add here that it cannot be attributed to a separate period since it makes part of building B. It could not belong to the early phase either as its floor is in level with the floor level constructed around the building. It may either be attached to the second phase of the period or a third phase should be set up. It is undoubtedly older than the structures of the next period.

Building C indicated the start of a new period. This building, namely, was not adjusted to the previous constructions only perhaps its walls were built apart from the densest parts of the former. The find material of this period is even scarcer than of the former one. Anyhow, it may date from the beginning of the 4th c. In its destruction layer, each a coin of Constantine the Great and Galerius were found, and a further coin of Constantine the Great was found some metres farther to the East above the mosaic floor. Beside these, there was only one more coin from the 4th c. (Constantine II) at the site (*Pl. 227*).

Regarding that in this period Pannonian coin circulation was not as vivid as, e.g., in the middle of the century, these coins may yield significant information. It is a similarly important piece of data for dating that there are no or hardly any coins from the peak period of Pannonian coin circulation, the periods of Constantinian and Valentinian periods (*Pl. 228*).[60] We should have found the coins of these decades even if the floors of the periods lay higher and were destroyed or the find material would have been removed by the last owners. It is a general experience that the small bronze coins that soon lost their values and were easy to loose can be found even when the contemporary find material is poor.

The fact that finds from the best period of Pannonian coin circulation of the 4th c. are missing from the site means that the period of building C cannot be older than the first third of the 4th c.

The timber structures under building B. were called "protovillas". The Samian wares mentioned above from the closed layer date them. It is interesting to note that although the site is close to Italy, the products of the first wave of Italian Samian ware are not present in the find material although the neighbouring sites along the Amber Road yielded a considerable number of Samian ware from the Po region and Arezzo.[61]

[60] The graph was made on basis of all published coins from the Pannonian section of the Amber Road (4114 pieces), and from the Pannonian section of *limes Romanus* (9382 pieces), except of Carnuntum. The quantity of the imperial coins known from this colony is almost 10000 pieces, which might distort the graph. Anyway, there is no sense in calculating it, because it would be a part of both coin circulations mentioned above. About the method *see Redő – Somogyi 1986* 35-44, about the use: *Redő 1989b* 239-244, *and 1989a* 424-430.

[61] D. Gabler in: *RFiZ 1978* 403; *RFiZ 1979* 378; *RFiZ 1982* 354.

Consequently, the Samian ware material, which starts from the late Flavian period, not only dates the protovilla period but also reveals that settlement did not follow the romanization pattern of the Amber Road.

The garbage pit full of animal bones, which was cut by one of the planks of the protovilla was the earliest structure of the site. There is, however, no direct evidence of its date. Its presence implies, at the same time, that farther from the water bank (E of building B) further excavations may unearth traces of early Roman or Celtic settlements.

At the dating of settlement features that are away from building B, we endeavour to attach them to the above-developed periods.

The most important representative of these structures is building A. Its shape, size and quality suggest that it is contemporary to the two phases of building B. Although there are no explicit possibilities similar to its floors and the coins in the destruction layer of building C, indirect evidence can be used.

A significant fact is that this structure also had two phases. It was once reconstructed without changing the shape and the main walls probably for the sake of establishing floor heating. In its course, the wall of the S apse was removed. The analysis of its filling revealed that it contained, nearly exclusively, painted plaster which did not come from the Medieval church construction but from the Roman period. There is little stone and mortar component in the filling because most of the walls remained intact while the plaster coating was exchanged.

A striking parallel to it is provided by a close to 5 m long and 80 cm deep pit at the W wall of building B which also contained nearly exclusively a great quantity of painted plaster. It was certainly the remains of a reconstruction, in this case of building B.

Building A is underlain by a similar wooden structure as building B with the difference that at the latter the timber structure is higher quality. When saying that the timber house beside building A (partially under it) was an annex to the protovilla under B just as building A to B it underlines the continuity in the use of the area.

The melting oven and the baker's oven are farther away from all the above discussed structures. The former was attributed to the second phase of building B or to building C from stratigraphical considerations. From an aesthetical point of view, however, it would be difficult to place it in front of the W wing of the facade of building B. So it is rather dated to the beginning of the 4th c. The highly worn coins that waited here to be remelted were nearly one hundred years old.

The baker's oven is considered to be contemporary. There is no direct evidence of dating force, still the *hypocaustum* bricks were used here secondarily together with the stones in the wall which came from the material of a building that had been pulled down. If it was built together with building B, the building materials would display a more systematic application. According to another consideration, the quality of building B allows the assumption that a more comfortable place or even a stone

annex was provided for baking. The openair baker's oven would rather fit to the situation and structure of building C.

5. Type of the villa

Not all the main aspects of the villa type can be analysed with good results[62] as only a part of the site is yet excavated and at some points even hypothetical conclusions are unacceptable. We cannot tell how large the enclosed area, the estate was.[63] It is unknown what other annexes were attached beside the unearthed ones[64] and what type of economic system was used, etc.[65]

A fairly good grouping of the villa can be based on the type of the main building. It belongs to the so-called early *peristylium* villas (Baláca I, Gyulafirátót-Pogánytelek I).[66] Its closest analogue in Pannonia is the main building of the villa at Eisenstadt-Gölbersäckern.[67]

These villas of the N, cooler regions borrow the main elements of the arrangement of *atrium* or *megaron* type buildings representing the construction traditions of the classical area, the Mediterranean.[68] In the main buildings which served the personal demands of the well-to-do owner display the inner arrangement of a municipial, densely housed insula

[62] A part of the different groupings is based on the morphology of the buildings, like *Richmond 1969* 49-70; *Plantagenet 1984* 214-217; *Drack – Fellmann 1988* 134-137, Pl. 93; *Thomas 1964* 350-360; partly *Bíró 1974* 23-57 and *Mócsy 1974* 169-173.

[63] An other part of groupings is based on the dimension of the *fundus*: *Thomas 1973* 88; *Mócsy 1974* 171; V. Lányi in: *PRK 1990* 230-231. A correlation can be observed between dimensions of the *fundus* and the main residential building. That's why the researchers take into consideration this latter one too: *Thomas 1973* 88; *Mócsy 1974* 171.

[64] *Bíró 1974* 24-34.

[65] English researchers classify the villas in according to the qualitative characteristics like mosaic pavements, painted walls, baths, etc: *Potter 1980* 70-76.

[66] *Thomas 1964* 355-358; *Thomas 1973* 359; *Bíró 1974* 40-42; A. Mócsy calls it 'central courtyard villa' that derives from the classic *atrium* house: *Mócsy 1974* 171.

[67] *Kubitschek 1926* 21, Pl. 11; *Thomas 1964* 137-151. The English literature doesn't know this kind of villa. The so-called courtyard houses are much bigger, and their courts are immediately behind the gate: *Richmond 1969* 59-64. A construction (unearthed on the coast at Glan-y-mor, South Glamorgan in 1980) that seems to be very similar to our peristyl-villas is identified like an 'administrative building': *Plantagenet 1984* 482-483.

[68] About the origin of the different parts of the classic Italian house see: *Mau 1908* 250-251. P. Grimal analyses the development from the classic Italian house to the villa suburbana: *Grimal 1969* 206-209. A discussion between G. Tocco who had excavated the building complex on Monte Moltone, Tolve (Potenza), and G. Soppelsa, who reanalysed the material is interesting in this regard. The form of the excavated construction has offered such paralells to the known examples of the *villa rustica romana* in Italia, moreover in the whole empire, so its first researcher identifies it as the earliest (3rd-4th centuries B.C.) *villa rustica*. The probably correct observation of G. Soppelsa, according to the place of the site (in the territory of Magna Graecia) and to the newly excavated earlier phases of the building, support the greek origins of this type of constructions. (*Soppelsa 1991* 89-90.)

system.[69] They are the manifestations of a construction theory that offers all the comfort inside the building. It is attached to the outer world through a rather narrow entrance and is not aesthetically demanding outwards.[70]

This is modified by the feature of the estate centre and the demands of the open space which leads the inner part of the villa to the outer surroundings through a porticus and a significant gateway. This is the *peristylium* villa type with porticus of which the main building at Alsórajk-Kastélydomb is a nice representative.

Regarding its shape, the Eisenstadt villa is the best analogue. From this respect, it should be noted that this is the only place where a nearly exactly square-shaped main block can be found. Its measurements are close to those of the main building at Baláca.[71] It should be mentioned here that the excavation of the villa at Alsórajk has not yet been completed. It can be observed that at these structures, the main block of building is connected to its surroundings by secondarily built new porticos, enclosing walls and inner courtyards. Neither their existence nor their positive lack can be attested to at Alsórajk as yet. Disregarding this item, the main block of building of the two villas constructed in a unified structure are of the same size (about 1600 m^2).

It is not clear if the main entrance of these buildings was to the side from the main axis.[72] Certainly, it was not so at Alsórajk. Although an entrance was supposed on the E wall, this might only have served the passage of persons.

The especially important analogues between the Eisenstadt and Alsórajk villa are the pillars of the main gate.[73] The stone foundation in the middle of the *peristylium*, the heating of the W wing and the shape of the attached *praefurnium*,[74] the oblong-shaped *exedra* on the N side and the smaller room E of it. They all are attached to the main building from the outside just as at Alsórajk. The reconstruction of the lost E side of the Eisenstadt villa made by M. Bíró, which she made on the basis of the villa at Baláca[75] and where an apse is added to the ground plan may also be analogous. The analogue which is attached to the size of the building and so referring to the main building of the villa at Baláca is the passage cutting the building perpendicular to the main axis.

The size of the gateway (*fauces*) and the fact that it divides the *porticus* into two is a unique feature as compared to the above.

69 *Thomas 1964* 358.

70 Disappearance of the *atrium* means the turning out to the landscape: *Grimal 1969* 228.

71 *Thomas 1973* 88; *Palágyi 1991* 95.

72 *Bíró 1974* 41.

73 Similar gate pillars were found by E. Pochmarski (FÖ 1992 510) in Grünau. It is especially important from the respect of the gate at Alsórajk that the opening of the Grünau gate, which was only 190 cm broader, was further divided by two more pillars.

74 *Kubitschek 1926* Pls. 11, 16.

75 *Bíró 1974* 41-42.

It may also be mentioned that the arrangement of the bath is also similarly at Alsórajk and Eisenstadt SW of the main building. This, however, is probably more dependant on the possibilities of the surface than on construction concepts.

Research usually places the construction of the early *peristylium* villas to the turn of the 1st and 2nd centuries.[76] The constructors are supposed to have been *italicus* settlers, veterans.[77] The formal features and geographical position of the villa, the history of the region and the inscriptions from the direct vicinity all support this grouping.

6. Summary

The site is at an Inner-Pannonian road that branches from the Amber Road towards Aquincum. The main line of Italian trade and a flourishing town, Salla, are within one day's reach.[78] The area is favourable for agriculture, the site is on a bank of the lake near gentle W slopes and, although it was never needed, it could easily be defended since water bounds the peninsula from three sides. The traces of the enclosing walls, even if they were not really looked for, were missing because of this.

The Romans settled here with the aim of establishing a villa farm at the end of Domitian's reign since even the first timber house shows the features of a villa. It is a well-arranged main building with a *peristylium* and annexes put up at the same point of the peninsula where later the stone buildings were constructed.

It is known that at the time of the conquest of the province, the Amber Road functioned as a road of march[79] and, accordingly, camps were built along it. The auxiliary troops were stationed in Inner Pannonia till the beginning of Domitian's wars when they were detailed to the limes on the Danube[80] and they defended the borders. The settlements emerging from the earlier Inner Pannonian camps started their civil development in this period.

This change gave the impetus probably not only to the civil settlement development in the place of the camps but also influenced the estates and economic structure of the broader vicinity.

[76] *Bíró 1974* 40; *Thomas 1964* 359; V. Lányi, who otherwise is skeptical in the dating of the early phases of these villas (in: *PRK 1990* 233) accepts the date of the 1st c. for the villas along the Amber Road. About the date of disappearance of the atrium see: *Grimal 1969* 228.

[77] Beside the Caius Iulius of the earlier-mentioned stone from Magyarszerdahely, all the other names known from the region are Italic ones: *Mócsy 1976* 27; in general *Mócsy 1974* 169.

[78] The development of Salla was especially dinamic in the 1st and 2nd centuries as it is reflected by the graphs of coin and sigillata circulation: *Redő 1989a* 425.

[79] The legion camps at Emona and Carnuntum are known and auxilliary troops may have been in the settlements in between as in Salla.

[80] *PRK 1990* 36.

The period of Hadrian's reign witnesses a new state of civil development in Pannonia. The Emperor gave the status of *municipium* to several settlements, among them to Salla.[81] The overall urbanization lended new impetus to agriculture. Sometime at the middle of the 2nd c., a villa complex was built of stone at Alsórajk, which is richer and nicer than its forerunner. Two buildings of the new villa are known. The main building is a *peristylium*-house with *porticus*. It is square-shaped on a surface more than 1600 m^2. The main facade faces the SE. It could be reached from this direction. Although an annex with heated floor was attached, there is also a bath complex in the main building.

The parallel development of the town and the villa within its territory was separated by the Marcomannian attack. It has been revealed that the Germanic troops ran as far as Aquilea on the Amber Road and burnt everything on their way.[82] Salla also perished and depopulated afterwards.[83] At our site, however, the thick burnt layer dated elsewhere to the period of Marcus Aurelius is missing. The villa was probably farther from the road than the barbarian troops would have noted it.

The border and military politics of the Severus period learned from the experience of the Marcomannian ravage and attracted the urban population of Inner Pannonia to the limes. Septimus Severus also visited the province what was followed by a new upswing in settlements along the limes.[84]

The development was the same in the case of our villa. Probably, the very fact that it escaped the Marcomannian ravage accorded higher value to the farm. Anyhow, it was rebuilt at around the turn of the century or somewhat later. In this new form, the buildings are not larger but certainly nicer, more richly decorated and furnished with more comfort. The main building was pulled somewhat back from the bank and so it became better isolated. Three rooms got mosaic floors.

The reason why this flourishing stopped is unknown. It is certain, nevertheless, that the more modest villa building constructed in the beginning of the 4th c. was erected in the place of the ruins of the former one. This former one, consequently, must have been ultimately destroyed. Even the new villa was not used for more than a few decades. It was abandoned by the middle of the century.

[81] The exact date of it must have been one of the visits of the Emperor in Pannonia either in 118 or later: *PRK 1990* 36.

[82] *PRK 1990* 38.

[83] See in the comprehensive chronological table of the town: *RFiZ 1982* 338-339.

[84] *PRK 1990* 42.

Acknoledgements

Grateful thanks are due to my colleagues who were working together with me at the site: dr. Günther Keil, Thoralf Keil, Patrice Bertin, László Pintér; to the members of the staff of the Archaeological Institute: Gálné Csilla Tóth, Tibor Kádas, Sándor Ősi, Éva Somlósi, to my friends: Annamária Csáki and György Csáki who digitized and contributed a part of the figures to this study. The help of Katalin Simán and László Bartosiewicz in the translatinon of the text must also be acknowledged. I have to express my special thanks for the criticism of the editor: László Török.

Appendix: Coins

1. Denomination: As (worn)
A.: Head l. of the emperor Claudius (or Divus Augustus ?)
R.: ?
Date: 41-54.
Mint: Rome
Prov. and layer: black soil mixed with bricks and rubbles - 60 cm

2. Denomination: As
A.: M COMMODVS AN-TON AVG PIVS BRIT (Laur., draped bust r.)
R.: [VOTA SVSCEP DECEN P M TR P VIII P P] in exergue: [COS IIII P P]
Date: 183-184
Mint: Rome
Prov. and layer: Near the melting oven -135 cm
Ref.: *BMC* p. 789 C.

3. Denomination: As
A.: IMP SEV ALE-XANDER AVG (Laur. bust r.)
R.: VICTORIA AVGVSTI (V. draped stg r., l. foot on helmet, inscribing VOT X on shield set on trunk of palm-tree. S C l. and r. very low in field.)
Date: 230 A. D.
Mint: Rome
Prov. and layer: Near the melting oven -135
Ref.: *BMC* Nr. 637, Pl. 22.

4. Denomination: As
A.: [IMP SEV ALEXANDER AVG] (Laur. bust r.)
R.: [IOVI CONSERVATORI]
Date: 222-235
Mint: Rome
Prov. and layer: Near the melting oven -135 cm
Ref.: *BMC* Nr. 694, Pl. 24

5. Denomination: As (worn)
A.: Diademed bust r. of the empress Iulia Mamea
R.: ?
Date: 222-235
Mint: Rome
Prov. and layer: Near the melting oven -135 cm

6. Denomination: As (completely worn)
Date: from the beginning of the 1st century to the 1st half of 3rd
Prov. and layer: Near the melting oven -135 cm

7. Denomination: Antoninianus (worn)
A.: IMP AVRELIANVS AVG (Radiate bust r.)
R.: [FORTVNA REDVX] (Fortuna stg. r. with cornucopiae in her l.)
Date: 270-275
Mint: Siscia
Mintmark: * Q in the exergue
Prov. and layer: NE from the apse of the room XIX, layer of rubbles -65 cm
Ref.: *RIC* V/1 Nr. 220

8. Denomination: Aes 3
A.: IMP CONSTANTINVS PF AVG
R.: SOLI INVI-C-TO COMITI
Date: 313-314
Mint: Ticinum
Mintmark: * in the field l., ST in the exergue
Prov. and layer: above the pavement of the room XIX -45 cm
Ref.: *RIC* VII Nr. 8

9. Denomination: Aes 2 or reduced Follis
A.: [IMP LIC LICINIVS PF AVG]
R.: IOVI CONSERVATORI AVGG NN
Date: 315-316
Mint: Siscia
Mintmark: .SIS. in the exergue
Prov. and layer: Over the pavement of the building 'C' -40 cm

10. Denomination: Aes 3
A.: IMP LICI-NIVS AVG
R.: DN LICINI AVGVSTI VOT XX
Date: 320-321
Mint: Siscia
Prov. and layer: W part of the building 'B' in the humus -50 cm
Ref.: *RIC* VII Nr. 160

11. Denomination: Aes 3
A.: CONSTAN-TINVS AVG
R.: DN CONSTANTINVS AVG VOT XX
Date: 320-324
Mint: ?
Prov. and layer: Over the pavement of the building 'C' -40 cm

12. Denomination: Aes 3
A.: CONSTAN-TONOPOLIS
R.: (Victoria)
Date: 334-335
Mint: Siscia
Mintmark: .BSIS. in the exergue
Prov. and layer: grave Nr. 28 -80 cm
Ref.: *RIC* VII Nr. 241

13. Denomination: Aes 3
A.: DN CONSTAN-TIVS PF AVG (Constantius II)
R.: FEL TEMP RE-PARATIO (type 'Virtus')
Date: 355-361
Mint: Nicomedia
Mintmark: M in the field l., SMNS in the exergue
Prov. and layer: Near the baker's oven, in the humus -20 cm
Ref.: *LRBC* 2 Nr. 2313

14. Denomination: Aes 3
A.: DN VALENTINI-ANVS PF AVG (Valentininanus I)
R.: GLORIA RO-MANORVM
Date: 364-367
Mint: Aquileia
Mintmark: . above B in the field r.
Prov. and layer: from the filling of the wall N from the apse of the building 'A' -90 cm
Ref.: *RIC* IX Nr. 7a/3

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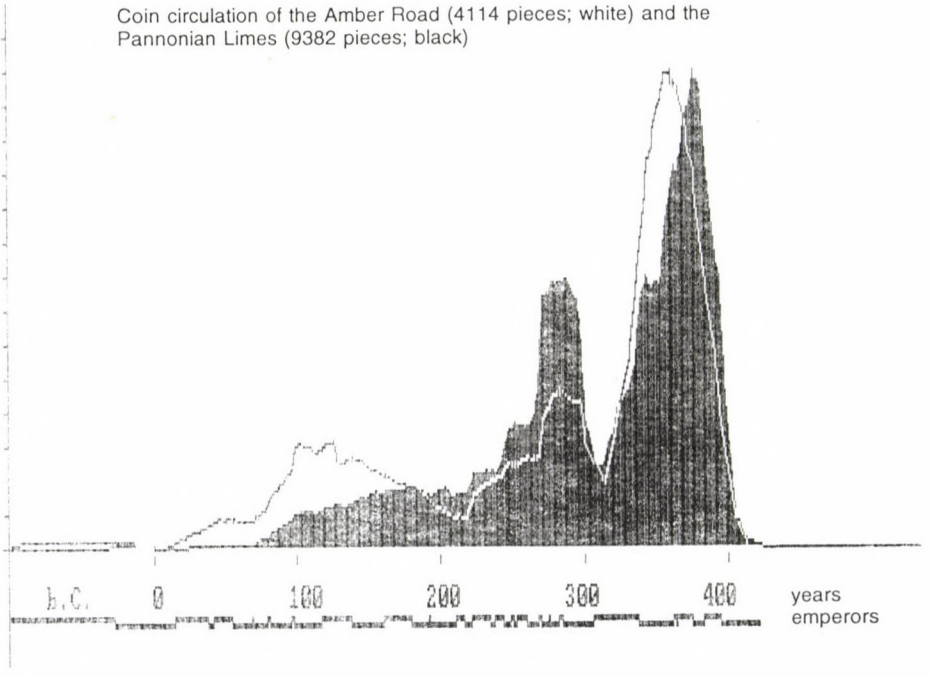

Fig. 20. Coin circulation along the Amber Road relating to the whole of Pannonia.

László Bartosiewicz

ARCHEOZOOLOGICAL STUDIES FROM THE HAHÓT BASIN, SW HUNGARY

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The prehistoric sites of Zalaszentbalázs-Szőlőhegyi mező and Börzönce-Temetői dűlő

1. Introduction

A series of archaeological excavations in Zala county (Southwestern Hungary), carried out over the last decade have yielded new information on the prehistory of this area. For over a century, somewhat disproportionately great attention has been focused on the prehistory of the Great Hungarian Plain, "the easternmost reaches of the East European steppe belt" and "the northernmost distribution area of tell cultures". On the other hand, relatively little is known of prehistoric life, agricultural practices and especially animal exploitation in the hilly countryside of Western Transdanubia.

Two small bone assemblages from Zalaszentbalázs-Szőlőhegyi mező (excavated by Eszter Bánffy) and Börzönce-Temetői dűlő (excavated by Mária Bondár) contribute to our understanding of the Neolithic-Bronze Age transition in the area. These animal remains also offer an opportunity to better define the relationship between environment and culture in the region.

Most archaeologists agree that the onset of the Late Neolithic coincided with large scale ethnic movements in Europe. This conclusion is based on the distribution of large stylistic ceramic zones over the continent.[1] An increasing body of new archaeological data point to the necessity of revising current theories concerning the Neolithic-Copper Age transition in Western Hungary.[2] Complementary radiocarbon dates should reveal stylistic contemporaneity as well as cultural divergence within the entire Carpathian Basin during this period.

[1] *Milisauskas 1978* 183.
[2] e.g. *Bánffy 1990.*

A hypothesized movement of "pastoral" groups from the direction of the southeast into the Carpathian Basin corresponds to the Copper Age in Hungarian archaeology.[3] All too often, however, there is a tendency to view the subsistence economies associated with prehistoric cultures in a normative manner, as single homogeneous units, and under comprehensive labels such as "nomads" or "sedentary agriculturalists". Since prehistoric archaeologists cannot yet convincingly demonstrate ethnic variability from ceramic sherds alone, precisely dated changes in subsistence strategies may be used in testing some widely accepted speculations.

Since subsistence agriculture in particular, is directly dependent on the natural environment, the analyses of the fauna, vegetation and climate are indispensable in the reconstruction of prehistoric food procurment strategies. Local environmental, cultural and taphonomic conditions, influence the taxonomic composition of animal bone assemblages found at each individual settlement.[4]

2. Site locations and dating

The two villages are located in Transdanubia, halfway between the southwestern end of Lake Balaton and Hungary's border with Croatia. They may be approached driving north from the city of Nagykanizsa on Road 733 which crosses Zalaszentbalázs. The modern settlement of Börzönce lay less than five kilometers southwest of this latter village. Both sites are located in the low, elongated rolling hills of Zala county at altitudes of around 200 m above the Baltic sea level. Settlement remains excavated at Zalaszentbalázs-Szőlőhegyi mező lay somewhat above this altitude, while the features found at Börzönce-Temetői dűlő came to light in the proximity of the 180 m topographic contour line. The studied part of Transdanubia is relatively densely forested even today, but the gentle slopes must have always favored land cultivation and grazing as well. The difference in altitude therefore may be considered negligible from an environmental point of view.

Two burnt down houses with recognizable floor surfaces as well as pits were recovered in the 3 by 15 m squares opened in two separate sections of the Zalaszentbalázs settlement. Excavations at Börzönce began with rescue work that yielded a number of pits, although no habitation features were discovered. Five elongated squares, transsecting the topographic contour lines between 200 and 180 m, yielded no additional features at this site.

Detailed lists of features that yielded animal remains at the two sites are summarized in the Appendix of this study.

Although to date only relative, typochronological dating of the ceramic material is available from the two sites under discussion here

[3] *Járai-Komlódi 1982.*
[4] *Choyke 1983.*

(Zalaszentbalázs: Balaton-Lasinja culture, Börzönce: Somogyvár-Vinkovci culture), both assemblages undoubtadly represent a rather tumultous period of both environmental and culture change.

In terms of traditional radiocarbon dates, the Holocene (a. k. a. Flanders interglacial) began in the last third of the 9th millennium BC. Around 3000 BC, a new phase of this period began which seems to have lasted until 800 BC. This entire time interval, the Subboreal Phase, included the Late Neolithic and the Bronze Age.

Pioneering palynological analyses carried out using sediment gathered in nearby Lake Balaton showed that forest cover increased in the Carpathian Basin during this phase.[5] The process was reversed around 3000 BC when the climate started turning more continental.[6] This time period, more-or-less, corresponds to the Copper Age in Hungarian archaeology. Macrobotanical samples available for study contained increasing proportions of grains and seeds from plowland weeds.[7] New human populations, who hypothetically moved into the Carpathian Basin supposedly acquired arable land by widespread deforestation.[8] From the Early Bronze Age onwards this activity increasingly distorted natural faunal succession as is shown by the higher contribution of rodents to the microfauna. Moreover, the number of bone remains from most game animal species, and especially carnivores, become less frequent after this period.[9]

The lack of serially gathered, standardized absolute chronological data makes cultural interpretations of this transitional time period open to fierce discussions. Problems can be clarified only by additional measurements as well as the uniformized re-calibration of radiocarbon dates.[10]

In order to provide a rough absolute chronological framework, sporadic radiocarbon dates associated with the ceramic styles also recognized at the two sites subject to this study are summarized in Table 1. Some Lengyel culture and Bronze Age data were standardized using the Groningen calibration system,[11] and most results may be reviewed within the broader absolute chronological context published by Ruoff and Gross.[12] It must be emphasized, however, that these dates may be regarded only as samples within broader time intervals that should be defined by subsequent research. They should serve as a mere illustration of the chronological context within which the two sites under discussion here may be interpreted.

[5] *Zólyomi 1953.*
[6] *Járai-Komlódi 1982* 156.
[7] *Zólyomi 1980.*
[8] *Gyulai 1993* 13.
[9] *Kordos 1982* 204.
[10] *Stuiver — Pearson 1993; Stuiver — Reimer 1993.*
[11] *Raczky et al. 1992* 42; *Bartosiewicz et al. 1993.*
[12] *Ruoff — Gross 1991.*

3. Results

Only a few animal bones were available from both sites (Zalaszentbalázs-Szőlőhegyi mező: 55 identifiable fragments; Börzönce-Temetői dűlő: 116 identifiable and 16 non-identifiable fragments). The significance of this material, however, lay in its geographical origins. Resulting from a combination of relatively infrequent excavations and poor bone preservation, only limited information has been available concerning prehistoric animal consumption and production in Zala county.

3.1. Taphonomic aspects

As is shown in the detailed list of bone finds presented in the Appendix, the small numbers of bones were recovered from several, closed features. Assuming that they represent, more-or-less, undisturbed primary deposits, these remains may be looked upon as reliable indicators of local meat consumption during the time when these sites were occupied. They do not permit, however, far reaching generalizations concerning animal keeping.[13] Due to this basic limitation in the find material, deductive reasoning must be followed in this paper.

Considering the poor preservation of animal bones from many prehistoric settlements,[14] it is surprising that the two small assemblages included a number of measurable bone fragments. The degree of surface erosion was also minimal. This is due to the fact that the bones were collected from undisturbed features at both sites. Deep deposits protected them from extensive weathering.

Differential discoloration even of individual bone specimens and lamellar surfacial damage on the pieces from Börzönce-Temetői-dűlő possibly indicate changing levels of stagnant water that occassionally reached the features. The lack of dog or pig gnawing also points to the relatively rapid burial of these animal remains.

Fragmentation is fundamentally related to the dimensional attributes of bone. Of the surviving bones, remains of smaller animals tend to be better preserved. Beyond a critical size, bones of similar density are more prone to both natural and anthropogenic (butchering, food processing) fragmentation.[15] Consequently, the number of bone fragments from larger animals tends to be overrepresented. At the Early Bronze Age site of Börzönce, several articulated extremity bones of a cow were found.

Post-depositional taphonomic loss seems to be limited to only two major sources of selective recovery. In spatial terms, it is noteworthy that neither of the two settlements could be completely excavated. Size-related selectivity may be due to the neither of the faunal samples were water-sieved.[16]

[13] *Choyke — Bartosiewicz 1987* 7.
[14] e.g. *Bökönyi 1960; Bartosiewicz 1984c.*
[15] *Binford — Bertram 1977* 96.
[16] *Payne 1975; Bartosiewicz 1988a.*

3.2. Quantification

The small number of bone finds from both sites did not permit a quantitative analysis of faunal composition. It is for this reason that a detailed verbal description of each bone is presented in the Appendix to this study.

It must be kept in mind that the representative value of bone samples is heavily dependent on assemblage size. Species composition, age profiles, and the anatomical distribution of bones can be reliably appraised only when major series of animal bones are available. The contribution of each newly identified bone increases the probability of encountering new phenomena both in taxonomic and osteological terms.[17] It is for this reason, that rare species, tool types etc. characterized by low relative frequencies tend to be altogether absent from smaller assemblages. Remains from wild animals are similarly affected in the archaeological deposits accumulated by communities involved in animal keeping.[18]

In the case of small assemblages, such as the materials analyzed in this study, random bias may heavily distort any quantitative assessment of the faunal composition. The number of identifiable bone specimens (NISP) and the estimated number of individuals (ENI as opposed to MNI)[19] are positively correlated in large faunal assemblages, which makes the prediction of this latter parameter possible. On the other hand, while the number of individuals can be relatively easily determined from a small number of bones, the interpretation of these results must remain on a specific, feature level. Naturally, even in this case, aggregation effects must be taken into consideration.[20]

Comprehensive faunal lists (NISP) from the two sites are summarized in Table 2.

As mentioned previously, the simple-minded comparison of these two assemblages may be easily biased by the difference in sample sizes. Although the remains of domesticates undoubtedly dominate both faunal lists, it is not possible to tell if meat from wild animals played any significant role in the supply of meat and other animal products. This question, naturally, cannot be answered using the small body of data available from the two sites.

Given the small number of often articulated bones, the calculation of percentages for either NISP or ENI would not have been viable way of evaluating these materials.

For the use of quantitative methods, the only other window of opportunity remained the estimation of stature from the relatively great number of well preserved, measurable Early Bronze Age bones. These calculations will be presented along with the discussion of species.

[17] *Bartosiewicz 1984b.*
[18] *Bartosiewicz 1991a.*
[19] *Bökönyi 1970.*
[20] *Grayson 1984* 31.

3.3. Species descriptions

3.3.1. Cattle (Bos taurus L. 1758)

As a result of natural fragmentation and intentional breakage the fragments of large cattle bones dominate both assemblages. Even small bone splinters from this species may, however, represent major quantities of meat. It is for this reason, that the two thirds contribution of cattle bone in terms of NISP coincides with a relatively realistic picture of the importance of beef as a source of animal protein.

At the site of Zalaszentbalázs-Szőlőhegyi mező, cattle bones originate from at least two subadult and three adult individuals. Many of them represent poor meat bearing regions of the head (teeth, horn core) and distally located dry limb regions (tarsal bones). A greater number of bones associated with high quality meat, especially the so-called round (pelvis and femur fragments) of an adult cattle, were found in Feature 4 of the 1993 excavation. Vertebrae and humerus fragments of subadult cattle came to light from the same feature.

The neurocranium fragment and horn core of a medium size domestic cattle of primigenius type is one of the most interesting finds from this site. The relatively large and thin horn core may have belonged to an ox (*Pl. 228*). By the Late Neolithic, variable skull formation as well as the keeping of very small, almost dwarf cattle is known from southern Transdanubia.[21] Even in large assemblages, the assessment of size variability is often complicated by different degrees of sexual dimorphism in various populations kept during this period.[22]

Articulated dry limb bones from a relative gracile cow found in Pit J at Börzönce-Temetői dűlő permitted the reconstruction of stature for that animal. Based on the study of 73 complete cattle skeletons[23] the wither's height of this mature animal was estimated as 124-125 cm (124.06 cm using metacarpus greatest length, 125.08 cm metatarsus greatest length). The anatomical distribution of cattle bones in this more numerous Early Bronze Age assemblage is more homogeneous than was the case at the Zalaszentbalázs-Szőlőhegyi mező site. This phenomenon, however, may be another artifact of sample size.

3.3.2. Sheep (Ovis aries L. 1758) and goat (Capra hircus L. 1758)

These two species of the Caprinae subfamily form the next most numerous group of animal remains at both sites. Their bones may be distinguished only in exceptionally fortunate cases i.e. using a few diagnostic skeletal elements (cranial fragments, dry limb bones etc.).

With one exception, caprine bones identifiable on the species level originated from sheep. The 1992 excavations at Zalaszentbalázs-Szőlőhegyi mező, however, yielded a frontal bone fragment with recognizable re-

[21] *Bökönyi 1962* 96.
[22] *Bartosiewicz 1990a* 21.
[23] *Bartosiewicz 1988b* 364.

mains of the horn core that originated from an adult goat. It represents the "aegagrus" type. This form of domestic goat is also known from other sites of the Lengyel culture in the region.[24]

In accordance with the shorter reproduction cycle and consequently lower individual value of caprines, many remains found at the two sites under discussion here come from young, subadult animals. The small number of finds, however, renders the interpretation of anatomical distribution irrelevant at this site.

The only piece of worked bone included in the faunal assemblage was also made from a caprine bone. An opportunistically used splinter of a metatarsal was recovered from Pit E at Börzönce-Temetői dűlő. It is a typical Class II point,[25] that is an implement that was "produced" by using a randomly chosen piece of bone, without previous planning or elaborate manufacturing. Although both ends of this tool are broken, this specimen most likely falls into type 1/8 ("mittelgrosse Spitze ohne Gelenkende") in Schibler's standardized typological system.[26]

3.3.3. Pig (Sus domesticus Erxl. 1777)

The contribution of domestic pig to the faunal assemblage was even smaller than that of caprines at both sites. Using the limited evidence of less than a dozen bones, however, it is not possible to tell if this small representation reliably reflects a small dietary role. While caprines and especially cattle may have been exploited for secondary products, pig could only have served as a source of pork, fat and hide. Similarly to young sheep, juvenile and subadult pigs seem to have been commonly slaughtered.

3.3.4. Dog (Canis familiaris L. 1758)

While the explicit estimation of minimum numbers of individuals was carefully avoided in the case of the previously discussed species, it may make some sense in the case of dogs identified at the site of Börzönce-Temetői dűlő where dog remains were recovered from two neighboring features (Pits L and P). While the remains of mature dog(s) in both pits may have belonged to the same individual, the mandible of a juvenile dog, certainly represents a second animal.

Communities with relatively developed animal keeping were less dependent on slaughtering dogs for meat.[27] By the time of the Bronze Age, the consumption of dog meat seems to have been largely abandoned.[28] No butchering marks were identified on the dog bones coming from this site. If all mature dog remains from Börzönce-Temetői dűlő originate from the same individual, their appearance in two different features may be a sign of secondary deposition. On the other hand, the juvenile dog's mandible may be a typical case of selective preservation.

[24] *Bökönyi 1962* 96.
[25] *Choyke 1984* 20.
[26] *Schibler 1981* 70.
[27] *Bartosiewicz 1990b* 290.
[28] *Bökönyi 1974* 320.

3.3.5. Red deer (Cervus elaphus L. 1758)

The piece of antler found at Zalaszentbalázs-Szőlőhegyi mező may have been shed by the stag at the end of the winter and then gathered as precious raw material.[29] The Bronze Age femur diaphysis fragment could be tentatively identified only on the basis of its small cross section and the pronounced linea aspera apparent on this piece of bone.

3.3.6. Wild pig (Sus scrofa L. 1758)

The Late Neolithic distal femur from a subadult "wild pig" found at Zalaszentbalázs-Szőlőhegyi mező may represent a misidentification due to the possibly great size overlap between the domestic form and its wild ancestor. Pig is the only economically important domestic animal whose wild ancestor has always lived in the natural environment of human settlements in the Carpathian Basin. It may be therefore assumed that its continuous domestication and cross-breeding lasted for a long time due to this fundamental condition of domestication work.[30] Naturally, domestication should not be looked upon as a linear, evolutionary process, but as a constant, dynamic interaction between the wild and domestic stocks. One should reckon with some sort of a feral form that could not have been clearly classified as either entirely wild or particularly domesticated.

4. Discussion

The keeping of domestic animals is influenced by the interaction between local geographical conditions, the physiological capacity of domestic animals and the culturally determined expectations of the human population.[31] Disregarding this latter, very important factor poses the danger of outright geographical determinism. Animal species also compete with each other within the subsistence economy. Due to their complementary habitat preferences and relatively short reproduction cycle, pig, sheep and/or goat (Caprinae) are especially sensitive indicators of cultural adaptation.[32]

Animal husbandry is dependent on both gathered and cultivated crops available for fodder. Animal keeping, however, also has a complex feedback effect on agriculture. Typical unintentional influences include overgrazing, trampling, deforestation, crop damage as well as the dispersal of various seeds. A special form of crop damage, caused by wild animals, may inspire "defensive hunting" even in societies where animal keeping guaranteed sufficiently large meat supplies.[33] Toward the Bronze Age, the procurement of fodder, the use of animal draft power in land tillage and agricultural transport[34] as well as soil fertilization by manuring in later

[29] *Choyke 1984* 56.
[30] *Bökönyi 1969* 223.
[31] *Choyke 1983.*
[32] *Bartosiewicz 1990b* 290.
[33] *Uerpmann 1977.*
[34] *Bökönyi 1992* 70, Fig. 31.

historical periods represent human decisions within the animal keeping sphere that have effects on plant cultivation. Preoccupation with domestic animals is also shown by numerous finds of clay animal figurines which often depict domestic animals. Statuettes of cattle and pig are known from the Early Bronze Age site of Börzönce-Temetői dűlő as well.[35]

Traditionally, two ratio values are used in characterizing the exploitation of animals at any prehistoric site. The proportion between wild and domestic animals is usually interpreted as a fundamental indicator of animal husbandry's development. Within the group of domestic animals, the relationship between the contributions of caprines and pig is implicitly recognized as a measure of "pastoralism" (sheep/goat) and "sedentism" (pig). Definitions of these two categories are blurry and ignore complex cultural traditions. It is not possible to assume that higher proportions of sheep/goat necessarily reflect a pastoral society or that all forms of pastorlism reject the significant exploitation of pig. It is even possible that a pastoral society may evolve into a more sedentary one (or vice versa) but maintain its preferences for a particular domesticate. The variations on this theme are numerous and must be kept in mind before giving a name to the animal keeping at a particular prehistoric settlement. In addition, species ratios between sheep/goat and pig would become meaningful only when sufficiently large bodies of archaeozoological data are available.

The virtual absence of wild animal remains in the two small assemblages under discussion here falls in line with previous observations. While hunting was relatively important toward the end of the Neolithic at various sites, hunting and fishing apparently played only a supplementary role in Copper Age subsistence strategies[36] even in the proximity of major water surfaces. According to Ambros,[37] aeneolithic faunal assemblages in Slovakia are also dominated by domesticates (c.a. 80 % of NISP). In terms of NISP, the Copper and Early Bronze Age exploitation of wild fauna may be considered complementary to animal keeping below the threshold of 25 %[38] and negligible below 10 %.[39] Around the beginning of the Subboreal Phase, that is during the Late Neolithic Period preceding the Bronze Age, the warm, humid and balanced climate free of extremes, gradually deteriorated. It is suspected that this climatic change lay behind the increasing proportion of wild animal bones and (hand-collected, that is large) fish remains at many settlements in Hungary.[40] According to Bökönyi[41] this climatic change may have been one of the factors leading

35 *Bondár* in this volume.
36 *Bartosiewicz et al. 1993.*
37 *Ambros 1986* 12, Fig. 1.
38 *Bartosiewicz 1990b* 288.
39 *Matolcsi 1982* 77.
40 *Zalai-Gaál 1983* 238.
41 *Bökönyi 1974.*

to a decrease in the exploitation of domestic animals, for example, at the settlement of Tószeg-Laposhalom in the Great Hungarian Plain. On the other hand, a clear diachronic increase in the contribution of wild animals occurs at the tell site of Jászdózsa-Kápolnahalom.[42] This trend, however, may often be overestimated when antler fragments are taken into consideration as well.[43] Hypothetically mobile animal husbandry characteristic of the Late Neolithic, Copper and Early Bronze Ages, however (represented by the assemblages analyzed in this study), was apparently replaced by a combination of animal keeping, hunting and possibly sedentary agriculturalism by the Middle Bronze Age.[44]

The same tendency is apparent at other Central European sites as well. For example, the significance of hunting radically increased during the Late Neolithic phases of Zürich Kleiner Hafner (Cortaillod and Pfyn culture animal bone samples). In meat consumption, domesticates regained dominance only by the Early Bronze Age.[45]

These trends fall in line with a number of relevant palaeobotanical observations from Hungary. Macrobotanical remains representing the beginnings of agriculture (Neolithic and Copper Age) in Hungary were summarized in a monograph by Füzes.[46] Bronze Age agriculture in Hungary has already been discussed to varying degrees as a part of several studies.[47] Most recently a detailed and comprehensive study was published by Gyulai.[48] On the basis of palynological research carried out on the Great Hungarian Plain it is possible to reconstruct the flora and climatic conditions of the Atlantic Phase.[49] Extensive Neolithic mixed oak forests occupied loess soils which provided an ideal basis for agricultural cultivation. The species composition of these forests started changing. According to the results of pollen analyses from Switzerland, the mass invasion of beech started as the climate there turned slowly but unambiguously colder and more humid.[50]

This process can also be observed in Early Bronze Age pollen samples from Börzönce Temetői dűlő.[51] The crown level of oak trees lets sunlight permeate. Consequently oak forests have thick undergrowths as opposed to beech woods which grow a closed foliage resulting in a poor development of shrubs. In contrast to the mixed oak forests of the Neolithic, Bronze Age beech forests were characterized by only a few plant species and thus did not provide sufficient amounts of nutrients for subsistence

[42] *Bökönyi 1992.*
[43] *Choyke 1987.*
[44] *Gyulai 1992; Gyulai 1993.*
[45] *Schibler 1987* 192.
[46] *Füzes 1990.*
[47] *Nováki 1975; Árendás 1982; Hartyáni 1982.*
[48] *Gyulai 1993.*
[49] *Járai-Komlódi 1966.*
[50] *Jacomet et al. 1989.*
[51] *Bondár* in this volume.

gatherers.[52] As a result of prolonged forest cover, chernozem soils turned into brown forest soils in more mountainous regions. Loessy soils turned into meadow soils in newly opened open areas.[53] Population increase and the reduced subsistence base created additional demand for foodstuffs. Environmental changes therefore contributed to the stimulation of agricultural development. Macrobotanical remains from the Early Bronze Age site at Pécs-Nagyárpád in neighboring southern Transdanubia[54] yielded extensive evidence of plants which had been first cultivated during preceding Neolithic times. Cereals identified in that material included small spelt, amelcorn, and barley. Of the legumes, lentils and peas have been identified.

Apparently, Early Bronze Age climatic deterioration resulted in a decline in the keeping of sheep and/or goat often in favor of pig, a species preferring more humid, forested habitats.[55] With the advancement of land cultivation, forests also remained ideal grazing areas for pig. Unfortunately, the radical dichotomy between keeping sheep/goat versus pig is of little use in reconstructing the natural environment in temperate climates. It is for this reason that archaeobotanical data are needed in ecological reconstruction. In the area under discussion here, probably both sheep and pig thrived. While the gentle slopes in Zala county clearly favored land cultivation, even within the small range in altitude there has always been enough variability to meet the habitat preferences of both caprines and pig. Lower lying areas were obviously more humid (winter fodder, pig keeping), while drier hillsides provided ideal pasture for both cattle and caprines. It was probably in these areas that animal keeping, to some extent, competed with crop cultivation.

The dominance of cattle (Bos taurus L. 1758) as well as sheep and/or goat (Caprinae subfamily) bones in the faunal list falls in line with relevant trends from Slovakia[56] Lengyel culture and the subsequent Bronze Age cultures are characterized by a relatively higher contribuiton of pig bones than the 2-20 % observed at sites of the preceding Copper Age in Hungary. This trend, however, cannot be ascertained using the evidence of animal bones from the two small bone assemblages recovered at Zalaszentbalázs-Szőlőhegyi mező and Börzönce-Temetői dűlő.

Animal keeping is supposed to have been the chief form of subsistence for the people of the Pit Grave Kurgans. Their eastern-type material culture first reached the Carpathian Basin at the beginning of the Bronze Age in Hungary, around 2000 BC. At the same time, people, hypothetically more familiar with land cultivation came from the south. The merger of these two different styles of life gave rise to the Zók culture. The cul-

[52] *Gyulai 1993.*
[53] *Nagy 1982* 220.
[54] *Hartyáni — Nováki 1975.*
[55] *Bökönyi 1992* 71.
[56] *Ambros 1986* 15, Fig 2.

ture covered by this collective term, however, derived from ceramic typology. It includes several groups characterized by potentially different ways of life.[57] In the favourable natural environment of the Zala hills, prehistoric animal keepers clearly did not face the choice of having to adapt their stocks to harsh local conditions.

A more complete chronological sequence of prehistoric fauna (and flora) containing larger assemblages would help in developing a more clear-cut picture. Under, more-or-less, neutral, favorable environmental circumstances, however, cultural influence on animal keeping (ethnic affiliations, availability of stocks, social structure, settlement hierarchy) may have a relatively great impact as well. These problems may be best addressed within the framework of a revised typochronological context backed by broadly based absolute dating.[58]

Table 1. Radiocarbon dates highlighting the occurrence of the discussed ceramic styles at other archaeological sites (Compiled after *Kalicz—Raczky 1987*; *Raczky et al. 1992*; *Figler et al. 1994*)

CERAMIC STYLE: LENGYEL II CULTURE			
Sample code	BP	cal BC	Site
Deb-2157	5540±60	4458-4418 4406-4350	Győr-Szabadrét domb
Deb-2179	5440±60	4350-4240	Győr-Szabadrét domb
Bln-502	5400±80	3450±80	Zalavár-Mekenye
CERAMIC STYLE: BALATON-LASINJA CULTURE			
Sample code	BP	cal BC	Site
Deb-2171	5160±60	4040-4012 4008-3944 3850-3820	Győr-Szabadrét domb

[57] *Kalicz 1968.*

[58] Thanks are due to the two excavators, Eszter Bánffy (Zalaszentbalázs-Szőlőhegyi mező) and Mária Bondár (Börzönce-Temetői dűlő) who provided unpublished information on the two sites. The photographs were taken by Antal Fekete. These investigations were partially supported by Grant No. 1212 of the National Scientific Research Foundation of Hungary.

CERAMIC STYLE: SOMOGYVÁR-VINKOVCI CULTURE

Sample code	BP	cal BC	Site
BIn-1640	4000±50	2582-2468	Szava
BIn-1945	3900±60	2490-2482 2470-2310	Pécs-Nagyárpád
BIn-1634	3885±40	2460-2444 2440-2340	Pécs-Nagyárpád

Table 2. Faunal lists (NISP) of the two assemblages

	Zalaszentbalázs Szőlőhegyi mező (Late Neolithic)	Börzönce Temetői dűlő (Early Bronze Age)
Cattle	38	74
Domestic pig	6	12
Sheep	4	6
Goat	1	-
Sheep or goat	4	17
Dog	-	6
Red deer	1 (antler)	1
Wild pig	1	-
NISP total	55	116
Large mammal	-	14
Small mammal	-	2
Non-identifiable total	-	16

The Bronze Age and Medieval settlement remains from Hahót-Telekszeg

1. Material and methods

Animal bones recovered from settlement deposits should be regarded as chiefly reflecting aspects of meat consumption. Although in depth faunal analyses may reveal additional aspects of animal exploitation, most of the animal bones from refuse pits shed light on dietary habits of a given culture.

The archaeological material of Hahót-Telekszeg represents four major periods. Of these, the Neolithic (Transdanubian Linear Pottery) is the earliest, however, no animal bones were available for study from the three pits that contained sherds characteristic of this culture.

The smallest set of animal remains (Table 1) originates from the late Bronze Age Urnfield culture that was identified in a 13 m long stretch of Trench 1. While one third of this faunal material consisted of samll, non-identifiable bone fragments, over 70 % of the identifiable remains originated from cattle.

The early medieval, 11th-13th century Period of the Árpád Dynasty contributed archaeological finds to several features, although these materials were sometimes mixed with those from subsequent medieval periods. Consequently, only a small number of bones could be unambiguously assigned to the Árpád Period (Table 2), one quarter of which could not be identified to species.

The overwhelming majority of animal remains from Hahót-Telekszeg came to light from late medieval (15th to early 17th century) features, most notably a 16th-17th century house. One fifth of the over 1500 bones representing the late Middle Ages (Table 3) could not be precisely identified.

The number of identifiable bone specimens (NISP) was considered the basic unit of counting in this study. Estimating the number of individuals is often biased by processes of accumulation and post-depositional effects which are impossible to separate out and identify. This holds especially true for food remains from the deposits of relatively complex settlements where several archaeological periods are represented.

2. Preservation and sample sizes

Sixty-six to eighty percent of the animal bones listed in Tables 1 to 3 were identifiable to the species levels. This is, however, not merely the result of inevitably size selective hand collection which limits faunal analysis to the size range of domestic mammals. Since most of the material was well preserved in relatively deep and at most secondary deposits, only a small degree of natural fragmentation and surface erosion/weathering were observed. On the other hand, it is these taphonomic factors which rendered the remaining portion of the assemblage taxonomically non-identifiable.

Dog gnawing, an indicator of prolonged garbage exposure on the surface, is relatively infrequent. Carnivore gnaw marks appear on 2.3 % of the bones in the statistically most reliable, large late medieval assemblage of the Hahót-Telekszeg settlement. This fact may also be indicative of the aforementioned relatively rapid burial of food refuse.

Quantifying animal remains ought to be a cornerstone of reconstructing diet or even practices of animal keeping, in a broad sense, in former times. Acquiring bone samples which are of representative value is of

paramount importance. Unfortunately, due to their small sizes, the late Bronze Age and Árpád Period assemblages can be only interpreted in a rather general sense.

The stochastic relationship between the number of identifiable specimens (NISP = x) and the number of species represented in an assemblage (R = y) is best expressed by the linear regression between the decimal logarithms of these two variables.[59]

The late medieval animal bone assemblage from Hahót-Telekszeg contained 1491 identifiable bones which originated from 12 species (in this calculation all caprine bones were taken as originating from sheep). The 1491 NISP value was substituted into the equation calculated on the basis of 22 medieval assemblages from the city of Vác. The trend established on the basis of the Vác material may be described using the following equation:[60]

$$\lg R = 0.335 \lg NISP + 0.098 \; (r = 0.903)$$

The high and significant correlation (P 3/4 0.001) as well as the low regression coefficient indicate that the recovery of bones from each new species follows a clearly degressive trend. The number of species represented in a sample of 500 bones is approximately 10 and, by and large, includes all domestic species, although more unusual animal remains can be expected only in large assemblages.

The theoretical number of species expected on the basis of the NISP value characteristic for late medieval Hahót-Telekszeg was 14.5 which is higher than the actually observed 12 species (one of which, fox, may have been an intrusive animal). It may be therefore concluded that the species inventory of this site was somewhat poorer than that of medieval Vác. The difference may be explained by the greater variety of animals exploited in an important urban center.

3. Chronological characteristics

The percentual contributions of identifiable animals species listed in Tables 1 to 3 are shown in *Figure 21*. Although the late Bronze Age (LBA), early medieval (EMA) and late medieval (LMA) animal bone assemblages do not represent a continuous sequence their differences are noteworthy even in the absence of a causal evolutionary relationships. The remains of domestic animals dominated the faunal list in all three periods, cattle being represented in highest numbers. Sporadic remains of wild animals, on the other hand, are present in each of the assemblages.

[59] *Grayson 1984.*
[60] *Bartosiewicz (in press).*

3.1. Late Bronze Age

The small Bronze Age assemblage from Hahót-Telekszeg is so heavily dominated by the bones of domestic cattle that the interpretation of 5 caprine and 8 pig remains would be meaningless. The 71,7 % contribution of cattle bones is unusual for Bronze Age settlements,[61] and may result from a sample that represents a special concentration of cattle butchery refuse at the studied segment of the prehistoric settlement.

3.2. Period of the Árpád Dynasty

The relationship between the Árpád Period sample from Hahót-Telekszeg and contemporary sites in Hungary is shown in *Figure 22*. This graph shows relevant sites in the rank order of decreasing proportion between caprine to pig remains (NISP). In spite of possible sampling bias that often distorts results when data from various sources in the literature are compared, the comparable percentual contributions of bones from pig and members of the caprinae subfamily places Hahót-Telekszeg within the lower section of the diagram. On the other hand, the sites listed in the left hand side of this figure show no marked regional patterning. The sample from Hahót-Telekszeg itself is most similar to assemblages from Csátalja (Danube-Tisza interfluve), Doboz and Szarvas from the East of the Great Hungarian Plain.

Of the early medieval cultures in the Carpathian Basin, faunal lists dated to the period of the Árpád Dynasty analyzed by Ambros,[62] Bökönyi,[63] Matolcsi[64] as well as Bartosiewicz and Takács[65] seem to be richest in so-called "steppe elements" such as the remains of caprines and horses.

Avar Period settlements studied by Bökönyi,[66] Bartosiewicz[67] as well as Takács and Bartosiewicz[68] tend to have major percentages of cattle and caprine bones. Sporadic animal remains from Slavic settlements[69] show a less clear-cut picture, but are relatively rich in pig remains.

The importance of sheep and possibly goat in meat consumption during the early medieval period of the Árpád Dynasty probably points east of the Carpathian mountains: the percentual contribution of caprines is similarly high at several sites of the early medieval Saltovo-Majack culture distributed in the northern Caspian region.[70]

[61] *Choyke 1983.*
[62] *Ambros 1955* 415.
[63] *Bökönyi 1974a* 358.
[64] *Matolcsi 1975a* 70; *Matolcsi 1982* 327.
[65] *Bartosiewicz — Takács (n.d.).*
[66] *Bökönyi 1974* 340-432.
[67] *Bartosiewicz 1993.*
[68] *Bartosiewicz — Takács (n.d.).*
[69] *Bökönyi 1974a* 432; *Kurnatowska 1977* as detailed by *Bálint 1991.*
[70] *Pletnëva 1967* 147; *Gadlo 1978* 124; *Matolcsi 1982* 201; *Magomedov 1983* 101; *Bálint 1989* 96.

Another possibly related culture, the Balkan-Danubian culture, was divided into two regional groups by Bálint.[71] A high percent of caprines was observed in faunal lists from its eastern section[72] located on the left bank of the Prut river. Domestic faunas in the southwestern branch of this culture[73] in Northern Bulgaria, on the other hand, are characterized by higher percentages of pig. The same tendency is apparent in faunal lists of the Romni-Borsevo culture[74] located north of this region.

Within this geographical and chronological context, the typically transitional position and similarity of sites from the Avar and Árpád Periods in the Carpathian Basin[75] may alternatively be explained by either the same environment and/or a similar cultural heritage. Naturally, a purely ethnic/cultural interpretation of these results may be erroneous. Attempts to identify different ethnic groups in the archaeological record initially use other data rather than faunal information.[76] The increasing proportion of pork consumption relative to that of mutton between the 11th-13th centuries in Basel has been interpreted as a sign of improving living standards.[77] Probably both factors interacted in the composition of the Hahót-Telekszeg faunal assemblage. In addition to the previously discussed osteological evidence, written sources such as the inventories of the Pécsvárad monastery[78] as well as donation documents and tax rolls of the Dömös church district[79] mention thousands of sheep, which illustrates the importance of sheep keeping during the 11th-12th centuries. According to Rogerius the prebend of Nagyvárad (Oradea, present day Rumania), during the short 13th century Tartar occupation in Eastern Hungary, dues were primarily paid in sheep.[80] This example shows the occupants' preference for these animals as well as a sufficiently great supply of sheep.

3.3. Late Middle Ages

As was mentioned previously, the significant majority of animal bones at this site originated from late medieval deposits. It is this chronological period representing the interval between the 15th and 17th centuries which contributed most information on animal keeping. The detailed analysis of animal species identified at the site of Hahót-Telekszeg is, therefore, based predominantly on observations made concerning animal remains from the late Middle Ages.

71 *Bálint 1991.*
72 *Chynku 1969* 50; *Rafalovic 1972* 120; *Necrasova — Haimovici 1967* 226; *Comsa 1978* 46.
73 *Kurnatowska 1977* 102; *Ivanov 1956* 92; *Bartosiewicz — Choyke 1991.*
74 *Suchobokov 1975* 105 as cited by *Bálint 1991.*
75 *Bartosiewicz 1992.*
76 *Styles 1993* 267.
77 *Schibler — Stopp 1987* 332, Fig. 11.
78 *Gaál 1966* 79.
79 *Knauz 1874* 92; *Rodiczky 1880* 5.
80 *Turchányi 1904* 50.

4. Faunal analysis

4.1. Cattle (Bos taurus L. 1758)

Domestic cattle was undoubtedly the most important source of animal protein and possibly draft power at the settlement of Hahót-Telekszeg. Evidence and relationships between these two forms of exploitation are among the most interesting problems emerging during the ananlysisis of this faunal material.

The area under investigation here did not include clearly recognizable butchery deposits. Carcass partitioning is illustrated by more subtle indirect evidence. Cattle bones, which formed the bulk of animal remains found at the site of Hahót-Telekszeg, display no evidence of systematic hacking. Only 15 (1 %) unambiguous marks of hacking occurred in the late medieval material representing a period in which advanced tools such as metal cleavers and hatchets must have been available to specialized butchers. Still, the anatomical composition of late medieval cattle bones (Table 3) suggests that the settlement's inhabitants may have been provisioned with dressed carcasses usually lacking head and feet, thus resulting in these elements being characteristically underrepresented in the assemblage.

In the face of the widely held utilitarian view, it is suggested here that there may be more than one "minimax" way of partitioning and distributing a carcass. While the fundamentals of primary butchery are unquestionably defined by anatomical structures,[81] the variability of techniques is influenced not only by technology (evolution of tools such as cleavers and knives) but also by the culturally specific value attributed to main carcass components (meat, fat, bone) as well as particular cuts. In addition, ethnozoological studies have revealed long traditions of target-oriented carcass partitioning which varies according to the particular manner in which food is prepared,[82] something which is more apparent on the level of secondary/household butchery. Although cuts representing typical medieval techniques of carcass partitioning occur in this material, the emergence of systematic patterns could be expected only in larger assemblages. The overall impression, however, is that beef was not centrally provisioned to the site's inhabitants.

Historical records suggest elements of specialization in beef production. A 1526 Augsburg document reveals that Hungarian beef was preferred there to Polish cattle. In fact, the note praised Hungarian beasts as "die pesten Ochsen".[83] A 1631 tax roll from Hungary notes that young steers especially castrated for fattening were also registered separately in the city of Nagykörös, southeastern Hungary.[84]

[81] *Vörös 1992* 232.
[82] stewing, grilling etc., e.g. *Velarde 1994* 33.
[83] *Takáts 1927* 352.
[84] *Márkus 1943* 41.

4.1.1. Draft exploitation

Most of the cattle bones originated from robust, mature individuals. In addition some minor deformations in bones of the distal extremity segment, as well as two extremely distorted bones from a late medieval ash pit in Square XIV are indicative of the slaughtering of old draft cattle for beef. These two bone specimens (*Pl. 228,1,2*), possibly representing the same individual, displayed typical pathological phenomena associated with draft exploitation.

The numerous reports on cattle arthropaties from archaeological sites are scanty and non-standardized. Siegel[85] painstakingly compiled a list of 18 selected British sites where pathologies had been recorded only to note that the non-random character of her data set did not permit firm conclusions. This, in addition to the effect of differing assemblage sizes, contradiction of diagnoses and the lack of information on actual aetiology (amply discussed in this study) illustrate the complexity of the problem, when remains of draft oxen are supposed to be singled out.

The fundamental problem of archaeology, that the properties of a dynamic system can hardly be inferred from its static consequences,[86] should be kept in mind during the interpretation of the "pathological" results presented here. In the case of macromorphological changes this means, that even in extreme, pathological cases, the association between the symptoms and the aetiology of the condtion remains largely intangible.[87] In-depth studies of metric and microstructure variability are burdened with the same contradiction.

Most typically, speculations about draft animals stem from the observations of exostoses[88] and other deformations on extremity bones. These are among the most commonly described (sub-)pathological phenomena in archaeozoological assemblages.[89] Animals exploited for traction do manifest the brunt of this bone were observed in numerous achaeological materials and have been discussed usually under the generic term "pathology". Certainly, anomalies in cattle bones and, within these, deformations of the meta- ad autopodia such as spavin, dominate in many of these inventories.[90] It must be pointed out, however, that these disorders observed in archaeological bone may sometimes be caused by improper foot conformation and weakening of the joints which may lead to ostitis rarefaciens, periostitis ossificans and ultimately arthropathia chronica deformans.[91] The topography of sites may also have a bearing on the development of bone deformations in the feet of cattle.[92]

85 *Siegel 1976* 359.
86 *Cribb 1984* 164.
87 *Horwitz 1989* 170.
88 *Higham et al. 1981* 357.
89 *Hesse — Wapnish 1985* 83.
90 *Wäsle 1976* 83; *Feddersen — Heinrich 1977* 167; *Johansson 1982* 59.
91 *Dürr 1961* 32.
92 *Van Neer — De Cupere 1993* 231.

The pedal thump or the heavy strain by traction may lead to joint inflammations, specifically in the hock.[93] Arthritis and periarthritis chronica deformans et ankylopoetica of the carpals or tarsals (spavin) and the phalanges, as well as coxarthritis in cow were listed by von den Driesch[94] as alterations of the skeleton caused by overstrain or resulting from old age. Heavy exostoses on the medieal side of the distal tibia fragment recovered from the late medieval ash pit typically mark the proximal border of this condition affecting the hock joint. According to Silbersiepe et al.[95] cattle spavin mostly occurs in draft animals due to overload. A 1st century AD case of cattle spavin was published by Harcourt[96] in connection with athrosis of the tarsal joint, implying that the cause of this deformity was other than infection (arthritis). Pfannhauser[97] reported spavin in Late Roman cattle from Germania. Medieval examples of spavin were published by Hüster.[98] More recently, Frey[99] has also mentioned keeping anomalies as a cause for cattle spavin in addition to "mechanical insults". These latter, however, are still implicitly regarded as a the main source of this condition in archaeozoological assemblages.

Of the less extreme metapodial deformations, Mennerich[100] attributed the mediolateral broadening of the trochlea capitis medialis of metacarpals to draft exploitation in Roman Period cattle, since it equally occurred in both sexes and castrates of various sizes. Similar cases were described by von den Driesch.[101] These observations have directed attention to the metric evaluation of asymmetric broadening of distal metapodials.[102] This phenomenon is frequently accompanied by a slight twis along the metacarpal's long axis. This type of deformation was observed on a slender cow metacarpus also originating from the late Middle Ages at Hahót-Telekszeg.

Armour-Chelu and Clutton-Brock attempted to reconstruct draft use in the British Neolithic on the basis of pathological deformations, especially osteoarthritis,[103] on the scapulae and acetabula pelvis in the subfossil material. The unusually high incidence of deformations in cows was studied in light of data in the modern veterinary literature. Among other things, their results also point to a higher strain on the thoracic extremities of prehistoric cattle potentially caused by draft exploitation.

93 *Alur 1975* 411.
94 *Driesch 1975* 423.
95 *Silbersiege et al. 1965* 486.
96 *Harcourt 1971* 267.
97 *Pfannhauser 1980* 106.
98 *Hüster 1990* 45, Fig. 18c.
99 *Frey 1991* 173.
100 *Mennerich 1968* 35.
101 *Driesch 1975* 420.
102 *Davis 1992* 5.
103 *Armour-Chelu — Clutton-Brock 1985* 298.

Indeed, periosteal growth observed outside the articular surface of the acetabulum where ligaments attach the femur to the pelvis often occur on excavated bones.[104] This is one of the characteristics recorded on the acetabulum pelvis fragment from the ash pit excavated in Square XIV at Hahót-Telekszeg. Hüster[105] also observed hip joint deformations including coxarthrosis on Medieval cattle from Schleswig-Schild. Twenty-seven such cases were recorded on the acetabulum pelvis, while corresponding deformations were found in 57 cases on the caput femoris. Murphy and Galloway[106] cite the high incidence of hip joint deformations among the Medieval cattle remains from Winchester as consonant with the exaggerrated draft exploitation of those animals. At the same time, however, von den Driesch[107] pointed to poor nutrition as an alternative explanation for Bovine coxarthrosis at Swiss Late Neolithic[108] and Medieval[109] sites.

Grave cases of joint inflammations such as arthritis chronica deformans et ankylopoetica represent one end of the continuum along which evidence of draft use is possibly identified. According to Baker and Brothwell,[110] at least three of the following criteria are required for this the diagnosis of osteoarthritis:

1. grooving of the articular surface of the bone
2. eburnation
3. extension of the articular surface by new bone formation
4. exostoses around the periphery of the bone.

In addition to the aforementioned exostoses, arthrotic groowing and associated eburnations are clearly visible on the late medieval acetabulum pelvis fragment recovered at Hahót-Telekszeg.

The subjective element in diagnoses, however, is well illustrated in a recent study on inter-observer variation in the case of human osteoarthritis. Criteria, similar to those listed previously, were noted to different degrees by 19 experts. Concordance scores between their diagnoses ranged between 47 to 75.3 with eburnations and pittings on the joint surface having been recognized most consistently.[111]

One of the difficulties is posed by the fact that comparative collections of recent specimens have been missing even in human pathology.[112] Acquiring reliable reference materials would be even more difficult in the case of domestic animals, since usually either modern therapies or cul-

104 *Levine 1986* 70, Fig. 4.1.
105 *Hüster 1990* 44-45, Fig. 18a-b.
106 *Murphy — Galloway 1992* 96.
107 *Driesch 1975* 420.
108 *Förster 1974* 22.
109 *Klumpp 1967* 46.
110 *Baker — Brothwell 1980* 115.
111 *Waldron — Rogers 1991* 52.
112 *Sandison 1968* 206.

ling "prevent" the dramatic deformation of bones.[113] An even more grave methodological problem is presented by confusion in the nomenclature.[114] The general term "arthritis" is often used inconsistently in the archaeozoological literature,[115] mostly because it cannot be distinguished from chronic arthrosis in subfossil materials.[116] The first form of inflammation results from infections and is caused by with microbes such as staphylococci, gonococci etc.[117] While trauma (which of course may eventually lead to infections) was found to be the most common source of lameness in modern cattle populations (63 %) infection alone was only responsible for 9 % of 9130 cases of foot disorders recorded in Britain during 1977.[118] Arthrosis, on the other hand, is commonly defined as a condition brought about by old age and chronic overstress. The progress of arthritis, however, may be very agressive affecting even younger animals.[11]

4.1.2. Specialization in cattle keeping

In Hungary, according to the 14th century Italian chronicler Villani, many oxen and cows were raised that were not used as draft animals.[120] Sixteenth century documents,[121] on the other hand, mention that draft oxen retired from traction work were put to pasture to be fattened. In 18th century England, draft cattle were also routinely fattened and killed for beef[122] when they could no longer work. The low quality, tough meat from old oxen may have made its way to poorer households or even to a dump depending on the cause of and age at death. During the 14th century in Italy, the tough meat of working oxen indeed served as food only for the lower social strata, people with a very strong stomachs or "very vigorous" persons.[123]

4.1.3. Dairying

One way to approach the reconstruction of dairy exploitation is to focus upon age distributions in cattle. In a milk producing economy it is assumed that the cattle population will mostly consist of cows used for reproduction and associated milking. The bones of adult female cattle indeed dominate in the osteological assemblage under discussion here.

While dated written sources on medieval milking range between the earliest Christian times in Ireland[124] to detailed notes on manorial milk

113 *Harcourt 1971* 271.
114 *Olsson 1971* 335.
115 *Baker 1978* 110.
116 *Van Wijngaarden-Bakker — Krauwer 1979* 37.
117 *Zivanovic 1982* 144; *Farrow 1985.*
118 *Russel — Shaw 1978* 7.
119 *Vaughan 1960* 536.
120 *Miskulin 1905* 7.
121 *Hoffmann 1963* 49.
122 *Garner 1944* 78.
123 *De Crescenzi 1805.*
124 *McCormick 1992* 202.

processing in 16th century Sweden,[125] documentary evidence is again relatively scarce in Hungary. A great variety of cheeses were recorded in 15th century chronicles, however, many of these documents concern Italian and French imports by the royal court and high nobility.[126]

Even in the absence of direct evidence, it is certain that cows were regularly milked during the Hungarian Middle Ages. It remains a question, however, how much dairy production remained on a household level and whether surpluses were preserved and marketed on a large scale in the form of butter and cheese. Specialized dairy production started only at the end of the 17th century when the first upgraded Swiss cows were imported to Hungary.[127]

4.2. Pig (Sus domesticus Erxl. 1777)

While pigs were underrepresented in the late Bronze Age and early medieval samples, their percentual contribution (NISP) steadily increased through time (*Fig. 21*).

In spite of this increasing tendency, however, the contribution of pig attains more than 20 % of the total NISP only by the late Middle Ages. This phenomenon may be considered characteristic for Hungary in the studied time period. Considering the smaller body mass of pigs, this points to the relatively minor role played by pork in the diet.

Pig keeping could at least partially be based on the fodder available in forested and marshy places in the vicinity of Hahót-Telekszeg. In areas covered with acorn bearing oak and beach forests pig keeping must have been particularly important during the Middle Ages.[128] Possible crossings with wild pig may also explain the occasional presence of a few large suid bones in the medieval bone assemblage which, otherwise, does not have a composition suggestive of frequent hunting.

According to a 13th century account, at least on one estate, the profit originating from keeping pigs in the forest was 25 times greater than the price of wood sales.[129] In addition to better known codified forms of pig pasturing, written regulations show that cows also grazed in the forest as early as the 13th century.[130]

4.3. Sheep (Ovis aries L. 1758) and goat (Capra hircus L. 1758)

The importance of sheep during the early Middle Ages is clearly illustrated by its high contribution to the faunal list from the early Middle Ages of Hahót-Telekszeg. The declining medieval importance of sheep and goat parallels a similar trend between the 11th century Castle area and the late medieval German town in Vác.[131]

125 *Björnhag — Myrdal 1993* 79.
126 *Zolnay 1975.*
127 *Hankó 1936* 141.
128 *Wenzel 1887* 333.
129 *Dorner 1925* 30.
130 *Tagányi 1896* 16.
131 *Bartosiewicz 1991a; Bartosiewicz 1994.*

In the Buda toll tariffs issued in 1255, shortly after the Tartar invasion, sheepskins as well as black and pied lambskins were mentioned.[132] This document confirms the aforementioned great significance of sheep in Hungary during the early medieval Period of the Árpád Dynasty.

The late medieval sample from Hahót-Telekszeg contains relatively few sheep bones. No bones of goat were recognized in the material under discussion here. Unambiguously identifiable sheep bones made up only small portions of the chronological sub-sets assigned to sheep or goat, that is the caprinae subfamily. It may be assumed, however, that most of these latter bones also originate from sheep.

4.4. Horse (Equus caballus L. 1758)

As is usual with medieval faunal assemblages, horse remains occur but sporadically in the faunal material of Hahót-Telekszeg. They make up no more than 2 % of NISP in the largest, late medieval sub-set. Bones from beasts of burden were not necessarily incorporated in kitchen refuse unless the meat of these animals was consumed.[133] A taboo against eating horse meat was observed to varying degrees after the onset of Christianity in many European countries.[134] The Wien Illustrated Chronicle mentions that during the 1046 pagan uprising led by Vata, people "following his sinful persuasion devoted themselves to the devil, ate horse flesh and committed all sorts of terrible sins".[135] This ancient custom, however, survived for centuries in Hungary in spite of the strong prohibition that followed the adoption of Christianity in the 11th century. Equestrian pastoral groups such as the Cumans and Iasians continuously infiltrated into Hungary between the 11th and 13th centuries. First they fled the Mongol Tartar advancement, then settled in the devastated areas left by their army especially in the centre of the Carpathian Basin. While the Iasians were converted to Christianity by Franciscan missionariaes in 1472,[136] the evidence of numerous horse remains from 15th century features at the rural settlement of Szentkirály suggests that the meat of these animals was eaten. This hypothesis is supported by the fact that non-peripheral skeletal elements of even subadult animals were found and that many of the bones showed signs of intensive butchering.[137] However, as much as we know of the ethnic composition of late medieval Hahót-Telekszeg, such blasphemous behavior would not have been typical there. This hypothesis is corroborated by the small number and anatomical distribution of horse remains. These animals, on the other hand, had a clearly defined, strictly utilitarian role in the medieval life as is shown by a number of horse shoes from the Hungarian Middle Ages.

132 *Kovácsy 1923* 97.
133 *Wing 1989* 78.
134 *Langdon 1986* 261.
135 *Matolcsi 1982* 252.
136 *Henkey — Szabó 1991* 42.
137 *Takács 1988-1989* 103.

Vörös[138] estimated the withers height of a 15th century horse from Vác as between 130-135 cm on the basis of a distal metacarpal fragment. A complete 14th century tibia and 15th two century metacarpals brought to light by subsequent excavations in the same town yielded estimates of 121.9, 138.2 and 140.2 cm respectively.[139] Medieval horses in Germany were usually taller sometimes reaching a withers heighht of 150 cm.[140]

One of the horse bones, a worked specimen found in late medieval Pit 5/c, deserves special attention. In contrast to prehistoric times, animal bone lost most of its significance as a universal raw material by the time of the Roman Period.[141] In a poem discussing "The Moral of Evil Female Folk" Kristóf Ambrus, an official of the Szeben (Sibiu) chancellary[142] wrote as follows in 1550/1551:[143] "God made women from a bone, since he knew how useless they were: just like bone, which is of no use except when carved into dice."

The only substantially modified bone, a horse radius fragment with its worn dorsal surface and two holes cut into the palmar side was almost certainly used as a sled runner. Bone skates and runners made on the long bones of large ungulates such as horse and cattle have occurred regularly since Roman times in Hungary[144] and are also well documented in the ethnographic literature. Horse radii especially, were often used as a raw material for larger runners.[145] Similar medieval sled runners are known from Muhi, Esztergom, Romhány, Pusztacsév and southern Slovakia.[146] The broad distribution of this artifact type is shown by the fact that a "Lüscherz-type" horse bone sled runner[147] was found in 14th century Leiden.[148] Of all the horse bones, raddi occur in greatest numbers in the Hahót-Telekszeg material (Table 3), which raises the possibility the selective stocking of these bones for the purposes of subsequent manufacturing.

Bone has long been recognized as an ideal substance to enable people to travel over ice. The following description appears in Fitz Steven's "Description of London", written at the end of the 12th century:[149] "When the great Fenne or Moore (which watereth the walls of the citie on the north side) is frozen, many young men play on the yce... some tye bones to

138 *Vörös 1986* 256.
139 algorithm: *Bartosiewicz 1991b* 304.
140 *Herre 1950* 118; *Requate 1956* 12; *Müller 1959* 240.
141 *Bíró 1987.*
142 *Klaniczay 1978* 408.
143 *Petényi 1994* 33.
144 *Choyke 1989* 626.
145 *Kassai — Takács 1985* 853; *Pálóczi Horváth 1989* 114; *Becker 1991* 22, Fig. 2-3.
146 *Petényi 1994* 115.
147 *Herman 1980.*
148 *Van Wijngaardner-Bakker 1980* 46, Fig. 2.
149 *Halstead — Middleton 1972* 61.

their feet and under their heeles, and shoving themselves with a little picked staffe do slide as swiftlie as a birde flyeth in the aire or an arrow out of a cross-bow".

The clear technical advantage of using bone runners is summarized by Olaus Magnus:[150] "... leg bones, broadly filed off at the sole and greased with pork fat, ... are not hindered or limited in their travel by frozen droplets, which in hefty cold rise from the pores of ice, the same way as is the case with iron that can be never as polished or so well greased. Therefore no lubrication can be as good for iron as the grease on the bones of deer or cattle which have a slippery quality by nature."

To date, drilled medieval skates in Hungary are known only from Esztergom. Undrilled, early medieval bone skates from the Period of the Árpád Dynasty were found among other places at the rural sites of Doboz, Bashalom, Tiszalök-Rázom, Turkeve-Móric and Kardoskút.[151] Seven of the 44 bone skates recovered from the 10-11th century layers of York were drilled in a dorsopalmar direction.[152]

In contrast to most bone skates, large sled runners are characterized by two round holes near both ends drilled in a vertical direction perpendicular to the bone's long axis. In cases, such as the Hahót specimen, when the sole was not entirely perforated, small pieces of wood were fit directly into the holes as the legs of the sled's seat.[153]

4.5. Domestic hen (Gallus domesticus L. 1758) and goose (Anser sp.)

Poultry keeping in medieval Hungary was dominated by domestic hens. Although the relation between the presence of this species and the increasingly sedentary way of life led by early Hungarians has not yet been clarified, bones of primitive hens regularly occur at sites from the Period of the Árpád Dynasty (11th-13th century). Bone finds from the Buda castle dated to the 13th-14th century displaying increasing variability may be indicative of breed formation.[154] Sexual dimorphism is apparent in the configuration of tibiotarsus measurements.

Geese are also represented in early medieval assemlages, although sometimes it is not possible to tell if these bones originate from domestic goose or its wild ancestor. Measurable goose bones clearly fall within the size range of domestic geese.[155] Domestic geese were certainly kept in Hungary as early as the 11th-12th century. Selection for white color was regulated by the 13th century.[156]

150 *Olaus Magnus 1976* I/25: 57.
151 *Petényi 1994* 111.
152 *Radley 1971* 55.
153 *Petényi 1994* 115, Fig. XXXIII.
154 *Bökönyi 1963.*
155 *Bacher 1967.*
156 *Matolcsi 1982* 279.

4.6. Dog (Canis familiaris L. 1758)

In spite of the marks of dog gnawing on animal bones recovered from most medieval deposits at Hahót-Telekszeg, bones of dogs are very infrequent in this assemblage. At this settlement with a fundamentally rural character, dogs must have been important scavengers, which would have made their roles reminiscent of pariah dogs. In light of the small number of wild animal bones in the food refuse, it is unlikely that the inhabitants of the studied settlement kept specialized hunting dogs.

4.7. Fishing

The exploitation of aquatic resources would have been one of the most obvious ways of food acquisition at a settlement located in an apparently humid environment. Since water-sieving was not carried out during the course of rescue excavations, only a single parasphenoid fragment of a large catfish (*Silurus glanis L. 1758*) was recovered from the late medieval ash pit in Square XIV. A water-sieving experiment, however, showed that using only hand collection, bone fragments smaller than 19 mm are likely to be lost with a 95 % probability.[157]

Catfish live in a broad variety of environments, their preferred habitat, however, is in warm and still, often marshy waters. Ubiquitous cyprinid fish species provide most of their diet in the shallow, muddy waters of floodplain type areas.

4.8. Hunting

The sporadic wild animal bones from Hahót-Telekszeg were most likely to be found in the largest late medieval osteological material. Even the late Bronze Age assemblage contained but a bone from aurochs and red deer each.

4.8.1. Red deer (*Cervus elaphus L. 1758*) and roe deer (*Capreolus capreolus L. 1758*)

The lack of antler fragments shows that deer was not simply exploited for this raw material (as was common in early historical times) but primarily for meat and possibly hide. This latter hypothesis is based on the presence of head elements and dry limb bones (metapodia, phalanx) in the assemblage which are often left in the raw hide and thus carried to the tanner's even after skinning.

4.8.2. Hare (*Lepus europaeus Pall. 1778*)

Bone fragments of hare and rabbit (*Oryctolagus cuniculus L. 1758*) can be difficult to tell apart. Domestic rabbits, possibly the latest domesticates in Europe, were mentioned from the (Medieval) Árpád Period. The earliest remains of this species came to light from late medieval deposits in nearby Visegrád.[158] A number of relatively large long bone fragments also seem to represent brown hare. Deforestation, another consequence of human activity in the most immediate hinterlands of settlements, may

[157] *Bartosiewicz 1983* 50.
[158] *Bökönyi 1974* 335.

also have favored the wide distribution of hare, which thrives in open areas such as gardens and croplands.

5. Age distributions

Only the large late medieval animal bone assemblage permitted the meaningful discussion of age distributions on the basis of the numerous bone remains from the four most important domestic animals. Half of the 1491 identifiable bones and teeth could be assigned to one of five age groups on the basis of morphological features such as epiphyseal fusion and tooth wear following works by Habermehl, Silver and Schmid.[159] The percentual distributions of ageable bones are summarized by animal species in *Figure 23.* Although the porous bones of young animals are more prone to taphonomic loss, differences between animal species of comparable sizes make analyses of age distributions somewhat realistic.

Cattle and especially horse, are characterized by slaughtering ages suggestive of non-meat exploitation. The high number of bones from adult and mature cattle may originate from individuals culled once they could not be used as draft animals or dairy cows. In the case of horse, speculations about non-meat purpose keeping are consonant with the very small contribution of this species to the faunal list (Table 3).

Theoretically, caprines and pigs could be killed in similar ages. Both small ungulate species reproduce relatively easily and represent small individual values. These properties are indeed reflected in the more mixed age composition of pig remains. More surprisingly, however, the age pattern of sheep killed at the site of Hahót-Telekszeg is more similar to that of cattle. The dominance of mature sheep in faunal assemblages is usually interpreted as a sign of wool and possibly milk exploitation. Single meat purpose pigs can be slaughtered at any age.

6. Meat quality distributions

Identifiable remains of the most important late medieval meat producing domestic animals were classified into Uerpman's[160] categories between A, B and C, representing decreasing meat quality. The percentual distribution of various remains among these categories shows that in the deposits dated to the late Middle Ages contained a surprisingly high proportion of bones from high quality meat bearing parts (category A, axial skeleton and stylopodium fragments). It must be remembered, however, that horse remains occurred in as rare single finds at the medieval settlement. Cattle and pig bones show almost identical distributions by meat quality categories, medium quality (category B, zygopodium, ribs etc.) carcass parts being best represented. It is remarkable, however, that poor meat bearing regions (head, distal dry limb segments) are represented by

[159] *Habermehl 1961; Silver 1965; Schmid 1972.*
[160] *Uerpmann 1973.*

relatively high numbers of bones. In the case of pigs, this approximately 30 % contribution can be explained by the presence of the usually highly appreciated dry limb region (pig knuckles). On the other hand, the relatively frequent occurrence of category C cattle bones is suggestive of local butchering and direct meat distribution, rather than some kind of central provisioning. In this latter case, better quality category A and B cuts would be selectively overrepresented. The low incidence of C category caprine bones may, to some extent, be explained by recovery bias. Small bones within this category (teeth, phalanges etc.) may be relatively easily lost when no water-sieving is practiced.

7. Metric evalution

The standardized system and nomenclature of bone measurements used in this study was developed by von den Driesch.[161] An additional measurement was, however, introduced on long bones. While SD conventionally stands for the smallest diameter of diaphysis, this was applied for mediolateral breadth only. Smallest dorsoventral depth was coded Sd in the bone measurement tables.

7.1. Cattle

Only the large, late medieval bone assemblage contained a sufficiently great number of measurable specimens for the purposes of detailed analysis. The mediolateral breadth of a single, Late Bronze Age proximal radius fragment was 70 mm, while the dorsoventral depth of the same bone measured 35.8 mm. These dimensions may be considered medium size.

The following measurements were taken on cattle mandibulae and teeth from the Late Middle Ages:

	Side	Age	Alveolar length P1-M3	Alveolar length M1-M3	M3L	M3B
upper M1-M3	dex.	mat.	124.6			
mandibula	sin.	mat.			35.0	14.8
mandibula	dex.	mat.			38.9	14.9
mandibula	sin.	mat.	114.1	71.0	31.1	13.9
mandibula	sin.	mat.		88.1	38.8	15.1
lower M3	sin.	ad.			31.0	14.5

Fully erupted third molar (M3) teeth occur only in adult individuals. These teeth show a relatively great varibility both in terms of length and breadth.

[161] *Driesch 1976.*

The variability observed in terms of dentition is also apparent in the measurements of long bones. Proximal elements of the thoracic extremity displayed the following values:

	Side	Age	Gl	Bp	Dp	SD	Sd	Bd	Dd
scapula	dex.	mat.					55.3	53.8	74.2
humerus	dex.	mat.						69.2	65.5
radius	dex.	mat.						59.2	42.0
radius	dex.	mat.						77.4	51.2
radius	sin.	mat.		67.8	36.1				
radius	dex.	mat.		71.2	35.1				
radius	dex.	mat.		76.5	40.5				
radius	sin.	mat.		79.9	42.1				
radius	sin.	mat.		81.1	41.5				
radius	sin.	mat.		81.1	42.0				
radius	sin.	mat.		82.7	42.0				
radius	dex.	mat.		83.4	43.5				
radius	dex.	mat.		85.9	41.9				

Of the long bones, distally located metapodia are most frequently used in reconstructing the stature and sex of individuals. In addition to being relatively clearly defined in conventional anatomical terms, fragments of these compact bones occur in relatively great numbers, sometimes even in a complete condition.

Metacarpal measurements taken in the material from Hahót-Telekszeg were as follows:

	Side	Age	Gl	Bp	Dp	SD	Sd	Bd	Dd	WH
metacarpus	sin.	mat.	172.7							1036
metacarpus	dex.	mat.						51.2	26.9	
metacarpus	dex.	mat.				33.1	22.8	59.9	31.5	
metacarpus	sin.	mat.						60.4	30.2	
metacarpus	sin.	mat.						63.2	31.0	
metacarpus	sin.	mat.				36.8	26.2	64.0	34.0	
metacarpus	sin.	mat.		47.3	27.5					
metacarpus	sin.	ad.		50.9	29.9	26.2	19.3	52.9	28.0	
metacarpus	dex.	ad.		51.8	30.2	26.5	19.5	52.9	52.8	
metacarpus	dex.	mat.		52.2	32.5					
metacarpus	dex.	mat.		57.1	33.0					
metacarpus	dex.	mat.	194.9	58.4	36.1	30.0	19.9	61.2	32.5	1169
metacarpus	dex.	mat.		63.3	39.2					
metacarpus	dex.	mat.		64.9	36.2					

As may be seen from the bones representing the stylo- and zygopodia of these animals, late medieval cattle were relatively robust. This, in combination with data on age distribution and the aforementioned incidence of bone deformations is suggestive of draft exploitation. This hypothesis is also supported by Fig. 5, in which transversal dimensions of the proximal end of metacarpus were plotted against each other. For the purposes of comparison medieval (MA: 12th-14th century) and late medieval (LMA: 15th-16th century) data from the Vác excavations are shown within the same graph. While diamonds representing the Hahót-Telekszeg metacarpals are divided between two groups, the relatively numerous large bones at both sites may originate from draft oxen castrated at a relatively old age. It is unlikely that greater numbers of bulls would have been reared to full maturity.

Two slender metacarpalia, most probably originating from cows yielded withers height estimates (WH) of 1036 and 1169 mm[162] which should be considered small by modern standards. Observations made on the bones of the front leg were confirmed by measurements taken on the bones of the pelvic extremity:

	Side	Age	Gl	Bp	Dp	SD	Sd	Bd	Dd
femur	sin.	mat.						107.0	83.5
femur	sin.	mat.		98.4	54.8				
tibia	dex.	mat.						54.3	41.2
tibia	sin.	mat.						62.7	48.1
tibia	dex.	mat.						64.0	46.5
astragalus	sin.	mat.	63.1	58.2				40.1	
calcaneus	sin.	mat.	126.5					43.2	41.2

Similarly to metacarpals, metatarsals are instrumental in the conventional characterization of cattle represented in archaeozoological assemblages. Metatarsal measurements of late medieval cattle from Hahót-Telekszeg were as follows:

[162] combined algorithms for cows by *Calkin 1962* and *Matolcsi 1970. Prummel 1982,* however, correctly pointed out that due to their early epiphyseal fusion, metapodials frequently overestimate withers height.

	Side	Age	Gl	Bp	Dp	SD	Sd	Bd	Dd	WH
metatarsus	dex.	mat.	198.9			21.9	20.0	43.5	21.4	1093
metatarsus	dex.	mat.						53.1	31.1	
metatarsus	sin.	mat.						53.5	28.2	
metatarsus	sin.	mat.						54.9	30.8	
metatarsus	sin.	mat.				27.0	25.9	55.5	30.7	
metatarsus	dex.	mat.						56.0	30.1	
metatarsus	sin.	mat.	197.5	36.8	34.0	23.0	21.1	45.6	24.7	1086
metatarsus	sin.	mat.		39.3	38.2	21.5	20.3	56.2	27.0	
metatarsus	dex.	mat.		39.9	37.0					
metatarsus	sin.	ad.		41.3	39.9	23.1	21.2			
metatarsus	dex.	sad.		41.9	38.2					
metatarsus	dex.	mat.		43.1	41.2					
metatarsus	dex.	mat.		44.9	45.6					

Metatarsal proximal measurements occurring in greatest numbers were again compared to similar dimensions recorded from medieval and late medieval Vác. In the case of these bones, most data points representing late medieval cattle from Hahót-Telekszeg are clustered with the remains of smaller individuals possibly interpreted as metatarsalia of cows. Withers height estimates (WH) range between 1000 and 1100 mm.[163]

7.2. Pig

A Late Bronze Age distal tibia fragment from domestic pig was 29.8 mm wide (Bd) and 26.7 mm deep (Dd). A lower third molar tooth was 29.0 mm long and 14.0 wide measured at the alveoli. The only measurable Suid bone from the Árpád Period was a proximal humerus fragment. With a breadth of 73.5 mm and a depth of 80.0 mm, however, this fragment may have originated from a wild specimen.

More numerous pig bone measurements were available only from the large assemblage representing the late Middle Ages. Dimensions of the lower third molar tooth are widely used in characterizing the size of adult pig:

	Side	Age	M3L	M3B
mandibula	dex.	ad.	31.1	14.2
mandibula	sin.	ad.	31.3	15.2
mandibula	dex.	mat.	32.1	15.4
mandibula	sin.	mat.	33.8	15.2

[163] *Calkin 1962; Matolcsi 1970.*

Variability in the measurements of the postcranial skeleton may, to some extent, be increased by age dependent bias. Incomplete bones with early fusing epiphyses from subadult individuals (e. g. distal tibia and proximal radius fragments) cannot always be precisely aged.[164] Postcranial bone measurements of late medieval pig were as follows:

	Side	Age	Gl	Bp	Dp	SD	Sd	Bd	Dd	WH
scapula	sin.	mat.					22.9	21.6	32.9	
scapula	dex.	ad.					22.6	22.7	30.8	
scapula	sin.	mat.						26.1	35.2	
humerus	sin.	neo.	37.1							151
humerus	dex.	ad.						34.1	34.8	
humerus	dex.	mat.						34.5	34.1	
humerus	dex.	ad.				15.2	22.1	34.9	40.3	
humerus	dex.	ad.						35.4	35.8	
humerus	dex.	ad.				15.9	20.9	35.8	36.1	
humerus	dex.	ad.				16.9	21.0	36.5	36.8	
radius	dex.	mat.		28.1	19.5					
femur	sin.	neo.	45.0							164
femur	sin.	mat.						42.2	53.9	
astragalus	sin.	mat.	38.5	36.0				22.4	19.9	689
calcaneus	dex.	mat.	76.1					21.2	29.1	710

Four late medieval pig bones preserved in full length in the material could be used in withers height estimations.[165] Two of the obtained values, however, concern neonatal pigs, which naturally, cannot be taken into consideration when intraspecific variability is studied. Diaphyseal lengths of this humerus and femur are indicative of 104 and 124 days of foetal age respectively using Prummel's age estimation algorithms.[166] These foetal ages correspond to the 106-124 days time interval established for the pregnance of modern sows[167] which corresponds to the neonatal age identified for the archaeological specimens.

Pigs of 69-71 cm stature may be considered large. The best known primitive breed in Hungary, the so-called Bakony pig,[168] was kept in a more-or-less feral state, continuously interbreeding with wild boars in the

164 *Schmid 1972* 75.

165 *Teichert 1969* 264.

166 *Prummel 1989* 78. These regression equations were calculated using raw data for Norwegian Landrace piglets after *Gjesdal 1972* Table 4.

167 *Baintner 1976* 185.

168 *Matolcsi 1975-1977.*

wilderness of the Bakony area.[169] An approximately one year old female kept in the Museum of the Zirc Abbey measured only 42 cm at the withers.[170]

Distal humerus breadth is assumed to have correlated with overall body weight in medieval pigs.[171] Distal humerus measurements plotted in *Figure 27* are suggestive of sexual dimorphism in the late medieval sample from Vác, while bones in both the Vác medieval assemblage and the late medieval material from Hahót-Telekszeg seem to represent sows. Vörös[172] attributed the small size of medieval pigs recovered in the Buda Castle to penning which was less likely to have been practiced in non-urban settlements such as Hahót-Telekszeg.

7.3. Sheep

Due to the relatively small significance of sheep and goat in meat provisioning, only a few measurable bones were available from these two species. The lower cheektooth row in a late Bronze Age mature sheep mandibula was 73.7 mm long with the molar row measuring 49.4 mm. The lower third molar tooth of this animal was 24.1 mm long and 8.9 mm wide.

Measurements of postcranial bones from the Period of the Árpád Dynasty are indicative of medium size animals:

	Side	Age	Gl	Bp	Dp	SD	Sd	Bd	Dd
astragalus	sin.	mat.	32.3	31.2				19.9	17.8
metatarsus	sin.	mat.		22.9	21.1				

Measurable sheep bones from the late Middle Ages display comparable dimensions, although the numbers of data are far too small to substantiate this conclusion:

	Side	Age	Gl	Bp	Dp	SD	Sd	Bd	Dd
femur	sin.	mat.						45.1	57.5
astragalus	dex.	mat.	31.6	30.7				20.2	17.2

169 *Zolnay 1971* 93.
170 *Hankó 1940* 128.
171 *Crabtree 1989* 207.
172 *Vörös 1992* 234.

7.4. Horse

Measurable horse bones were found only in the large, late medieval assemblage. A lower third molar tooth was 33.5 mm long and 16 mm wide. Long bone measurements were as follows:

	Side	Age	Gl	Bp	Dp	SD	Sd	Bd	Dd	WH
humerus	sin.	mat.						82.5	86.0	
humerus	dex.	mat.				37.5	47.1	84.2	87.1	
radius	dex.	ad.		76.8	37.5	33.8	23.1			
radius	sin.	mat.		72.1	42.3	35.1	26.2			
metacarpus	sin.	mat.	221.2	52.9	31.2	36.1	21.2	47.9	36.0	1359
femur	sin.	mat.						94.2	13.9	
metatarsus	sin.	mat.	255.9	44.9	37.5	29.3	23.5	46.1	36.2	1337
metatarsus	dex.	mat.	280.3	53.4		36.4	28.5	53.1	40.8	1466

Similarly to cattle, the metapodia of horse can be successfully used in estimating withers height.[173] The resulting values ranging between 134 and 147 cm are indicative of relatively large horses which correspond to the 1300 to 1500 mm withers weight values discussed in relation to the zoological description of this species.[174]

7.5. Domestic hen and goose

Measurable bones of domestic hen occurred in greater numbers only in the late medieval assemblage. Similarly to the remains of domestic mammals, bones of domestic hen also originate from relatively large individuals:

	Side	Age	Gl	Bp	Dp	SD	Sd	Bd	Dd
humerus	sin.	mat.	60.9	17.4	8.6	7.1	5.2	14.1	7.3
humerus	dex.	mat.		19.0	9.2				
radius	sin.	sad.	53.4						
ulna	sin.	mat.	66.8						
ulna	dex.	mat.	65.9						
femur	dex.	mat.		13.8	9.2	6.1	5.8		
femur	sin.	mat.	73.2	14.9	9.8	6.5	6.2	14.5	11.9
femur	dex.	mat.	88.2	15.1	10.0	6.5	6.0	13.5	12.0
tibia	sin.	mat.	94.1	16.1	15.8	6.1	5.0	10.1	10.0
tibia	sin.	mat.	114.5	16.5	20.0	6.5	5.4	12.1	12.8
tibia	dex.	mat.		18.4	19.0				
tibia	dex.	ad.		19.0	18.1				
metatarsus	sin.	mat.	65.1	12.0	11.0	5.8	3.2	11.8	7.9

[173] *Kiesewalter 1888.*

[174] *Vörös 1986* 256; *Bartosiewicz 1991b* 304; *Herre 1950* 118; *Requate 1956* 12; *Müller 1959* 240.

Goose bones also represent relatively large, probably domestic individuals. The two measurable humerus fragments displayed the following dimensions:

	Side	Age	SD	Sd	Bd	Dd
humerus	sin.	mat.			22.9	12.9
humerus	sin.	mat.	11.1	8.9	23.0	13.6

7.6. Dog

Of the non-meat purpose domesticates, the mandibula of a late Bronze Age dog is characterized by the following measurements:

			Alveolar length		
	Side	Age	I1-M3	M1L	M1B
mandibula	dex.	mat.	121.2	29.2	11.0

This fragmented bone specimen probably belonged to an unusually large, robust dog, falling within the size range of wolves. The curved outline and slightly crowded teeth, however, are suggestive of its identification as domestic dog.

A late medieval dog humerus was preserved in full length is characterized by the following dimensions:

	Side	Age	Gl	Bp	Dp	SD	Sd	Bd	Dd	WH
humerus	sin.	mat.	190.0			14.2	16.0	38.0	32.7	640

The greatest length of this long bone provided an estimated withers height[175] of 640 mm which places the individual in the upper range of Category 4 within the size classification system developed by Bökönyi[176] for Roman Period dogs. Such animals are of medium size, although the stature of the individual from Hahót-Telekszeg is above the 579.1 mm mean value characteristic for this group. However, it does not reach the 710 mm minimum established for greyhound-like dogs classified within Bökönyi's Category 5.

[175] *Koudelka 1885.*
[176] *Bökönyi 1984* 72.

7.7. Wild animals

Due to the apparently small role played by hunting in the procurement of meat at this site, measurable bones from wild animals again occurred only in the late medieval material. The large size of this sample guaranteed a higher probability for the discovery of odd animal remains such as the better preserved bones of otherwise scarcely represented wild animals.

The completely preserved toothrow of alate medieval red deer mandibula is characterized by the following dimensions:

	Side	Age	Alveolar length P1-M3	M1-M3	M3L	M3B
mandibula	dex.	mat.	131.1	83.0	36.1	15.1

Long bone measurements of late medieval roe deer and hare are not informative in and of themselves, they are listed here, however, in the hope of contributing to a greater body of data concerning the size variability of these animals:

7.7.1. Roe deer

	Side	Age	Gl	Bp	Dp	SD	Sd	Bd	Dd
metacarpus	dex.	mat.		23.1	18.2	14.1	11.2		
metatarsus	sin.	mat.	203.2	20.9	21.2	14.1	12.2	24.9	16.8

7.7.2. Brown hare

	Side	Age	Gl	Bp	Dp	SD	Sd	Bd	Dd
tibia	dex.	mat.		22.1	24.1				

The greatest length of the roe deer metatarsus is significantly greater than the 192.8 mm mean value published for 32 modern does from Poland.[177]

8. Conclusions

Due to the limited size of faunal assemblages from the Bronze Age and the Period of the Árpád Dynasty, diachronic aspects of the archaeozoological evaluation could not be discussed in detail. On the other

[177] *Godynicki 1970.*

hand, animal bones from the late Middle Ages were overrepresented in the excavated material rendering comparisons between the three chronological sub-sets unreliable.

The idea that domestic animals played an important role in the meat provisioning of the medieval settlement and that their remains may be used in understanding the process meat provisioning are supported by the following results:

1/ Faunal data suggest that the small, early medieval Árpád Period bone assemblage from Hahót-Telekszeg fits within a series of coeval assemblages associated with "steppe" type domestic faunas and differ from prehistoric forms of animal keeping in the area. The late medieval decline in the consumption of mutton may therefore reflect possible changes in the standard of living, ethnic composition and increasingly autochtonous patterns of meat consumption.

2/ Typically for late medieval sites, domestic animals, especially adult cattle, provided most of the meat consumed by the medieval inhabitants of Hahót-Telekszeg. Hunting and perhaps fishing were of minor importance, although fish remains are unusually prone to taphonomic bias. The small contribution of bones from red deer and wild boar indirectly confirms written sources that hunting large game was restricted to nobility. However, cervids are exclusively represented by bones (as opposed to antler), providing unambiguous evidence for the consumption of venison.

3/ Specialization and differentiation in production is a common feature of technologically complex societies. By-products of meat procurement provided important raw materials for a number of crafts and arts during prehistoric times. Late medieval faunal remains at this site mostly provided indirect evidence for butchery, hide processing and draft exploitation of cattle. The manufacturing of mundane bone artifacts, on the other hand, must have been insignificant. Only a horse radius was turned into a sled runner, a typical utensil produced using this skeletal element.

4/ The evaluation of bone measurements showed that most late medieval domestic animals slaughtered at Hahót-Telekszeg were relatively large. This trend was less pronounced in the case of cattle, but was apparent in the estimated withers heights of pigs and horse.

The Roman Period and late medieval settlements of Alsórajk-Kastélydomb

1. Material and methods

Animal bones in the Alsórajk-Kastélydomb faunal assemblage represent two, discontinuous archaeological periods. While most of the Roman Period bone material belongs to the 2nd/3rd century occupation of the site, contamination from late medieval layers that covered the late Roman Period strata should be reckoned with. This type of spatial overlap (that is further exacerbated by fragmentation), however, affected the peripheral area of the Roman settlement for the most part. The effect of

reconstruction work in classical times is also shown by disturbed features within the Roman Period stratigraphy. Most animal bones originate from the earlier, wooden building and its immediate surroundings. Only relatively few chronologically identifiable remains were associated with the subsequent stone building of the villa. This period of the Roman settlement, however, is particularly important from an archaeological point of view: remains of a spectacular mosaic floor were recovered from the ruins of the completely destroyed stone building. Scattered late medieval features, naturally, are in no way related to these Roman Period provenances.

Given the mixed nature of deposits, a conscious decision was made to concentrate on the number of identifiable bone specimens (NISP) as the parameter used in characterizing faunal samples in this study. Grave methodological problems, however, have become increasingly apparent with the various ways faunal reconstructions are being carried out. The method by which animal bones are counted has a marked impact on subsequent interpretations.

Calculating the minimum numbers of individuals (MNI) is biased by a number of factors[178], and would have been especially misleading in light of the complex patterns of fragmentation deposition characteristic of food remains on a household level. At the time of its introduction, MNI calculations represented a revolutionary step forward. White[179] recognized that size differences between animal species meant that each of them contributed differently to aboriginal diets in North America. However, the increasing complexity of settlement deposits strongly biases the accurate calculation of MNI values. Correlations between sample size and species diversity calculated considering the minimum numbers of individuals have been questioned even in relatively simple assemblages (3).[180]

The fallacy of the mechanical, normative approach is apparent when one considers that the exact time span for the accumulation of bone assemblages can at best be guessed at. The same number of animals divided into time spans of 2, 5, or 20 years respectively can lead to drastic but undetectable distortions. It is for this reason that the calculation of MNI values was avoided in this analysis; individual animal bones were treated as "diagnostic signatures" of animal exploitation. The occurrence of several bones representing the skeleton of the same individual was indicated during the discussion of animal species.

Identifiable remains of the most important meat producing animals were classified into Uerpman's[181] categories between A and C, representing decreasing meat quality.

178 *Gautier 1984.*
179 *White 1953* 397.
180 *Meltzer et al. 1992* 385.
181 *Uerpman 1973.*

The standardized system and nomenclature of bone measurements was developed by von den Driesch.[182] An additional measurement was, however, introduced on long bones. While SD conventionally stands for the smallest diameter of diaphysis, this was applied for mediolateral breadth only. Smallest dorsoventral depth was coded Sd. Some of the bone measurements could be used in estimating the withers height.

2. Assemblage sizes and taxonomic richness

The exponential function characteristic of the number of identifiable specimens (NISP = x) and taxonomic richness (that is the number of animal species identified; R = y) can be relatively accurately described by the linear regression equation expressing the relationship between the decimal logarithms of these two variables.[183]

The number of identifiable bone specimens was 228 in the Roman Period assemblage from this site. These remains represented 11 animal species.

The late medieval animal bone assemblage from Alsórajk-Kastélydomb contained 114 identifiable bones which originated from 8 species (in this calculation all caprine bones were taken as originating from sheep). These two NISP values were substituted into the equations calculated for the Roman Period and the Late Middle Ages respectively. The first equation was calculated using data from 23 Roman Period sites:[184]

$$\lg R = 0.257 \lg NISP + 0.326 \quad (r = 0.932)$$

The relationship between the same two variables in typical medieval deposits was appraised on the basis of 22 medieval assemblages from the city of Vác. The trend established on the basis of the Vác material may be described using the following equation:[185]

$$\lg R = 0.335 \lg NISP + 0.098 \quad (r = 0.903)$$

The significant coefficients of correlation (P 3/4 0.001) as well as low regression coefficients indicate that the recovery of bones from each new species follows a clearly degressive trend. This tendency, however, is more clearly expressed at roman sites (smaller regression coefficient) which means that the taxonomic composition of these assemblages is less variable than at late medieval settlements.

The number of species represented in an average sample of 500 bones is approximately 10 and, which more-or-less corresponds to all domesti-

182 *Driesch 1976.*
183 *Grayson 1984.*
184 *Bartosiewicz 1990-1991* 109.
185 *Bartosiewicz 1995* 21.

cates and sometimes wild animals as well. Remains of more unusual animals occur with reasonably great probability only in large assemblages.

The theoretical number of species expected on the basis of the NISP value characteristic for Roman Period Alsórajk-Kastélydomb was 8.6 which is smaller than the 11 species actually observed at the site (one of which, was a roe deer antler fragment). The expected number of animal species in the smaller, medieval assemblage was 6.1, while the bone material represents 8 animals species. It may be therefore concluded that the species inventory of this site was somewhat richer than would have been estimated on the basis of 23 Roman Period and 22 medieval sites. Due to relative small sample sizes, however, these differences may be considered random.

3. Taphonomy, preservation

Animal bones from most features of this site are badly fragmented. Post mortem modifications of the animal bone assemblage directly influence interpretations. Taphonomic bias[186] may originate from a number of sources.

In the absence of complete skeletons or major sets of articulated bones representing body segments it may be concluded that slaughtering and primary butchering,[187] especially that of cattle, did not take place at the excavated parts of the settlement. Hen may be the only obvious exception in this regard. Secondary butchering, on the other hand, must have been carried out at places where food was prepared and consumed.[188]

Following food processing, bone preservation is threatened by a number of natural or at least non-intentional influences. These include weathering, trampling by the settlement's inhabitants. Due to their physical properties large bones are more damaged by natural fragmentation than the relatively compact bones of small animals. These latter, however, are more prone to scavenging by dogs or even pigs.[189]

As opposed to stylistically diagnostic archaeological artifacts animal bones, in themselves, have no dating value. The heterogeneous faunal material was probably deposited as a result of two competing activities. While the redistribution of land fills during earth moving related to construction activitites may have homogenized earlier deposits over the entire area, subsequent, especially medieval meat consumption possibly resulted in the primary deposition of bones. While this situation does not make the dating of individual bones more possible, it may be hypothesized that some better defined bone deposits developed during the latest, most intensive occupation of the site. Thanks to the relatively great

186 *Efremov 1940.*
187 *Schiffer 1976.*
188 *Coy 1972; Bartosiewicz 1985.*
189 *Greenfield 1988.*

proportion of identifiable animal remains, a characteristic picture of late classical meat consumption starts to emerge.

It is of great methodological importance that comparable percentages of the Roman Period and late medieval material under discussion here remained non-identifiable. This shows that assuming more-or-less uniform fragmentation, identification work was carried out with comparable success within the two chronological sub-sets of the Alsórajk material.

4. Faunal composition

The anatomical distributions of animal bones are summarized in Tables 1 and 2. These lists shows the number of identifiable specimens (NISP), a parameter used in this paper.

The percentual proportions between identifiable animal bones are shown in *Fig. 28.* Domestic animals overwhelmingly dominate in the assemblage as is usual with both Roman Period and late medieval settlements.[190] In order to illustrate this trend, late medieval faunal data from the nearby site of Hahót-Telekszeg was also included in *Fig. 24.*

4.1. Cattle

Cattle, the most important source of animal protein, was represented by 37 % of Roman Period bones while this proportion increased to 50-60 % by the late Middle Ages.

Even taking the typically heavy fragmentation of larger bones into consideration,[191] one cow may provide ten times as much meat as a sheep.[192]

4.2. Small domestic ungulates

Dahl and Hjort[193] point out that caprines play the role of "small change" in many cultures throughout Africa: their flexible populations can complement meat production by larger animals and serve as a buffer in times of economic hardship. In temperate and humid climates pig plays a similar role, especially on the household level.[194]

The bones of sheep and/or goat (Caprinae subfamily) and pig occurred in nearly equal numbers in the Roman Period chronological component of the settlement (20-25 %), the contribution of mutton to the diet, however, was less significant during the late Middle Ages when the consumption of beef gained in importance.

Pig remains consistently made up 22-29 % of the identifiable bones from this site. Their contribution, however, was somewhat higher in the medieval faunal assemblage. Pig is comparable to caprines in terms of individual meat output. Its reproduction rate and kill-off intensity (exclu-

190 e.g. *Bartosiewicz 1991a; Van Neer — De Cupere 1993* 231.
191 *Binford — Bertram 1977.*
192 *Matolcsi 1982* 202.
193 *Dahl — Hjort 1978.*
194 *Diener — Robkin 1978.*

sively meat exploitation), however, are even higher.[195] A general evaluative framework may be provided by the simple strategic model developed for prehistoric animal keeping.[196] During the early Middle Ages the complementary dietary roles played by caprines and pig may be regarded as a concrete example of that model. Modern analogies[197] also show that the sheep/pig dichotomy characterizes two basic types of animal keeping that are not only dependent on the environment but on cultural factors as well.

The incidence of bones from most economically less significant meat suppliers (NISP < 10 %) identified at this site was somewhat more characteristic for the Roman Period.

5. Age distributions

When ageable animal bones from the site of Alsórajk-Kastélydomb are classified into conventional gross age groups,[198] species specific patterns dominate the percentual distributions of both the Roman Period and late medieval materials.

Cattle, a domestic animal of high individual value, is represented mostly by bones from mature or at least adult individuals, although evidence for having slaughtered subadult and even juvenile cattle is available from the Middle Ages. It is possible, however, that the majority of cattle were used primarily as draft animals, as was observed at the nearby site of Hahót-Telekszeg during the late Middle Ages. Should this have been the case, predominantly draft animals would have been culled for meat. The presence of bones from calves in the medieval material, at the same time, may have been considered characteristic of rural settlements where animals were locally raised. At such agrarian settlements, the entire ontogenetic sequence of animal species can be exploited for meat as opposed to settlements of central position where meat was often acquired by indirect means of provisioning the market.[199]

Similarly, bones belonging to the adult and mature age groups also dominate in the case of caprinae. While cattle may have been kept until a longer age for the purposes of draft exploitation, the production of wool and milk are often cited as the possible reason for keeping old sheep. This may well have been the situation especially during the Middle Ages.

The relatively high contribution of younger age groups is most typical of pigs. While the presence of subadult pig is less pronounced in the Roman Period material, the remains of neonatal, juvenile and subadult pigs are more characteristic by the late Middle Ages. This age distribution is very characteristic of pig, a single meat purpose domestic animal.

195 *Bartosiewicz 1986* 42.
196 *Bartosiewicz — Choyke 1985* 187.
197 *Bartosiewicz 1984a* 200.
198 *Habermehl 1961.*
199 *Crabtree 1990.*

Horse, which did not serve as a source of meat, was represented only by a few bones originating from mature and adult individuals. The relatively great number of horse bones from the Roman Period is in contrast with assemblages from later, Christian sites. Due to the religious prohibition of horse meat consumption, during the Middle Ages, these animals were killed only once they could not be used as beasts of burden. Their bones may have found their way into secondary deposits or were discarded during the skinning of these animals.

6. Estimation of meat quality

Throughout human history, culturally determined tastes, including culinary tradition, have played a significant role in determining the subjective value of cuts, various carcass parts may usually be classified on a practical basis with regard to their contents of meat, fat and bone.[200]

When individual bone fragments are classified into meat value categories (from A to C in the decreasing order of nutritive value) the relatively large earlier Roman material (excluding bones from the villa; *Fig. 29*) and the late medieval assemblage of comparable size (*Fig. 30*) show similar patterns of meat quality distribution.

Horse is mostly represented by low quality (C) head elements and dry limb bones in both assemblages. Better meat bearing parts (A and B) make up less than a quarter each in both the Roman Period and late medieval material.

The only major difference between the Roman Period and late medieval assemblages occurs in the quality distribution of pig remains. The percentage of bones representing high quality pork (A) from the meat rich parts of the animals' body is significantly higher in the late medieval material. Considering that it is this chronological sub-set in which bones from piglets also regularly occurred it may be hypothesized that pigs served as a source of better quality meat during the Middle Ages than was the case in the Roman Period.

Similarly to horse, the age structures characteristic of caprinae as well as cattle are almost identical in *Figs. 31* and *33*, with particularly low (26-31 %) proportions of poor quality (C), bony meat parts.

The quality distribution of 38 identifiable bones from the Roman villa, on the other hand, shows radically different patterns (*Fig. 32*). Although the difference, in part, may be attributed to random bias resulting from insufficient sample size, it is remarkable that large ungulates are represented by bones indicative of good meat quality (A). The small proportion of low quality (C) bones supports that one is dealing with typical household garbage remains from this period. Only relatively meat rich cuts would have made it to the table. Considering the relatively great number of horse bones in the overal Roman Period assemblage from

[200] *Uerpmann 1973.*

Alsórajk-Kastélydomb and the high contribution of quality A bones to the villa assemblage it is reasonable to assume that (as opposed to the Middle Ages) horse also played a dietary role during that time.

The unusually high proportion of low quality cuts from pig and caprines within the villa may be understood in the relatively high appreciation of meatless body parts, especially in the case of pigs (pig knuckles, head meat etc.). Although preference for these body regions is less known in the case of sheep and goat, Category C elements of this species included skull fragments in the Roman Period assemblage recovered from the villa, possibly indicative of the head having been cooked as some kind of a delicacy. The meat quality distribution of this small material, therefore, is indeed different from that of the earlier Roman Period assemblage.

7. Metric evalution

Cattle, which dominated both chronological sub-sets within this assemblage, occurred in greatest numbers among the better preserved, measurable specimens as well. Unfortunately, no Roman Period cattle long bones survived in full length, therefore withers heights of Roman Period cattle could not be estimated at this site. The other measurements are indicative of medium size animals:

	Side	Age	Gl	Bp	Dp	SD	Sd	Bd	Dd
horn core	dex.	mat.		52.9	41.1				
metacarpus	sin.	mat.		85.9	38.1	34.2	24.8		
metacarpus	dex.	mat.				37.5	23.8	64.9	35.1
metatarsus	sin.	mat.		40.8	38.1				
metatarsus	sin.	mat.		52.2	50.1				
metatarsus	dex.	mat.						54.9	32.0
metatarsus	sin.	mat.						56.5	34.2

Measurable cattle remains from the Roman villa were limited to two bones from the vertebral column of high meat carrying capacity:

		Greatest breadth
epistropheus	mat.	101.9
os sacrum	mat.	221.8

Medieval cattle bones are somewhat more characteristic than the Roman Period set of measurable bones from this species.

	Side	Age	Gl	Bp	Dp	SD	Sd	Bd	Dd	WH
metacarpus	dex.	mat.		56.8	34.1					
metacarpus	dex.	mat.						53.0	29.8	
tibia	sin.	mat.						62.2	36.4	
tibia	dex.	mat.						69.5	45.1	
metatarsus	dex.	mat.						50.7	29.8	
metatarsus	sin.	mat.				24.1	21.9	48.8	28.3	
metatarsus	sin.	mat.	234.1	52.6	46.1	29.9	26.9	59.0	30.0	1287
metatarsus	dex.	mat.		41.5	39.0					

A metatarsus preserved in full length yields a withers height (WH) estimate[201] of almost 1300 mm, which was relatively frequently attained by late medieval cows. A complete astragalus originates from a relatively large animal as well:

	Side	Age	Gl	Glm	Bd	Dd
astragalus	dex.	mat.	59.2	53.5	41.0	33.5

Measurable bones of Roman Period sheep were few in numbers. Two long bone fragments are characterized by the following dimensions:

	Side	Age	Gl	Bp	Dp	SD	Sd	Bd	Dd
humerus	sin.	mat.				17.8	16.9	33.9	28.1
metatarsus	dex.	mat.		22.1	23.1	13.6	12.0		

A sheep calcaneus found within the Roman villa was 74.9 mm long, 24.2 mm wide and 28.1 mm deep at the distal end. The proximal half of a Roman period goat radius displayed the following dimensions:

	Side	Age	Gl	Bp	Dp	SD	Sd	Bd	Dd
radius	dex.	mat.		40.7	21.2	21.1	11.9		

Measurable sheep bones from the Middle Ages were limited to two mandibula fragments in which the two tooth rows could be measured:

[201] combined algorithms for cows by *Calkin 1962* and *Matolcsi 1970.*

	Side	Age	Alveolar length P1-M3	M1-M3	M3L	M3B
mandibula	sin.	mat.	68.1	48.4	23.9	9.0
mandibula	sin.	mat.	69.9	44.5	22.5	9.0

Medium size, measurable pig humeri from the Roman Period offer only vague information concerning the actual size of these animals:

	Side	Age	Gl	Bp	Dp	SD	Sd	Bd	Dd
humerus	dex.	ad.		49.6	62.1				
humerus	dex.	mat.						42.2	37.0

Medieval pig remains offered limited opportunity for the estimation of withers height.[202]

	Side	Age	Gl	Bp	Dp	SD	Sd	Bd	Dd	WH
scapula	dex.	mat.	221.1				26.5			840
scapula	dex.	juv.	54.1							205
femur	sin.	neo.	35.0							127
tibia	dex.	mat.				18.8	13.9	27.2	24.1	

The withers height estimate of 840 mm is indicative of a large boar, which was bigger than any of the Roman Period individuals identified at Tác-Gosrium.[203] Bones from juvenile animals usually give meaningless estimates of withers height, the diaphyseal length of a femur from a neonatal piglet, however, could be used in estimating the animal's age. The estimated 105.5 days of foetal age[204] corresponds to the 106-124 days long pregnancy of modern sows.[205]

The relatively numerous Roman Period horse remaind did not yield bones that could be used in the estimation of withers height. The measurements may be summarized as follows:

202 *Teichert 1969.*
203 *Bökönyi 1984* 55, Table 14.
204 *Prummel 1989* 78, Table 7.
205 *Baintner 1976* 109.

	Side	Age	Gl	Bp	Dp	SD	Sd	Bd	Dd
phalanx II	dex.	mat.	45.1	50.8	30.0				
tibia	dex.	mat.				40.9	30.2	72.1	42.5
metatarsus	dex.	mat.		51.1	42.3				

Measurable horse bones from the Roman villa deposit originated from the proximal extremity, a relatively meat bearing part of the animal's body:

	Side	Age	Gl	Bp	Dp	SD	Sd	Bd	Dd
scapula	dex.	mat.					56.1	42.2	86.1
humerus	dex.	mat.				34.0	41.1	74.0	79.9

A single measurable medieval horse bone was a distal femur fragment:

	Side	Age	Gl	Bp	Dp	SD	Sd	Bd	Dd
femur	dex.	ad.				32.8	42.2	81.2	87.1

Both measurable dog bones from the Roman Period were preserved in full length, making the estimation of withers heights (WH) possible:[206]

	Side	Age	Gl	Bp	Dp	SD	Sd	Bd	Dd	WH
humerus	sin.	mat.	125.1	17.8	26.1	8.0	8.2	21.3	16.1	421
radius	sin.	mat.	191.9	23.1	14.9	17.1	12.1	30.9	17.1	617

A completely preserved left humerus originated from a medium size (421 mm withers height), straight legged dog, a possible example of Bökönyi's Category 3 identified at the Roman urban site of Tác-Gorsium.[207] The greatest length of the large radius yielded an estimated withers (117) of 617 mm which places the individual in the upper range of Category 4 according to the size classification system developed by Bökönyi[208] for Roman Period dogs. Such animals are of medium size, although the sta-

[206] *Koudelka 1885.*

[207] *Bökönyi 1984* ibid. This size corresponds to Category C by the criteria published by *Hornberger 1970* 113.

[208] *Bökönyi 1984* ibid.

ture of the individual from Alsórajk-Kastélydomb clearly exceeds the 579.1 mm mean value characteristic for that group.

Measurable bones from domestic hen occurred in relatively small numbers. The following measurements were taken in the Roman Period material:

	Side	Age	Gl	Bp	Dp	SD	Sd	Bd	Dd
femur	dex.	mat.		17.8	12.1				
femur	sin.	ad.		14.8	8.7				
metatarsus	dex.	mat.	74.0	13.8	12.8	6.2	4.0	13.1	9.9

The following measurements were taken on a single measurable long bone from medieval domestic hen:

	Side	Age	Gl	Bp	Dp	SD	Sd	Bd	Dd
femur	sin.	mat.	86.2	14.1	10.0	6.5	6.1	13.1	11.5

A medieval goose femur is characterized by the following dimensions:

	Side	Age	Gl	Bp	Dp	SD	Sd	Bd	Dd
femur	dex.	mat.	25.1	20.0	13.5	8.0	8.1	19.5	15.8

Of the Roman Period wild animal remains, a red deer proximal metatarsus fragment measured 40.1 (Bp) and 45.1 mm (Dp) respectively. An unusually long third metacarpus of a mature wild pig was over 10 cm long (Gl = 106.9 mm). A medieval red deer metacarpus distal fragment was 46.9 mm wide (Bd) and 31.9 mm deep (Dd).

8. Conclusions

According to Crabtree,[209] it is reasonable to assume that different ethnic groups exploit the same geographic area in broadly similar ways. In the case of Alsórajk-Kastélydomb the characteristics of animal keeping are suggestive of this trend. Hunting played but a negligible role.

The dietary contribution of omnipresent beef did not substantially differ between the Roman Period and the late Middle Ages. Pig, on the other hand, significantly gained in relative importance by medieval times.

[209] *Crabtree 1990* 179.

While age distributions for the two studied periods are also different, a remarkable diachronic similarity was observed between the general Roman material and the faunal assemblage from the Middle Ages in terms of meat quality. It seems likely that prior to the prohibition of horse meat consumption that was introduced with the onset of Christianity in Hungary, hyppophagy was sporadically practiced in Roman times. In addition, the presence of bones from young animals is suggestive of the fact that inhabitants of the Roman villa relied mostly on the products provided by autochtonous local animal husbandry in the procurement of animal protein.

Age distributions are indicative of self sufficient meat production seems to be most typical in the case of pig during the Middle Ages. Sheep may have been increasingly exploited for wool, while cattle seems to have been extensively used as a beast of burden.

This latter hypothesis is corroborated by osteological evidence from the coeval, late medieval deposits of the nearby site at Hahót-Telekszeg. The dominance of bones from adult and mature cattle is typical of both medieval assemblages studied from this area. Although the number of completely preserved, measurable bones was few in these relatively well preserved but small assemblages, the measurements recorded are suggestive of medium to large size domestic animals both during the Roman Period and the late Middle Ages. Aside from the species exploited for meat, dog remains from the Roman Period are also of interest. In spite of their sporadic occurrence, they mirror the size variability observed in the large bone assemblage of Roman Period Tác-Gorsium.

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Skeletal element	Cattle	Caprinae	Pig	Aurochs	Red deer	Large ungulate
frontale	1					
neurocranium	1					
maxilla	1					
mandibula	2					
loose tooth	2	1	3			
cervical vertebra						1
thoracic vertebra	2					3
lumbar vertebra	1					
scapula	3		2			2
humerus	7	1	1			5
radius	2	2	2		1	
ulna	1					
carpalia	1					
sesamoid	1					
ilium	1					
acetabulum pelvis						1
femur	2			1		1
tibia	4	1				
metatarsus	4					
rib	2					9
long bone splinter						7
Total	38	5	8	1	1	29

1. The anatomical distribution of late Bronze Age animal bones from Hahót-Telekszeg.

Skeletal element	Cattle	Sheep	Caprinae	Pig	Horse	Hen	Wild pig	Large ungulate	Small ungulate
frontale	1								
neurocranium				1	1				
maxilla				1					
mandibula				1					
ramus mandibulae			1						
loose tooth			1						
cervical vertebra				1					
lumbar vertebra				1					
scapula				2			1		
humerus			1						
radius	2		2						
metacarpus	1								
phalanx media	1								
femur			2						
tibia	5		1	1					
astragalus		1						1	
calcaneus				1					
metatarsus		1		1		1			
rib	3		2					1	
long bone splinter								4	4
flat bone fragment								4	2
Total	20	2	10	10	1	1	1	10	6

2. The anatomical distribution of early medieval animal bones from Hahót-Telekszeg.

Skeletal element	Cattle	Sheep	Caprinae	Pig	Horse	Dog	Hen	Goose	Red deer	Roe deer	Wild pig	Hare	Fox	Large ungulate	Small ungulate	Aves
frontale	20			9												
neurocranium	14		6	14									1	1		
incisivum	2			4												
nasale	1		1	6						3						
zygomaticum	5		2	3							1					
maxilla	21		2	18					1							
mandibula	59		1	39	1				1							
ramus mandibulae	31		8	7	2										1	
loose tooth	22		2	24	1											
atlas	2			2												
epistropheus		1														
cervical vertebra	3				1										1	
thoracic vertebra	8			2												
lumbar vertebra	14			3										3		
sacrum	1			1			1									
clavicula							2									
coracoideum							6	1								
sternum							3	1								
scapula	45			19			3									
humerus	49			18	2	1	6	3						1		2
radius	50			11	4		2				1			1		1
ulna	19			12	3		5	1				3				
carpalia	6															
metacarpus	30	1		12	2	1				3						
phalanx proximalis	29			5					1							
phalanx media	22															
phalanx distalis	9															
sesamoid	2															
ilium	13		5	2										2		
acetabulum pelvis	12			9	3											
femur	36	1	12	15	2		4	1	1					2	1	1
patella	1															
tibia	58		29	31	1	1	11		1			2		5	4	2
fibula				9												
astragalus	6	1		2												
calcaneus	13			10												
centrotarsale	4															
metatarsus	42	2	4	3	4		8	1		2	2	1				
rib	235		27	61		1	3							68	16	
long bone splinter			7											79	53	4
flat bone fragment														46	15	
Total	884	6	136	351	26	4	54	8	5	4	4	6	1	208	91	10

3. The anatomical distribution of late medieval animal bones from Hahót-Telekszeg.

Skeletal element	Cattle	Sheep	Goat	Caprinae	Pig	Horse	Dog	Hen	Red deer	Roe deer	Wild pig	Large ungulate	Small ungulate
antler/horn core	2	1								1			
frontale				1	1								
neurocranium				1	1	1						1	
zygomaticum	2					1	1						
maxilla				2	4								
mandibula	3			2	5							1	
ramus mandibulae	5			1		1							1
loose tooth	2			9	14	4			2				
atlas	1												
epistropheus	1												
cervical vertebra	1												
thoracic vertebra	4			1	1	1							
lumbar vertebra	4												
sacrum	2												
scapula	7			1		2		1			1	2	
humerus	3	1		5	3	1						1	
radius			1	3	2		1	1					1
ulna	1			1	1								
carpalia	1												
metacarpus	2	1			2	1			1	2	1		
phalanx proximalis	2				1								
phalanx media						1							
ilium						1						1	
acetabulum pelvis	3					1							
femur	8			8				2					1
tibia	9			11	3	1	1					6	
fibula					2								
calcaneus	2	1			1	1							
centrotarsale									2				
metatarsus	6	2		1		2	2		1				
rib	8				9	2	1					4	2
long bone splinter	3											13	6
flat bone fragment												6	2
Total	82	6	1	47	50	21	6	4	6	3	2	35	13

4. The anatomical distribution of Roman Period animal bones from Alsórajk-Kastélydomb.

Skeletal element	Cattle	Sheep	Caprinae	Pig	Horse	Dog	Hen	Goose	Red deer	Large ungulate
horn core		1								
frontale	3									
neurocranium				1						
incisivum				1						
zygomaticum				1		1				
mandibula	3	2		6						
ramus mandibulae	5				1					
loose tooth	1		1	6	1				1	2
atlas				1						
cervical vertebra										1
thoracic vertebra	3			1						
sacrum	1			1						
scapula	3		1	4						17
humerus	3		1	1						
radius	2		1	2						
ulna	1						1			
metacarpus	4								1	
phalanx proximalis	1									
ilium	2									
acetabulum pelvis	2			2						
femur	10			2	1		1	1		
tibia	7		1	2			1			
astragalus	1									
metatarsus	6			2	1					
rib	3					1				11
long bone splinter										13
flat bone fragment										8
Total	61	3	5	33	4	2	3	1	2	52

5. The anatomical distribution of medieval animal bones from Alsórajk-Kastélydomb.

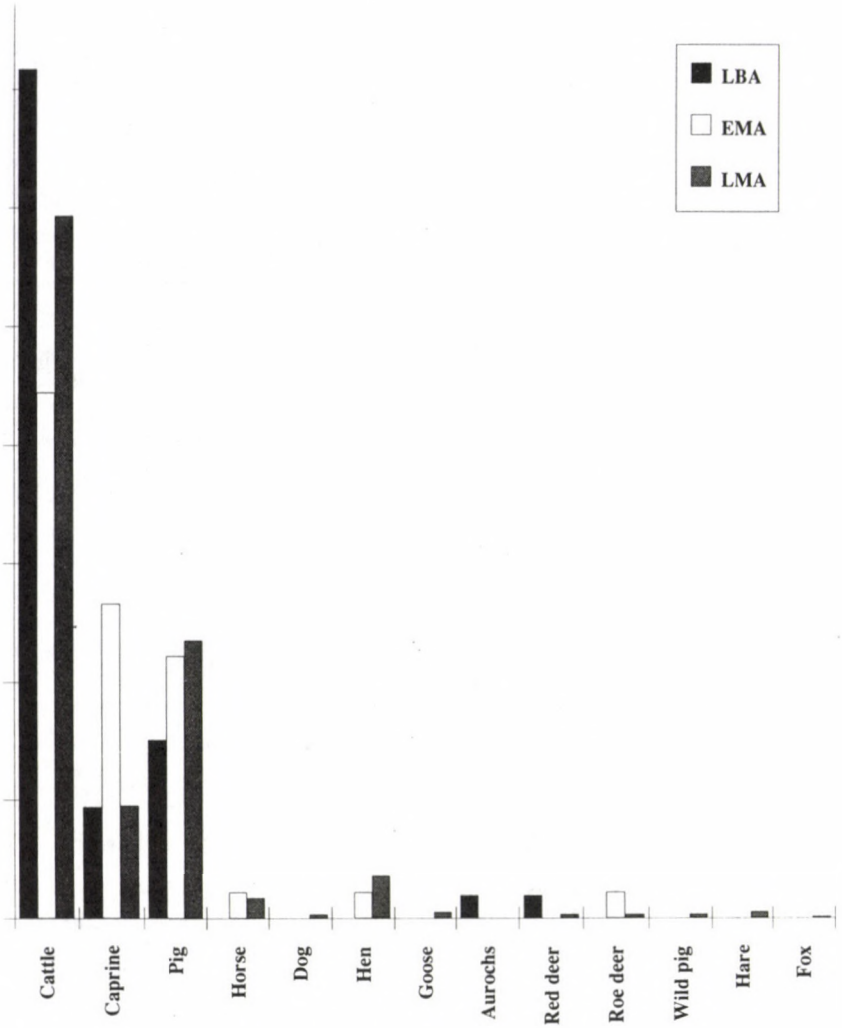


Fig. 21. The percentual contributions of animal species at Hahót-Telekszeg,

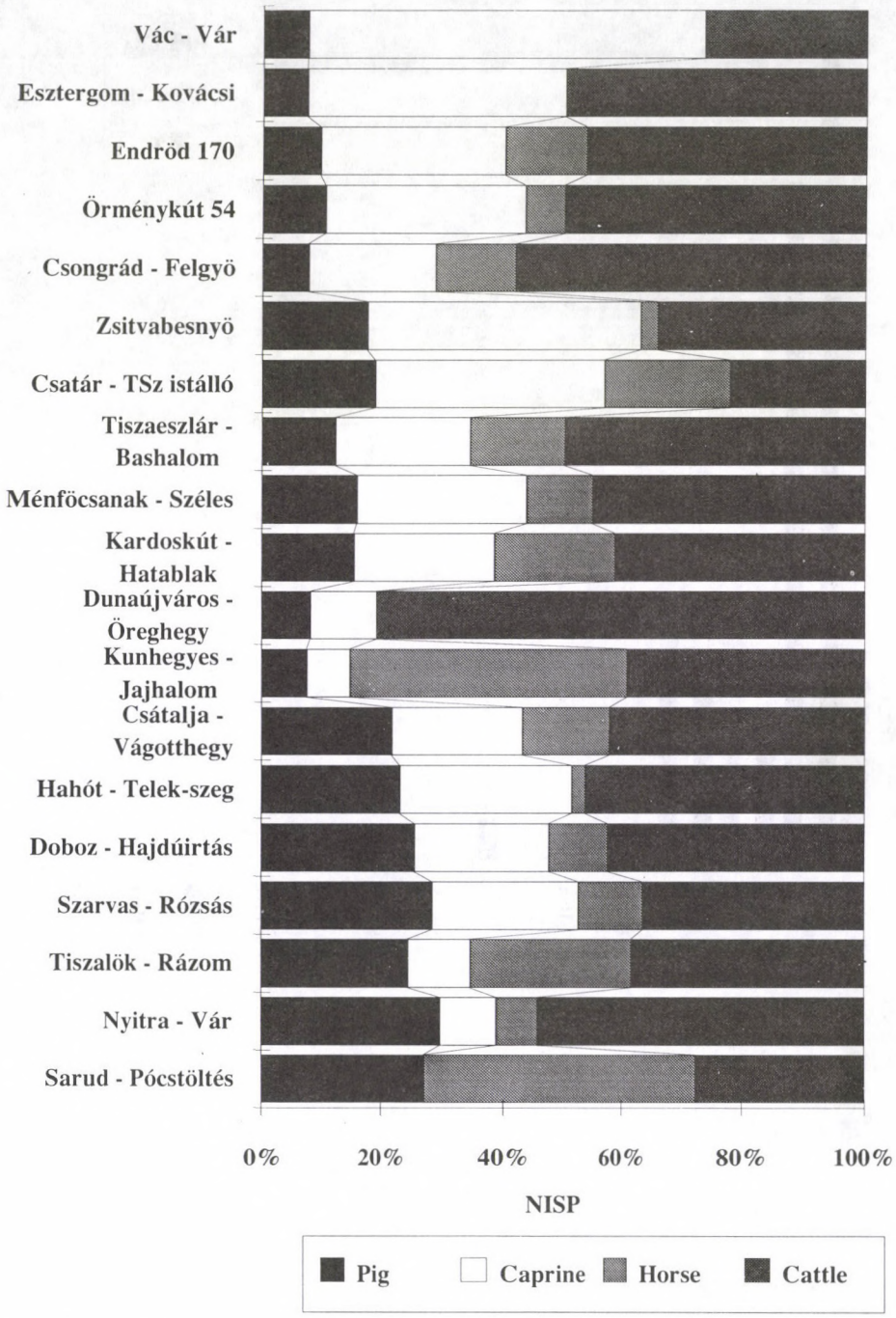


Fig. 22. The relative position of the Árpád Period material at Hahót-Telekszeg,

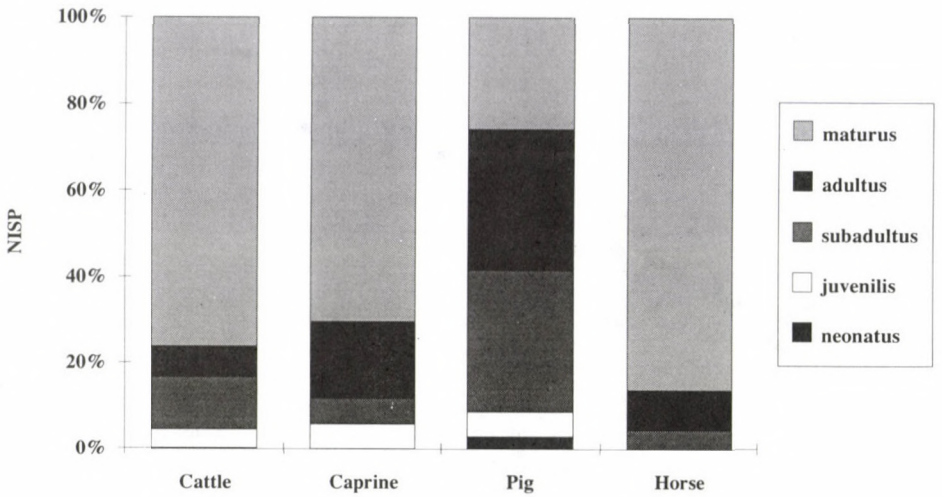


Fig. 23. The proportions of ageable late medieval bones at Hahót-Telekszeg,

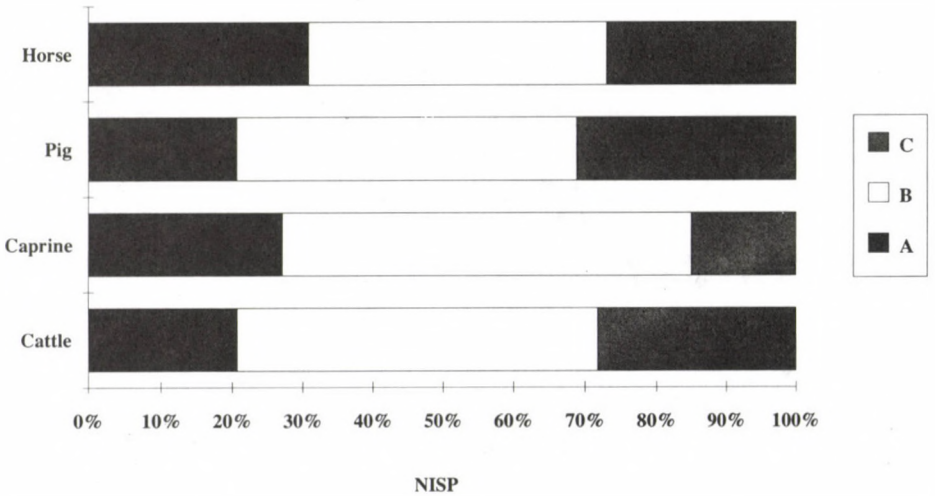


Fig. 24. The distribution of late medieval material by meat quality at Hahót-Telekszeg,

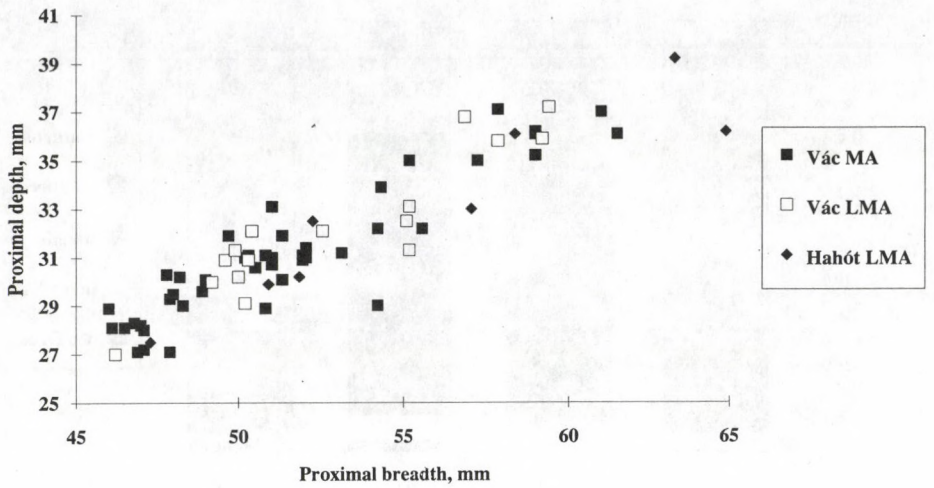


Fig. 25. Metacarpus measurements of medieval cattle at Hahót-Telekszeg.

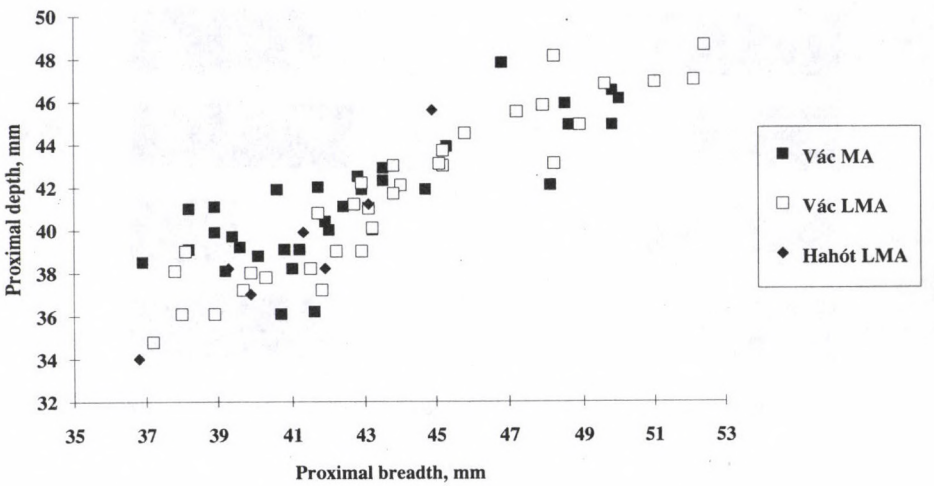


Fig. 26. Metatarsus measurements of medieval cattle at Hahót-Telekszeg.

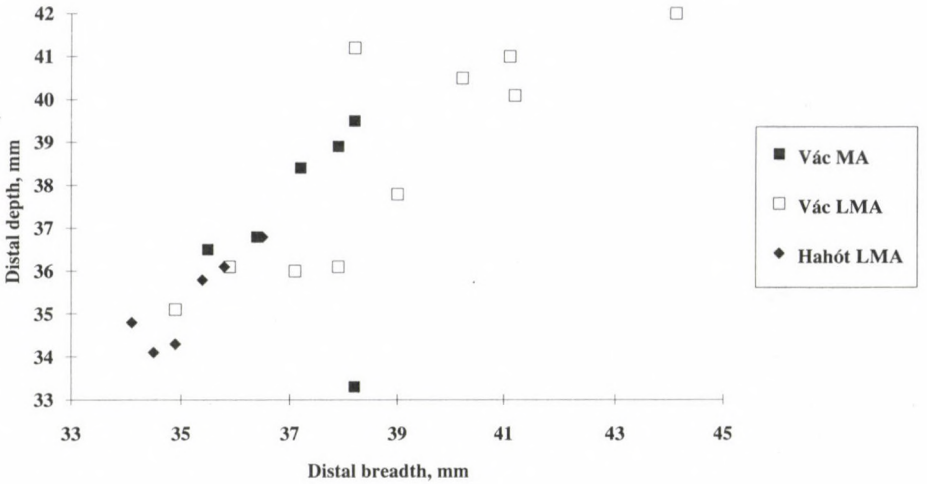


Fig. 27. Humerus measurements of medieval pigs at Hahót-Telekszeg.

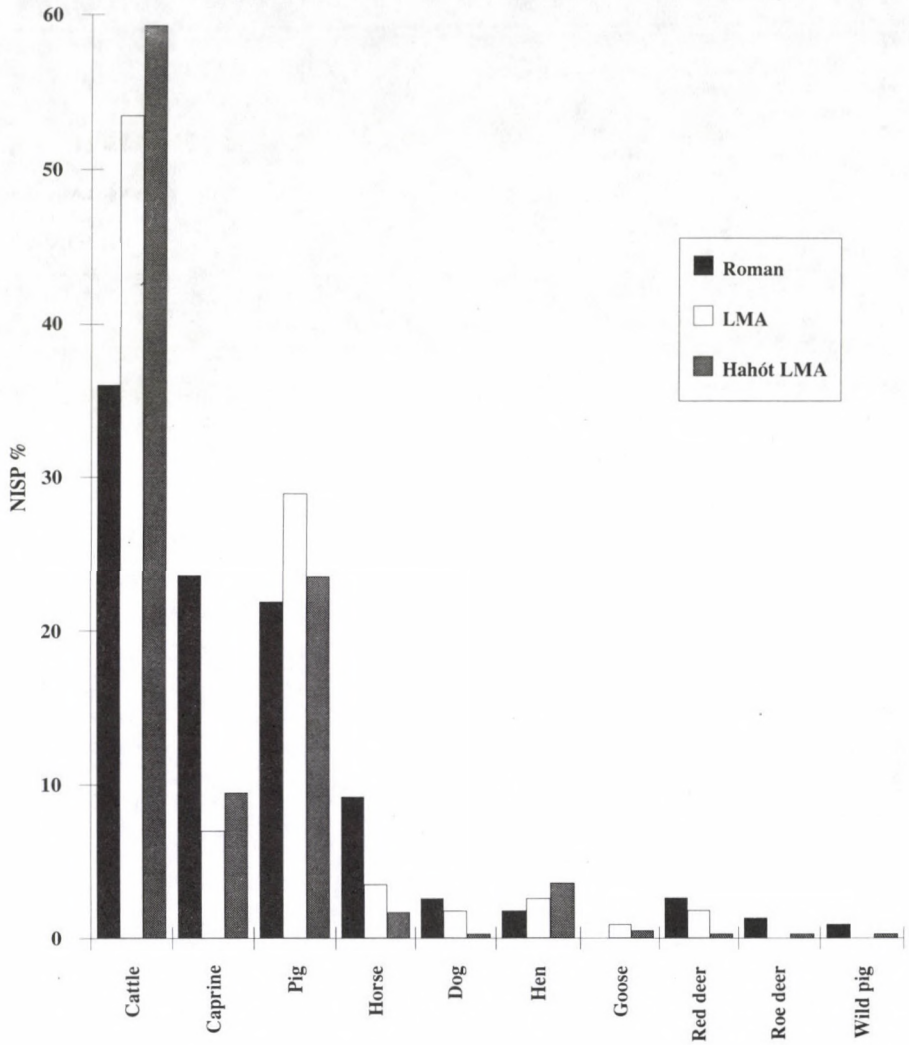


Fig. 28. The percentual contribution of animal species at Alsórajk-Kastélydomb.

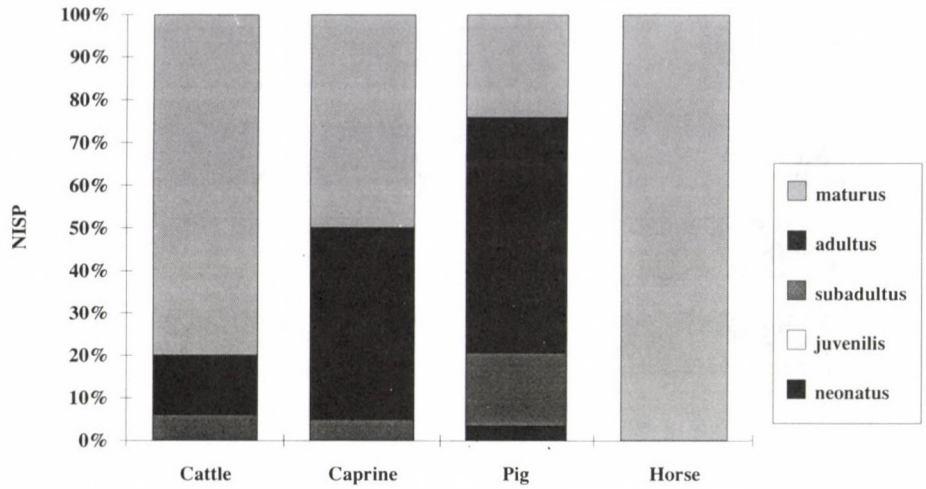


Fig. 29. The proportions of ageable Roman Period bones at Alsórajk-Kastélydomb.

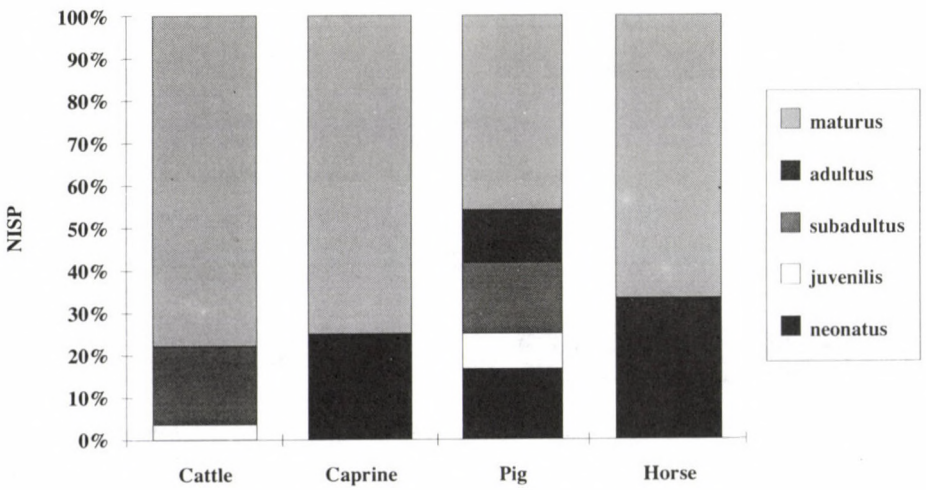


Fig. 30. The proportions of ageable medieval bones at Alsórajk-Kastélydomb.

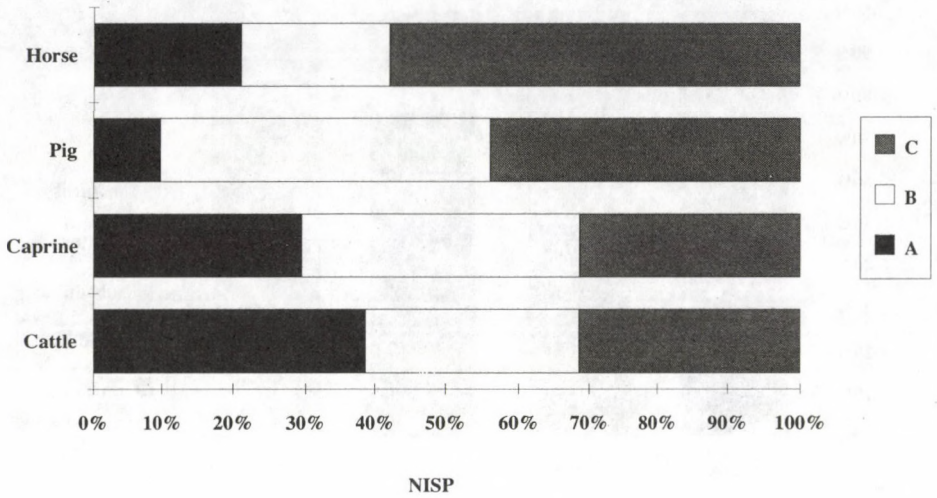


Fig. 31. The distribution of general Roman material by meat quality at Alsórajk-Kastélydomb.

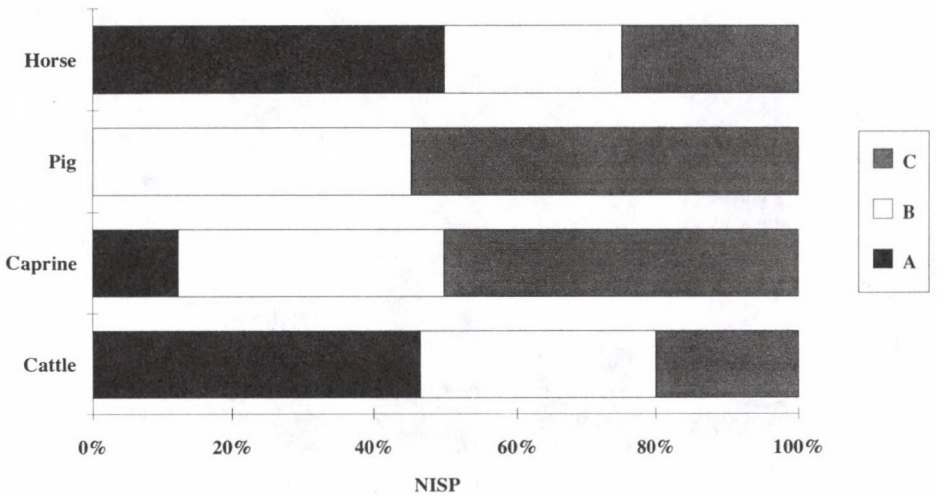


Fig. 32. The distribution of villa material by meat quality at Alsórajk-Kastélydomb.

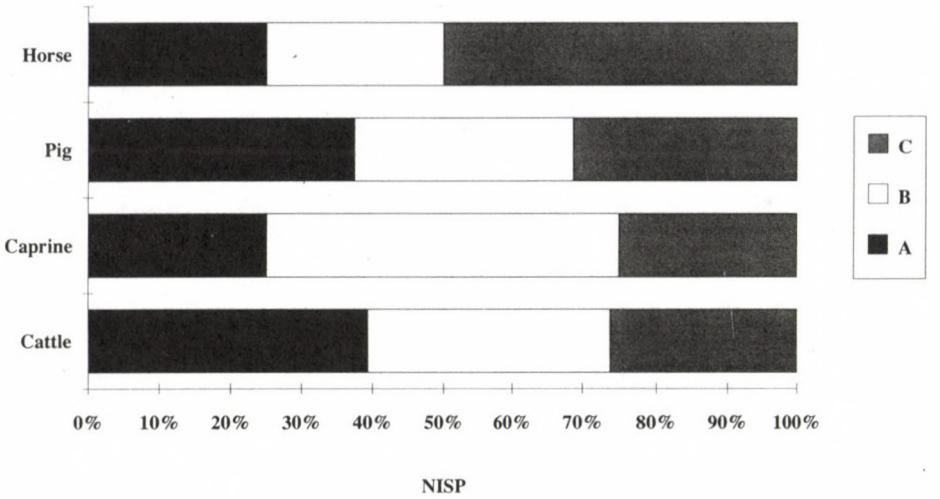
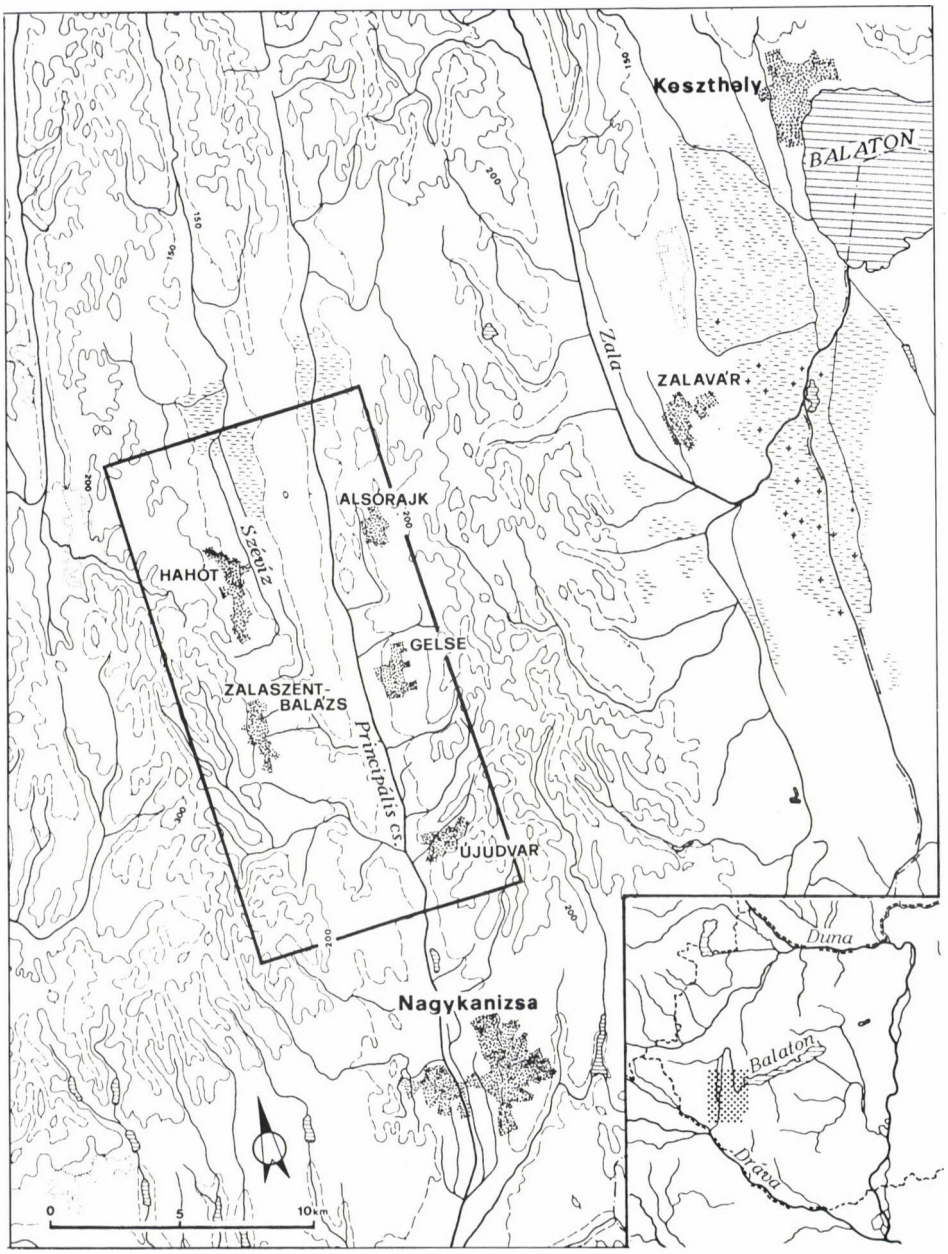
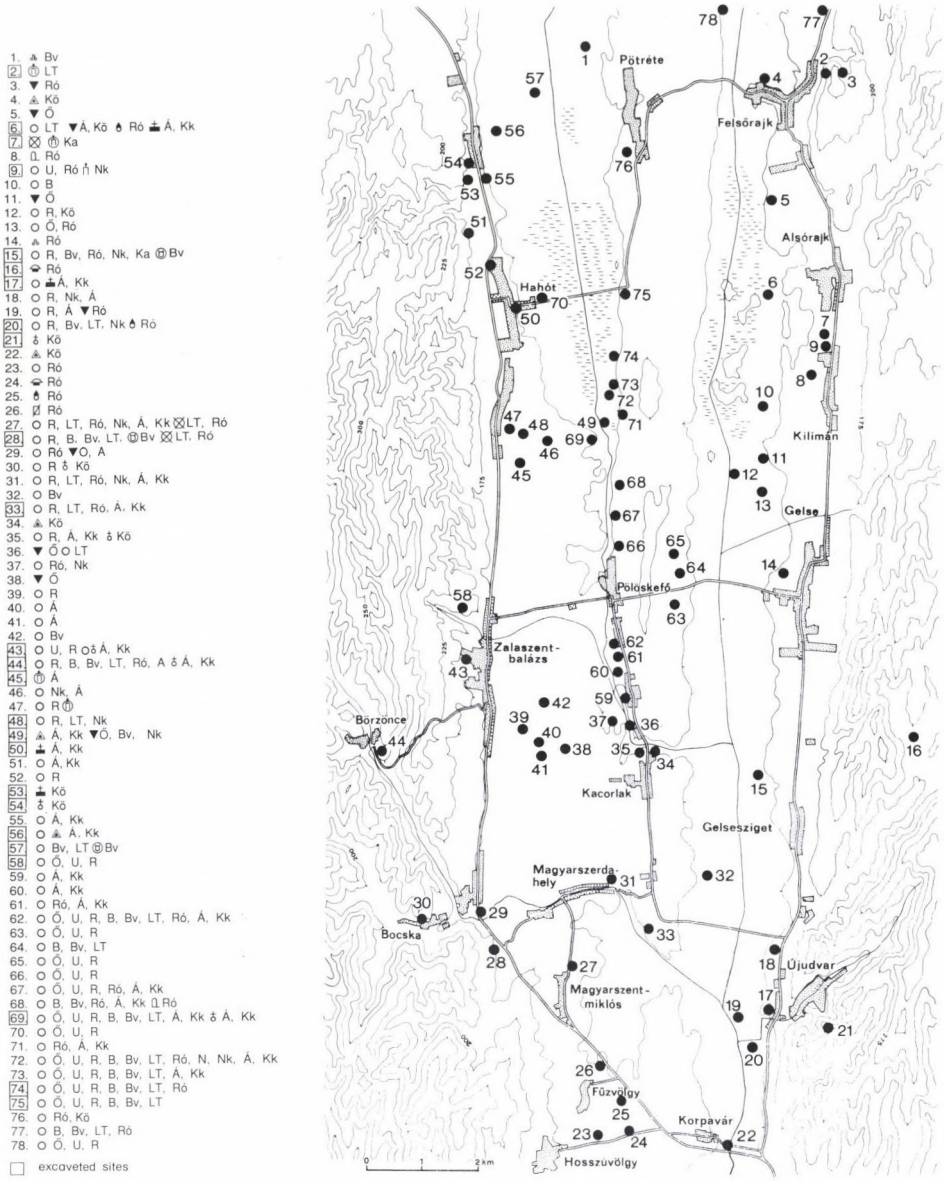


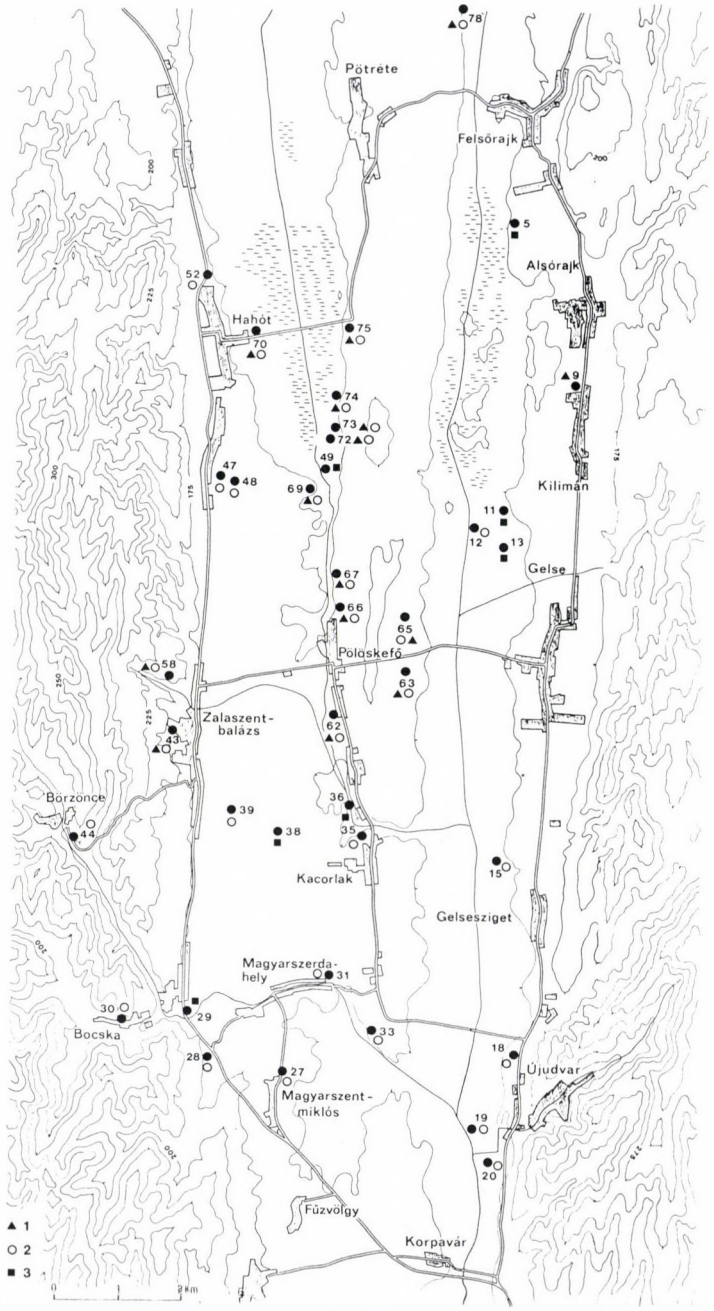
Fig. 33. The distribution of medieval materials by meat quality at Alsórajk-Kastélydomb.



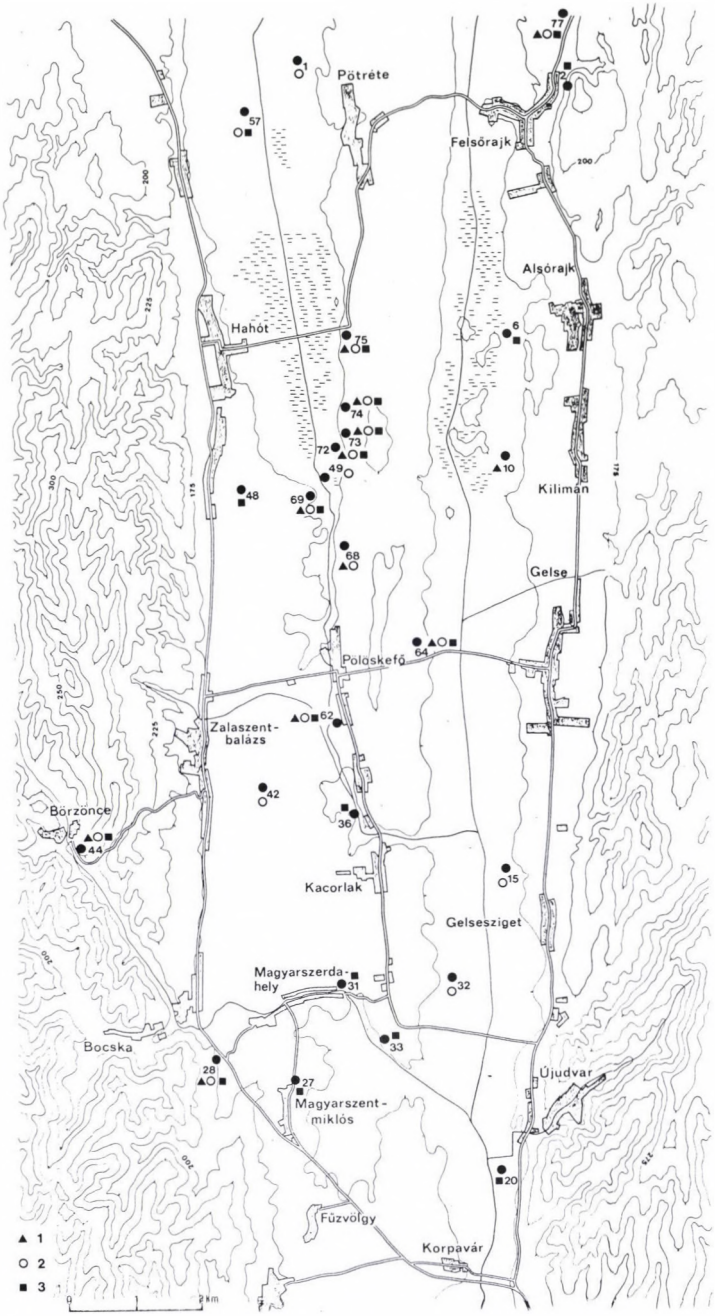
Pl. 1. The Hahót microregion and its broader environment.



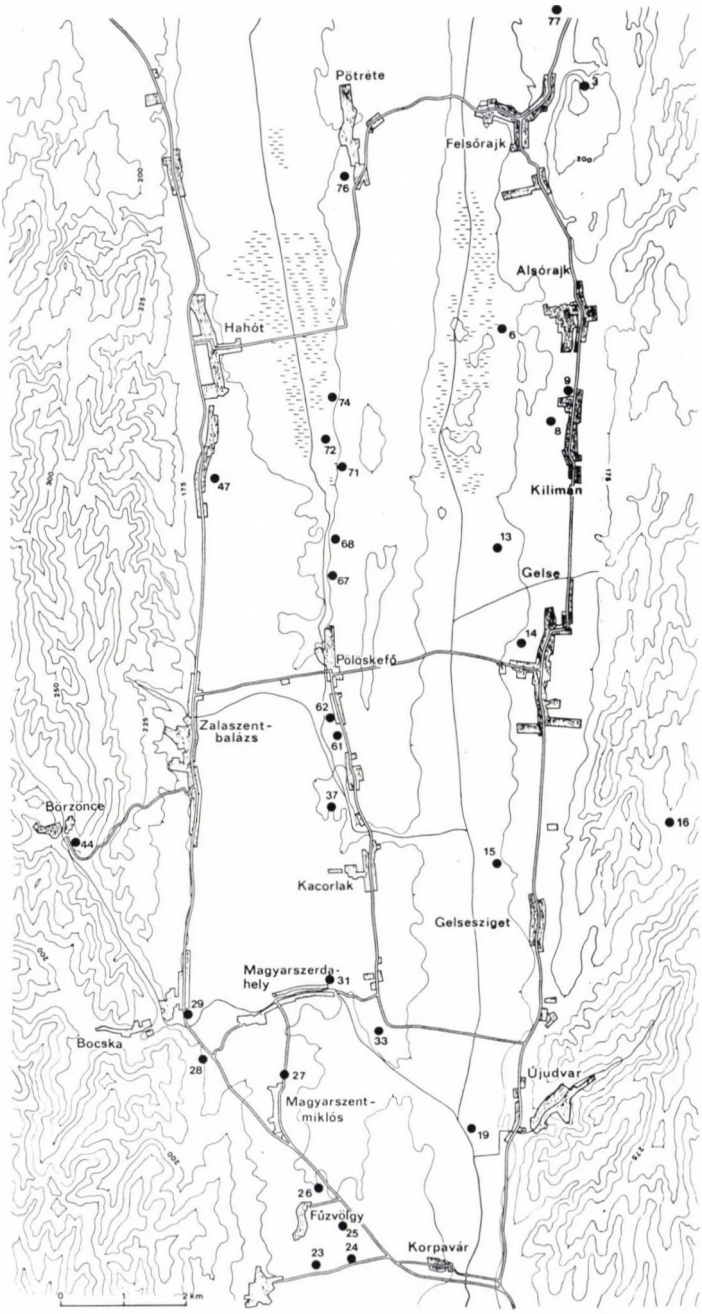
Pl. 2. Archaeological sites in the Hahót micro-region (the key corresponds to the one used in the volumes of the Magyarország Régészeti Topográfiája series).



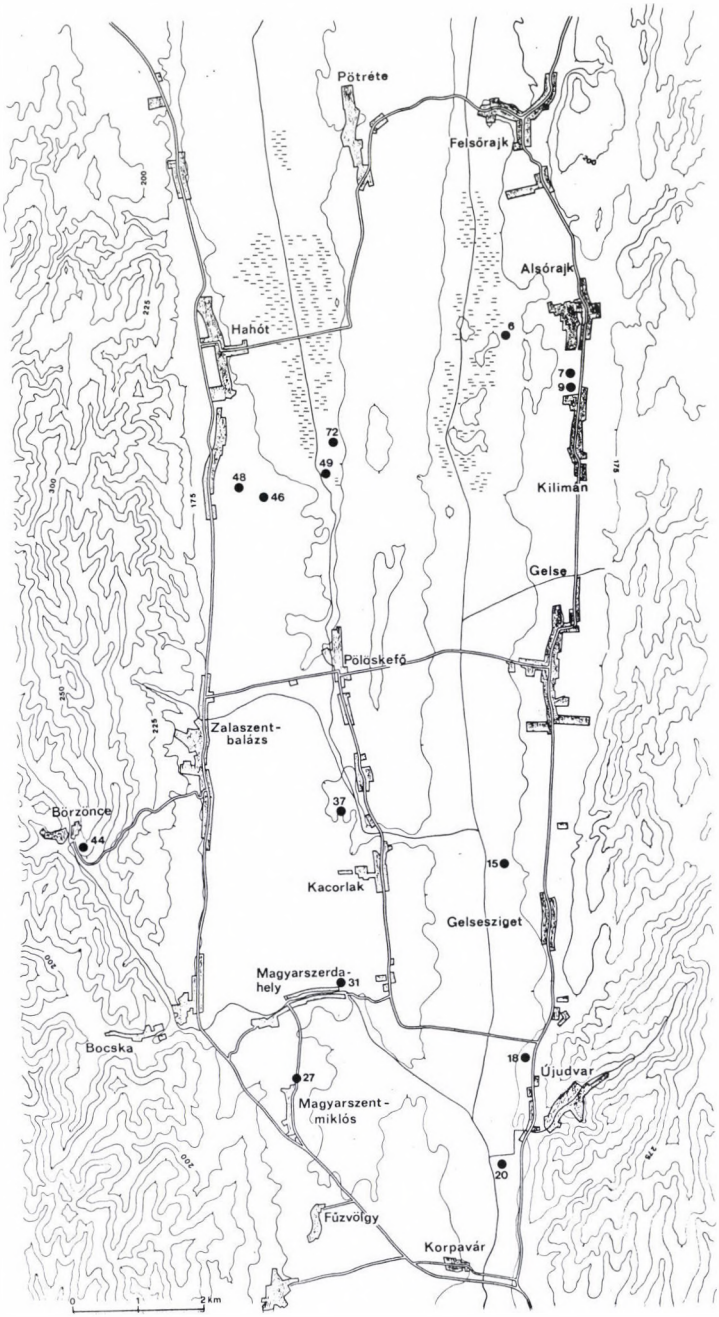
Pl. 3. Neolithic and Copper Age sites in the Hahót basin. 1. Neolithic, 2. Copper Age, 3. Prehistoric.



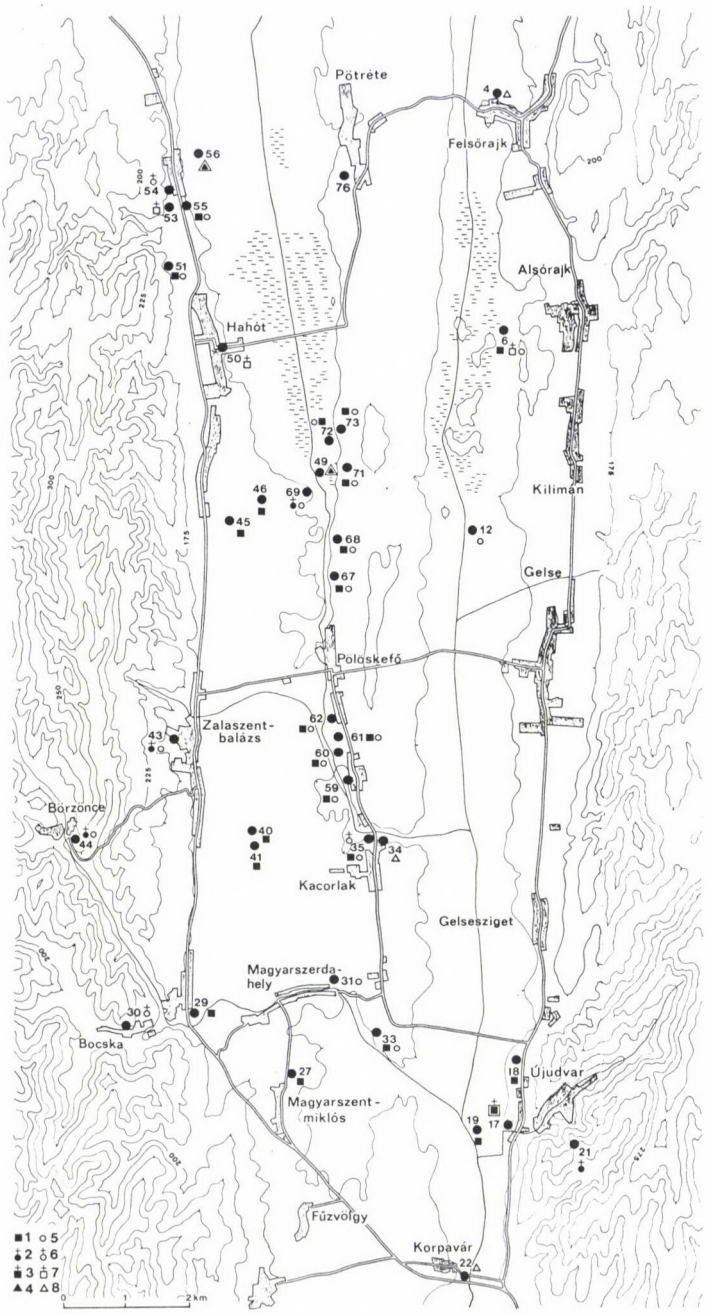
Pl. 4. Bronze and Iron Age sites in the Hahót basin. 1. Bronze Age, 2. Late Bronze Age, 3. Iron Age (La Tène).



Pl. 5. Roman sites in the Hahót basin.



Pl. 6. Migration period and early medieval sites in the Hahót basin.



Pl. 7. Árpádian Age and medieval sites in the Hahót basin.
1. Árpádian Age settlement, 2. Árpádian Age church or monastery, 3. Árpádian Age castle, 4. medieval settlement, 5. medieval church or monastery, 6. medieval castle.



1



2



3



4

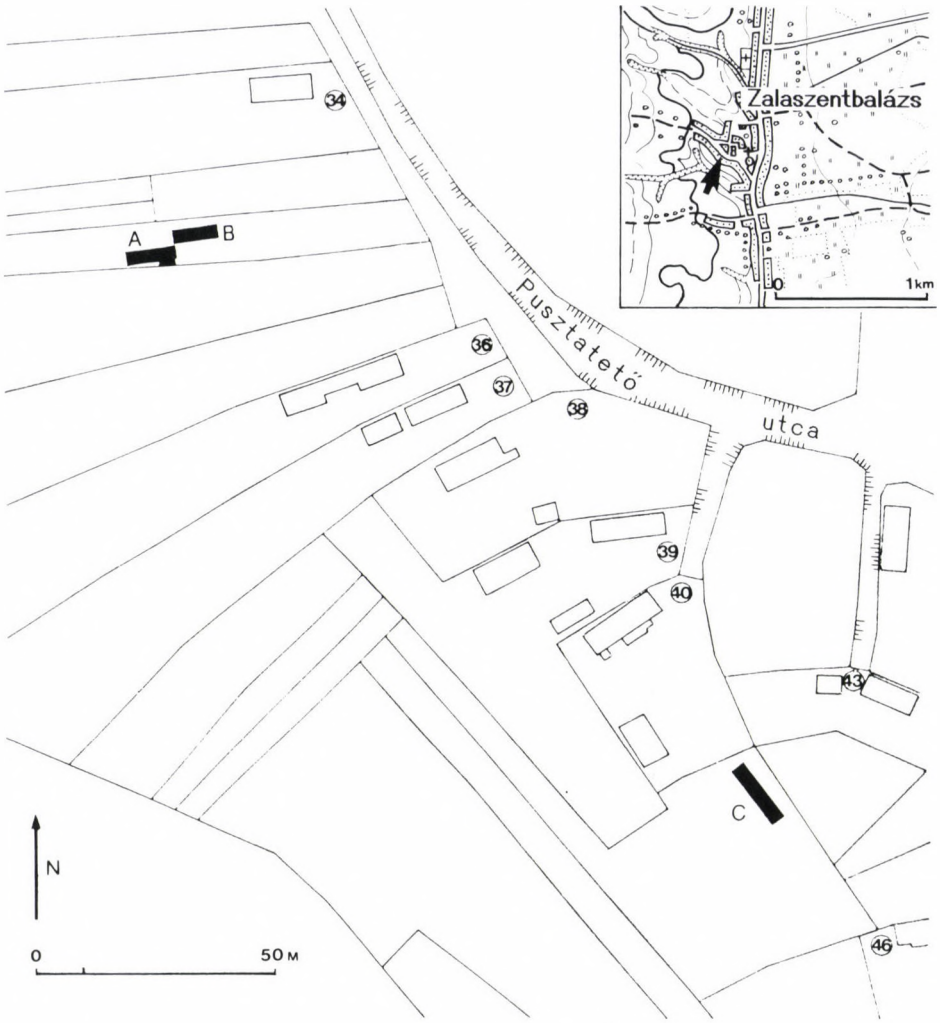


5



6

Pl. 8. Aerial photos of the Hahót microregion. 1. Hahót-Alsófakospuszta, Árpádian Age and medieval castle, 2. Kacorlak, Árpádian Age castle, 3-4. Hahót-Buzád (Sárkány) sziget, Árpádian Age and medieval castle, 5. environs of the Kőbánya-Alsórajk-Kastélydomb site, 6. Alsórajk-Kastélydomb, Roman villa and medieval (Premonstratensian) monastery.



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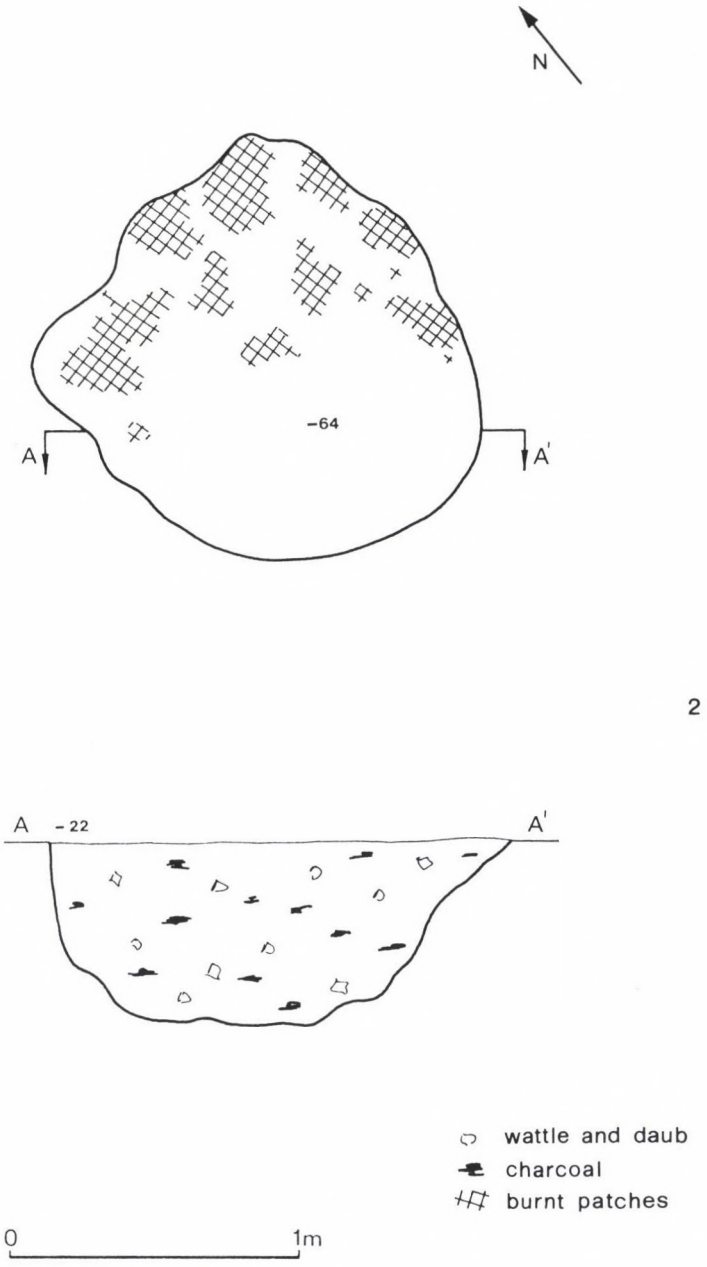
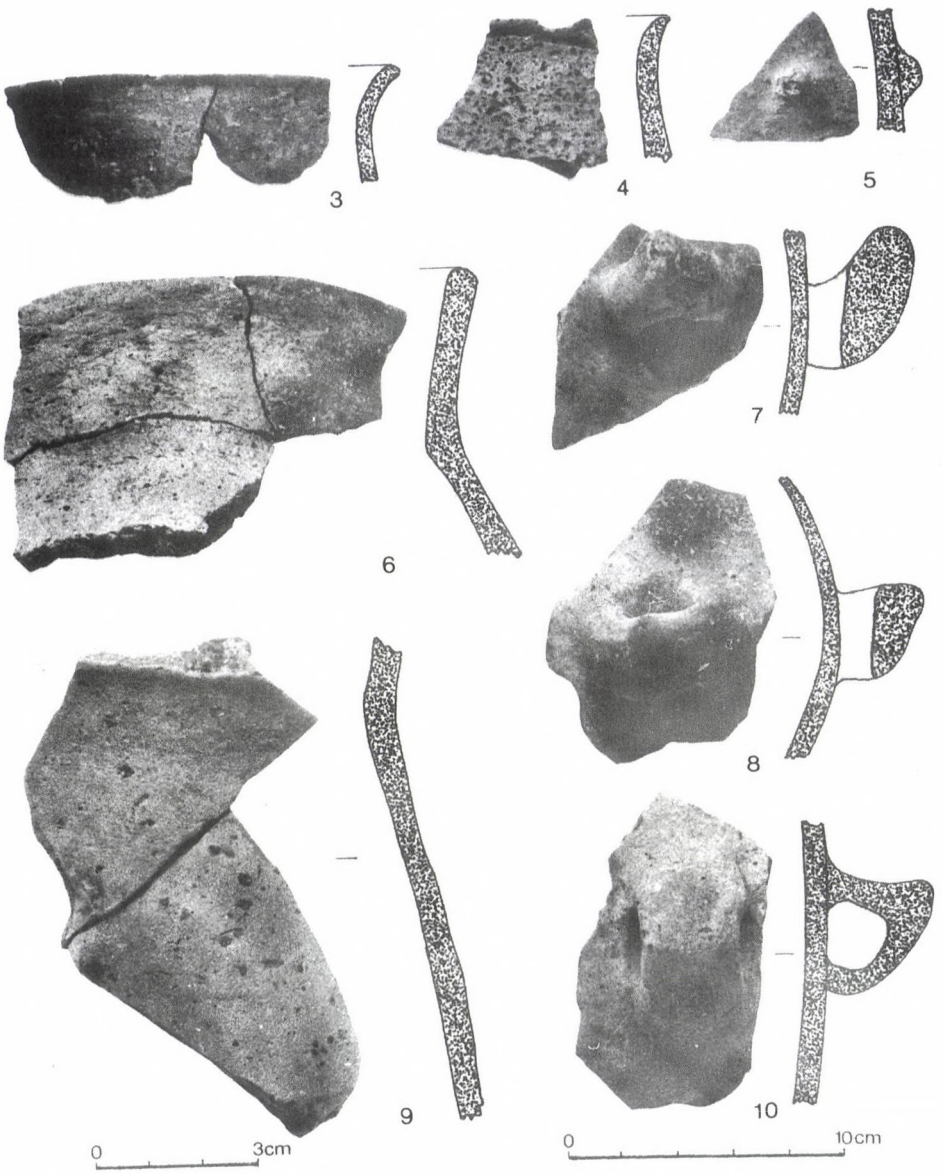
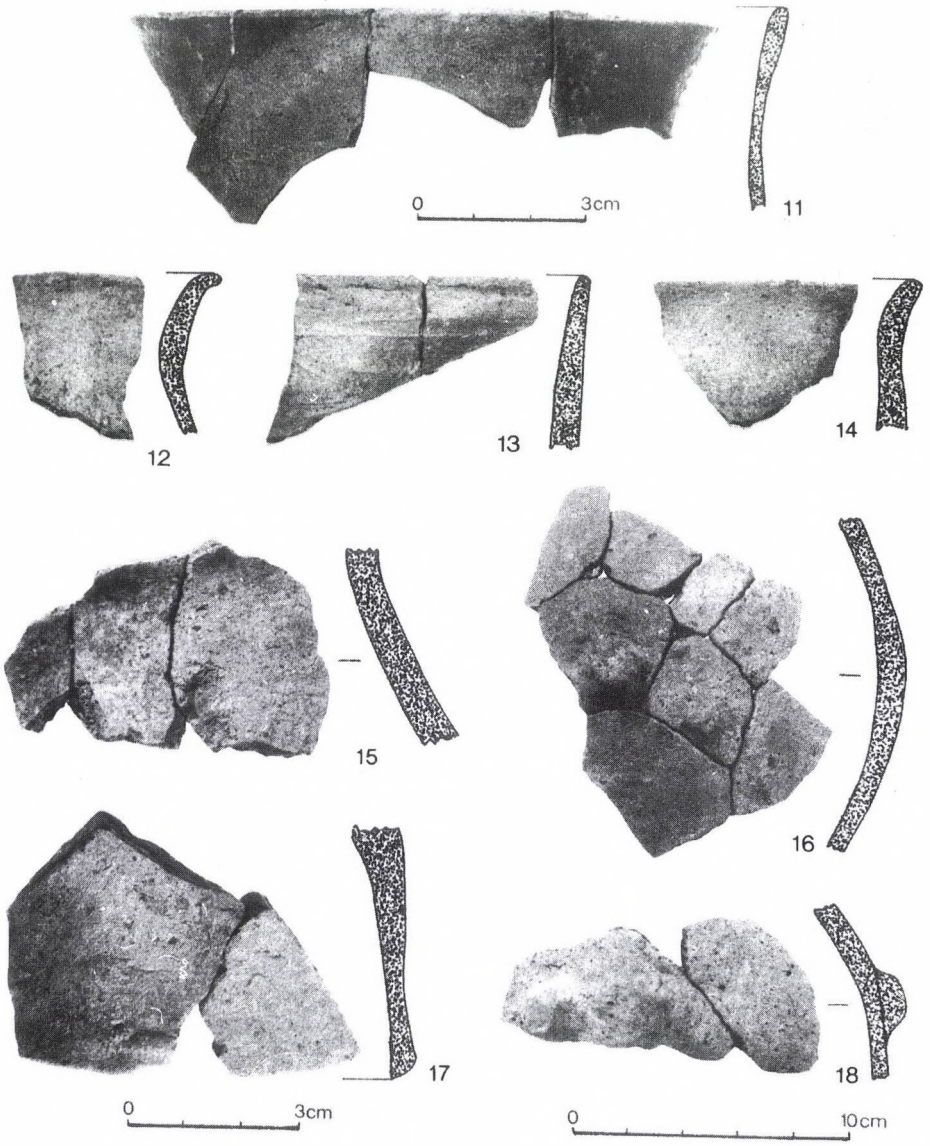
Pl. 9. Zalaszentbalázs-Pusztatető. Map of the site.



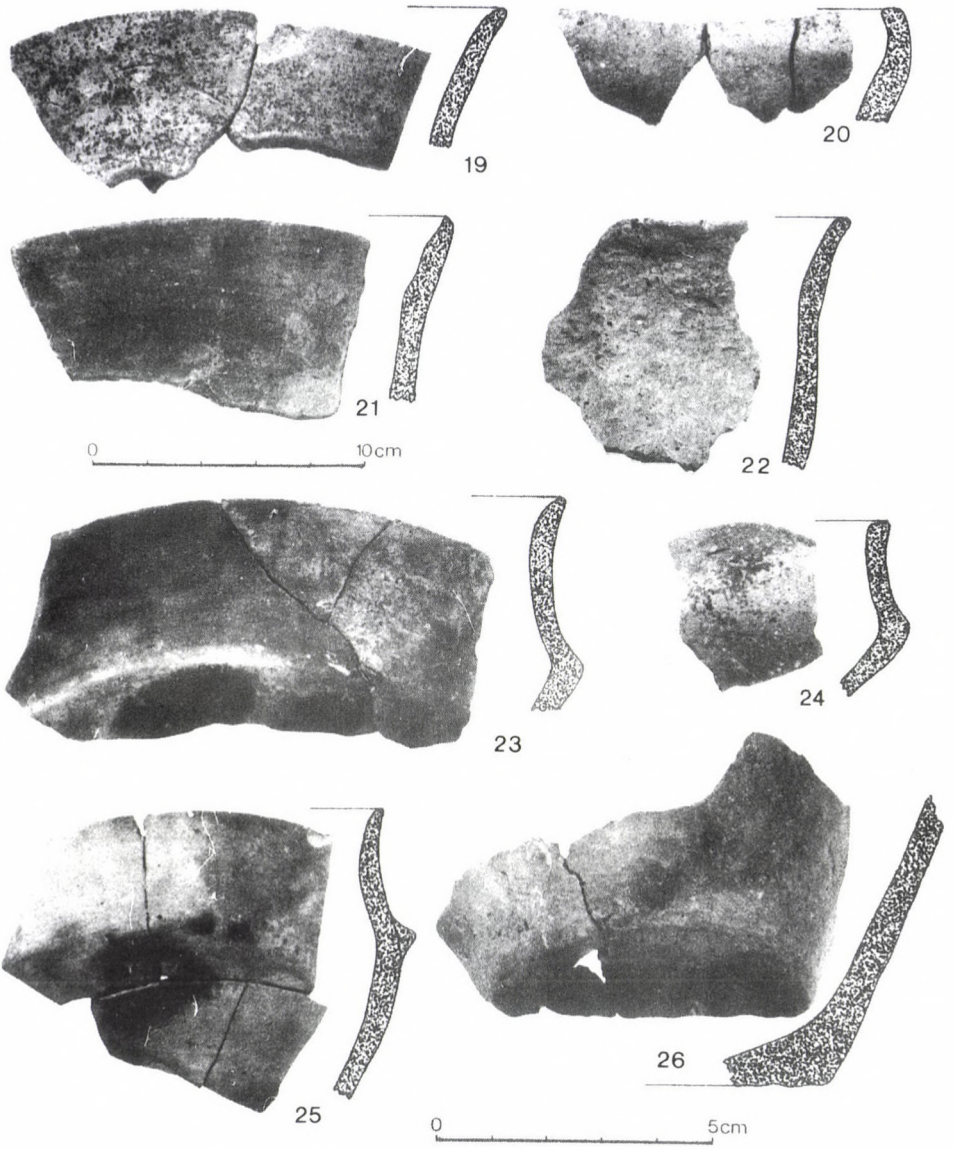
Pl. 10. Zalaszentbalázs-Pusztatető. Feature 1.



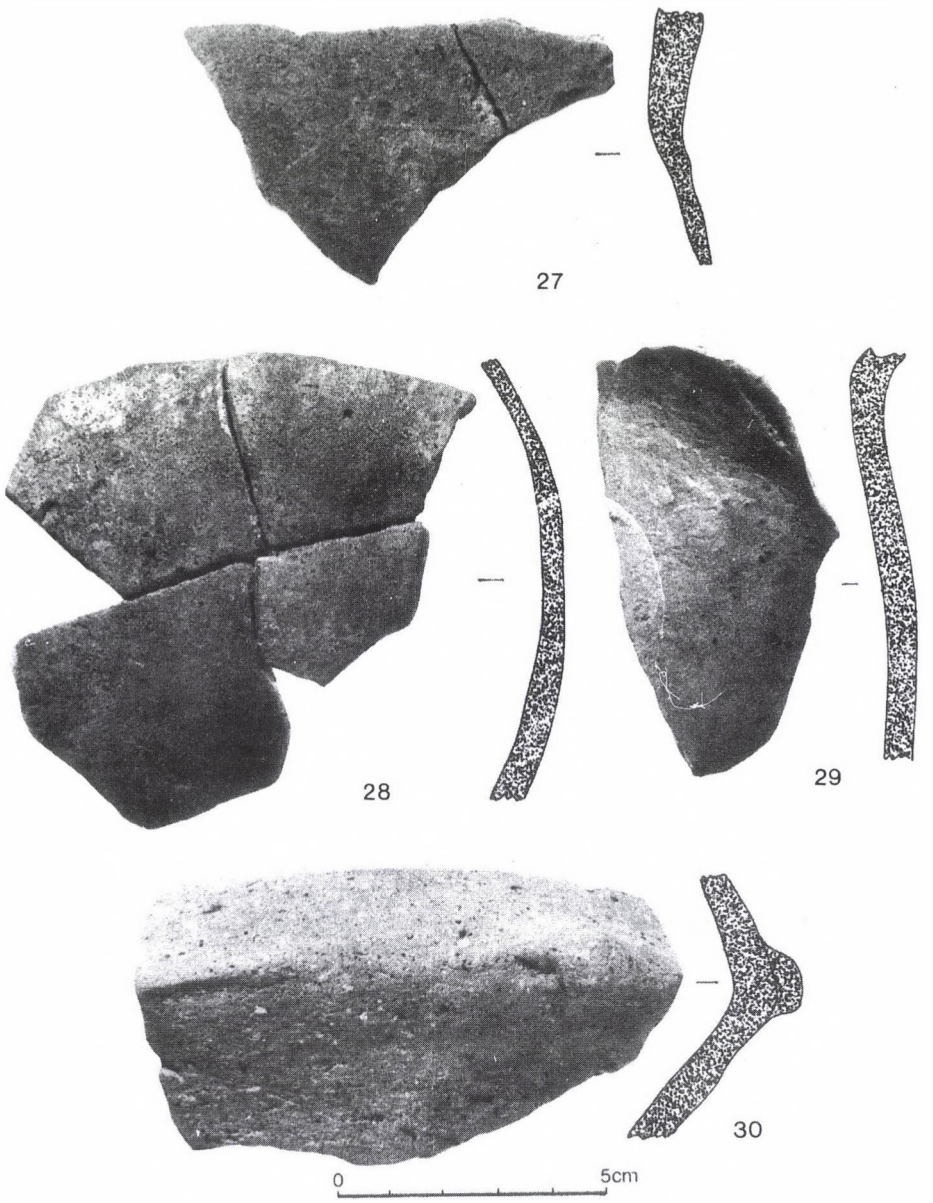
Pl. 11. Zalaszentbalázs-Pusztatető. 3-10: Feature 1.



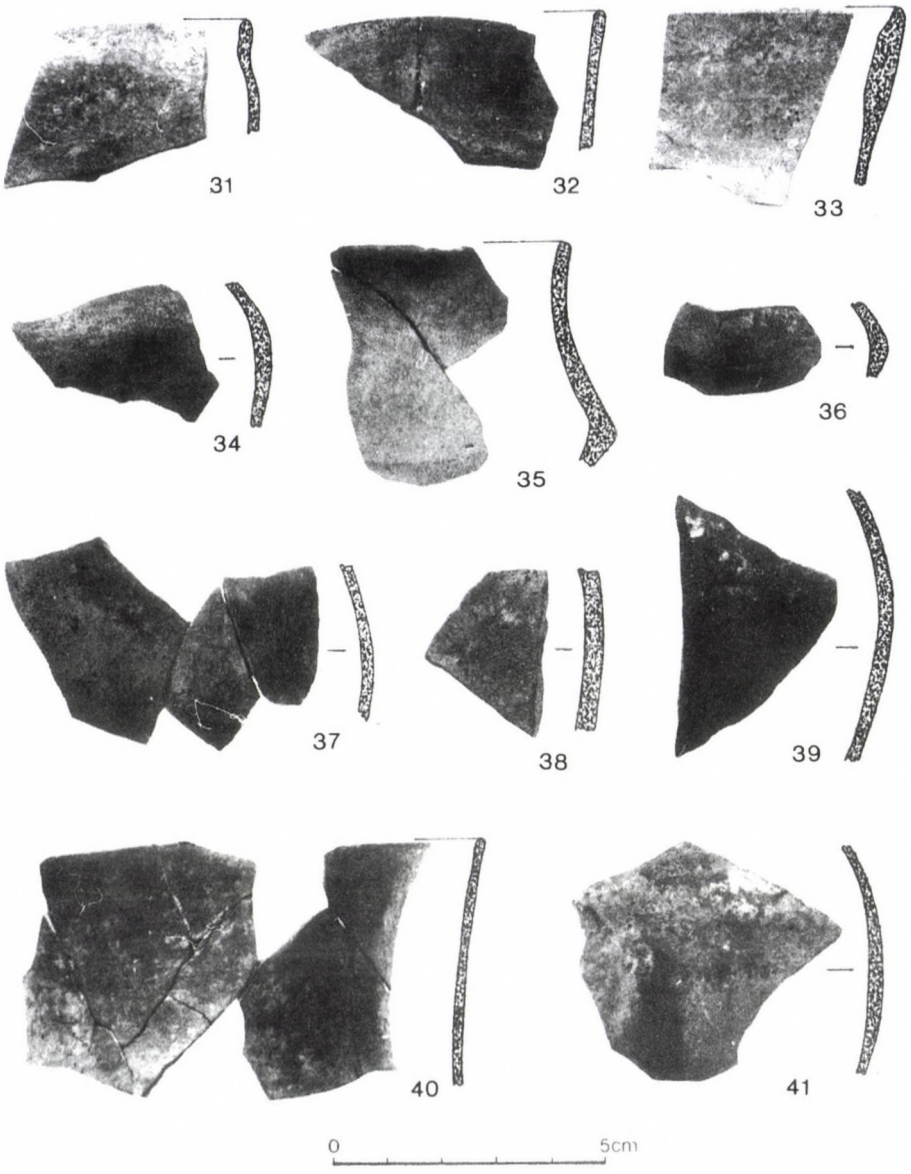
Pl. 12. Zalaszentbalázs-Pusztatető. 11-18: Feature 1.



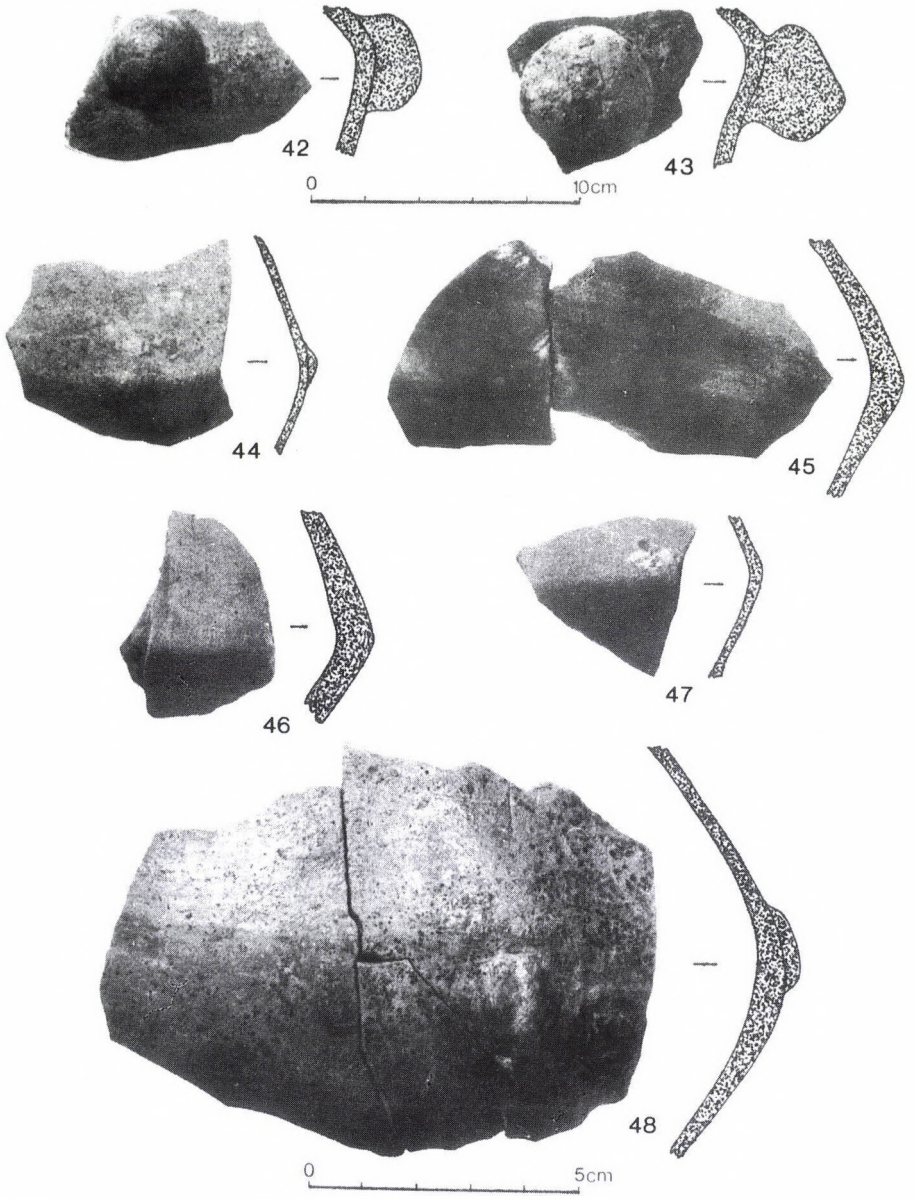
Pl. 13. Zalaszentbalázs-Pusztatető. 19-26: Feature 1.



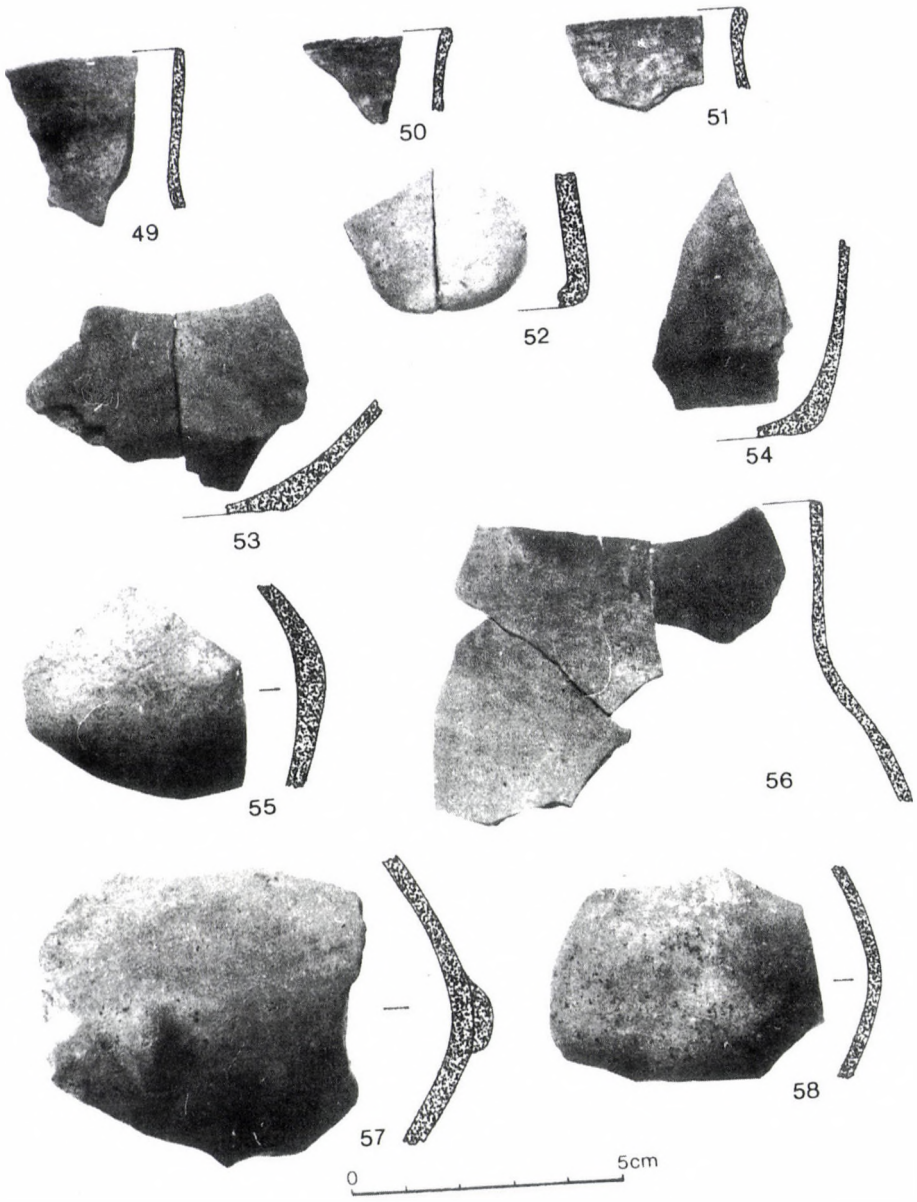
Pl. 14. Zalaszentbalázs-Pusztatető. 27-30: Feature 1.



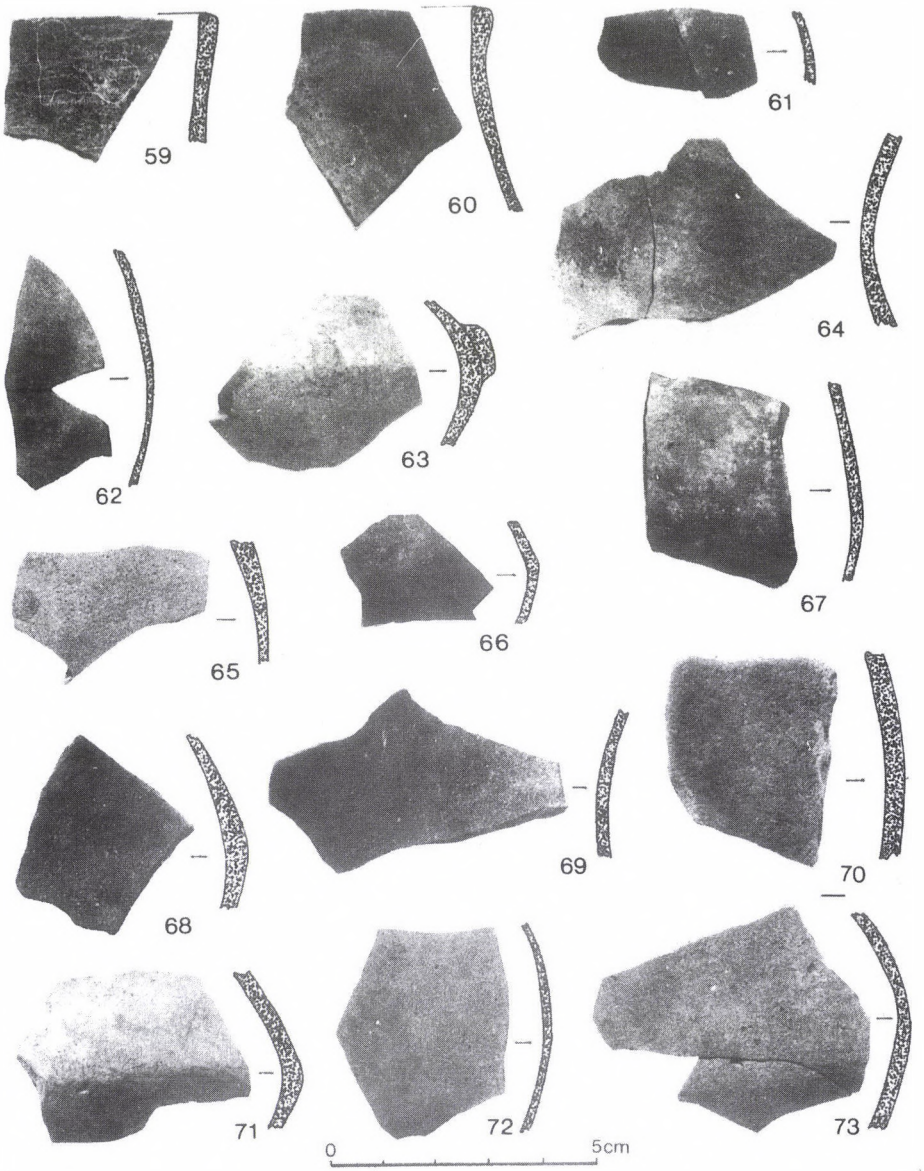
Pl. 15. Zalaszentbalázs-Pusztatető. 31-41: Feature 1.



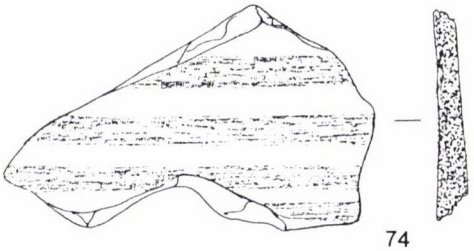
Pl. 16. Zalaszentbalázs-Pusztatető. 42-48: Feature 1.



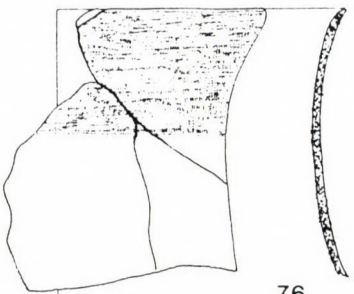
Pl. 17. Zalaszentbalázs-Pusztatető. 49-58: Feature 1.

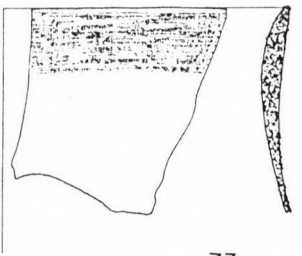


Pl. 18. Zalaszentbalázs-Pusztatető. 59-73: Feature 1.

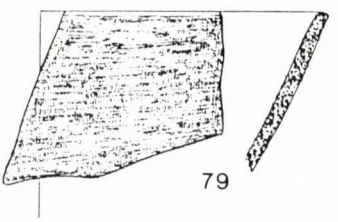


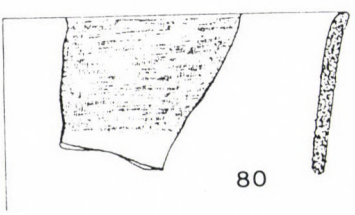


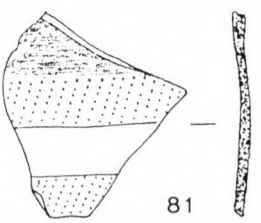




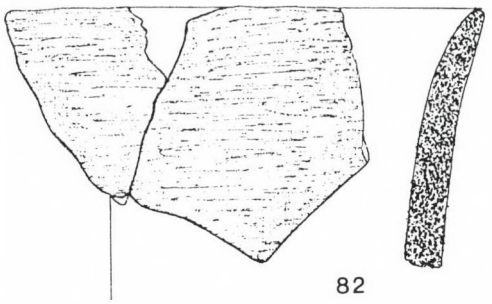


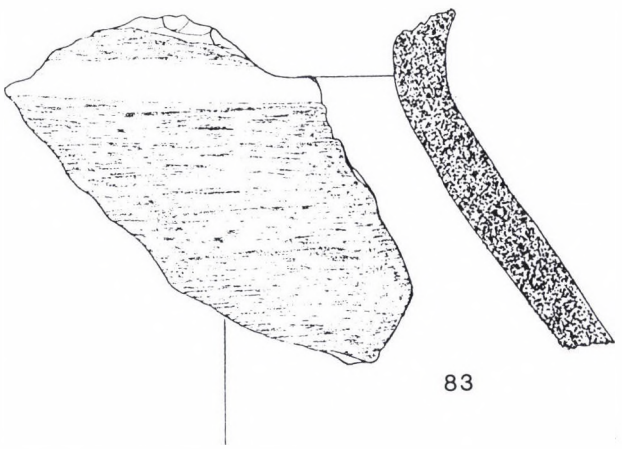




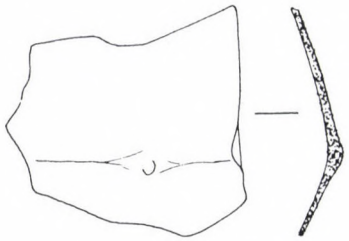


Pl. 19. Zalaszentbalázs-Pusztatető. 74-81: Feature 1.





Pl. 20. Zalaszentbalázs-Pusztatető. 82-83: Feature 1.



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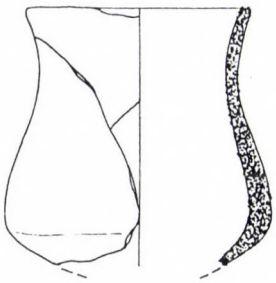

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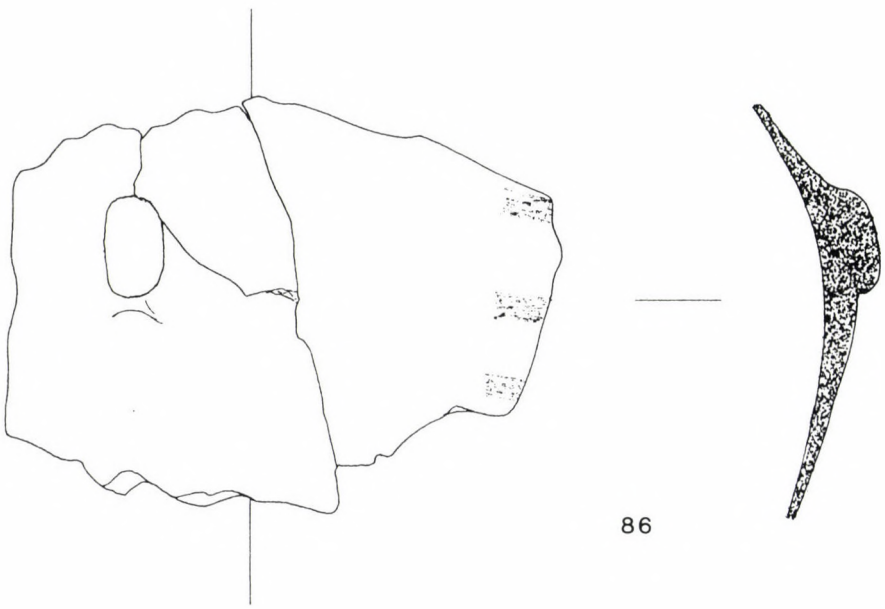
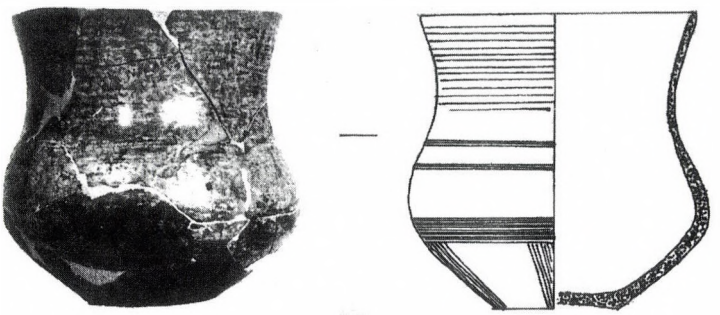


86

Pl. 21. Zalaszentbalázs-Pusztatető. 84-86: Feature 1.



87

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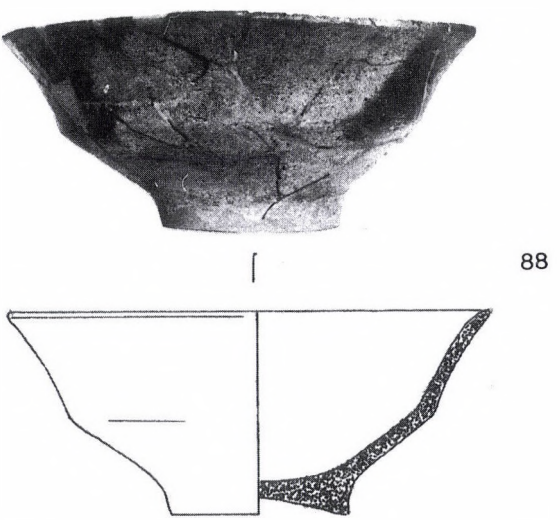

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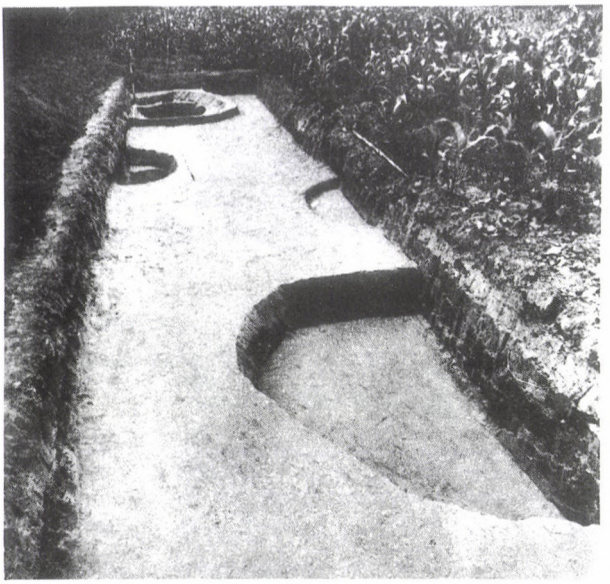
Pl. 22. Zalaszentbalázs-Pusztatető. 87-88: Feature 1.



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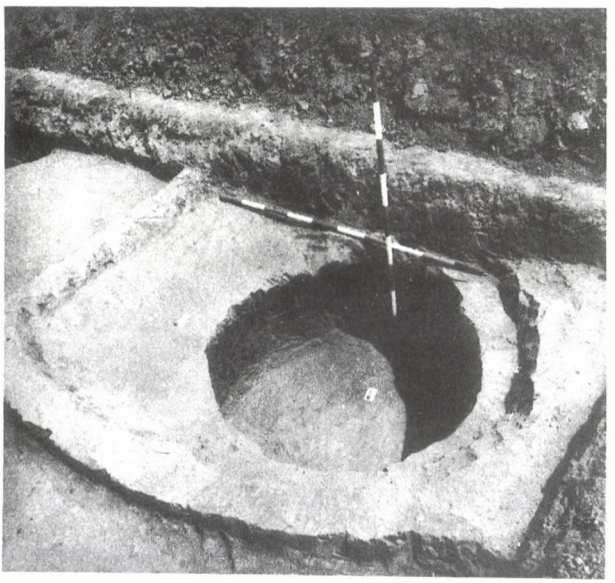

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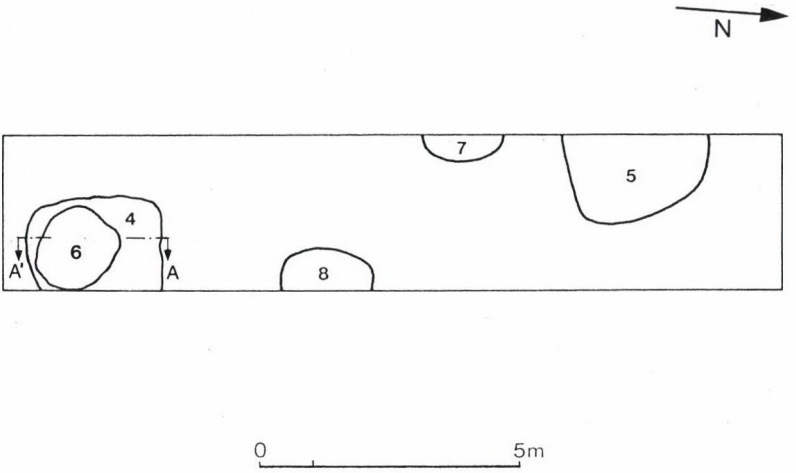
Pl. 23. Zalaszentbalázs-Pusztatető. 89-90: Features.



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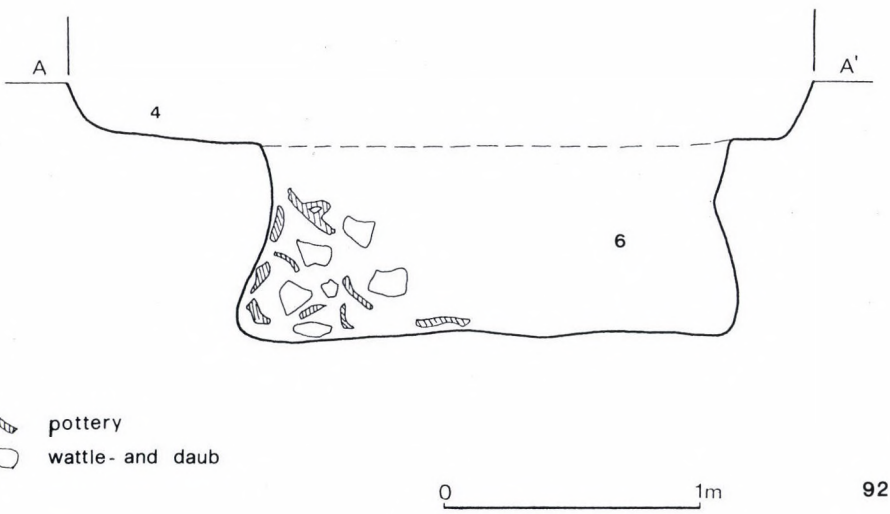

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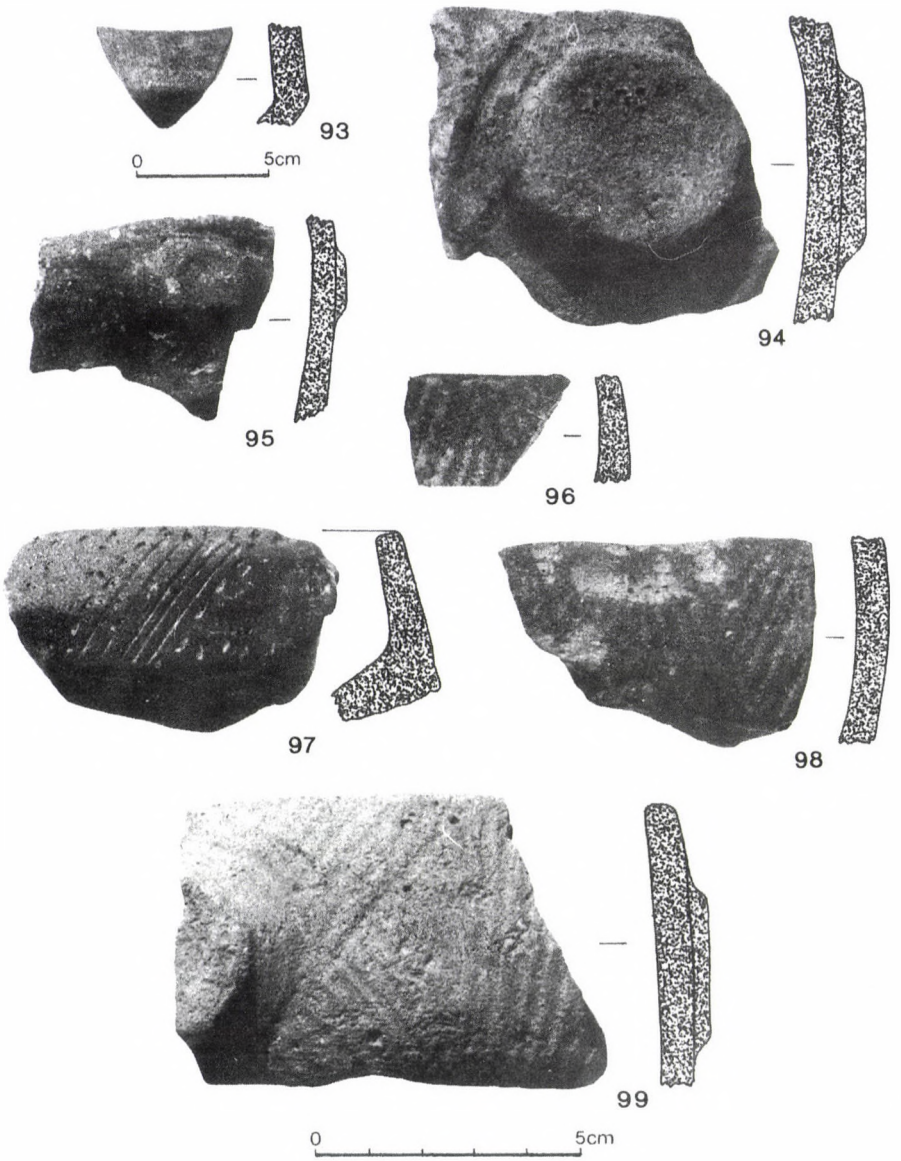
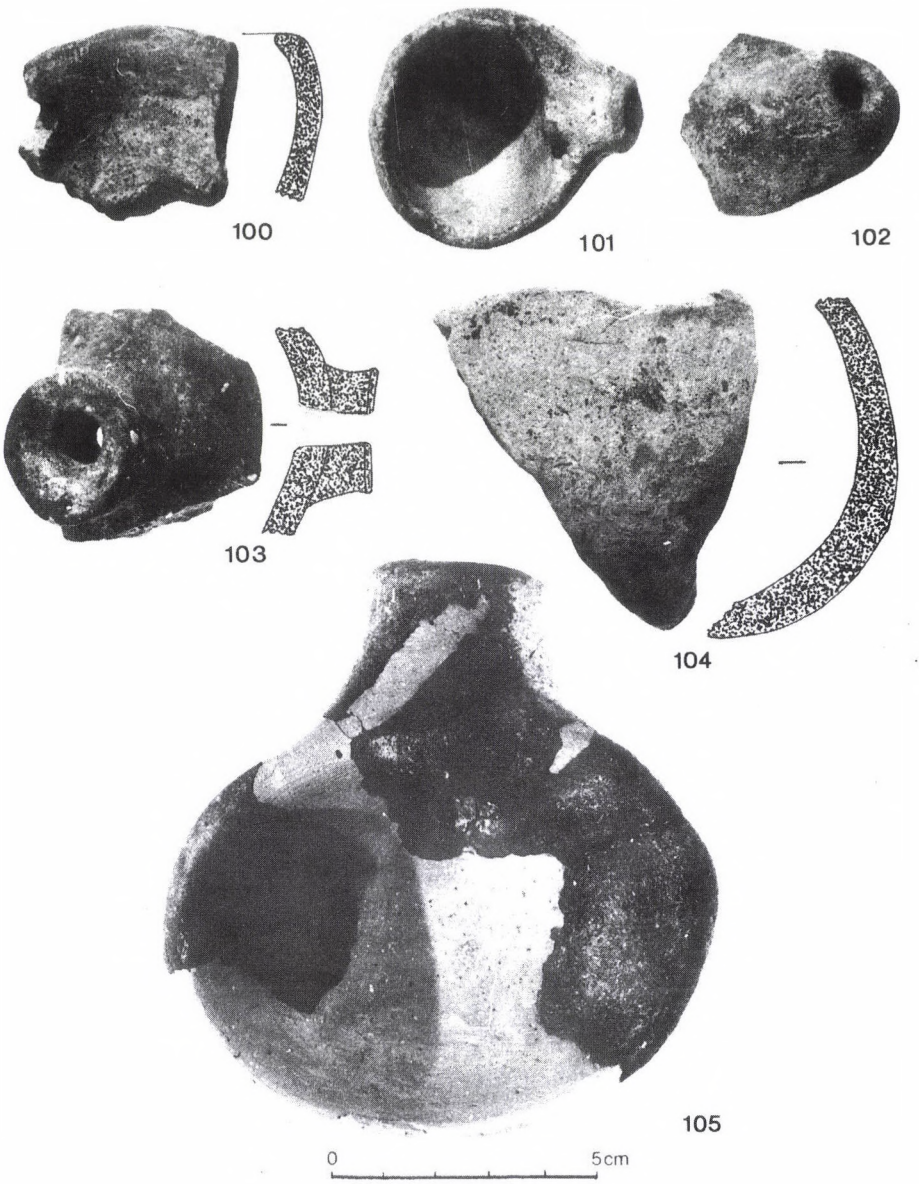
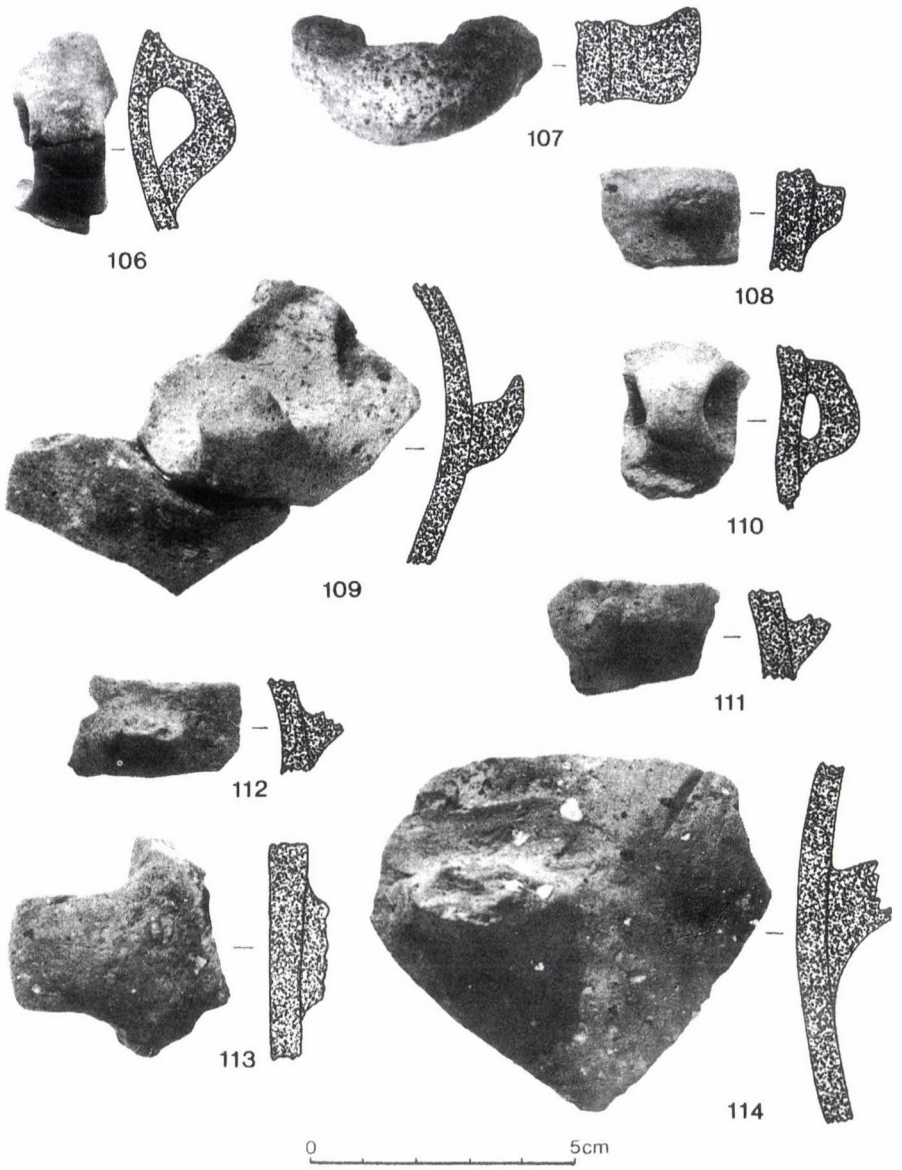
Pl. 24. Zalaszentbalázs-Pusztatető. 91-92: Features.



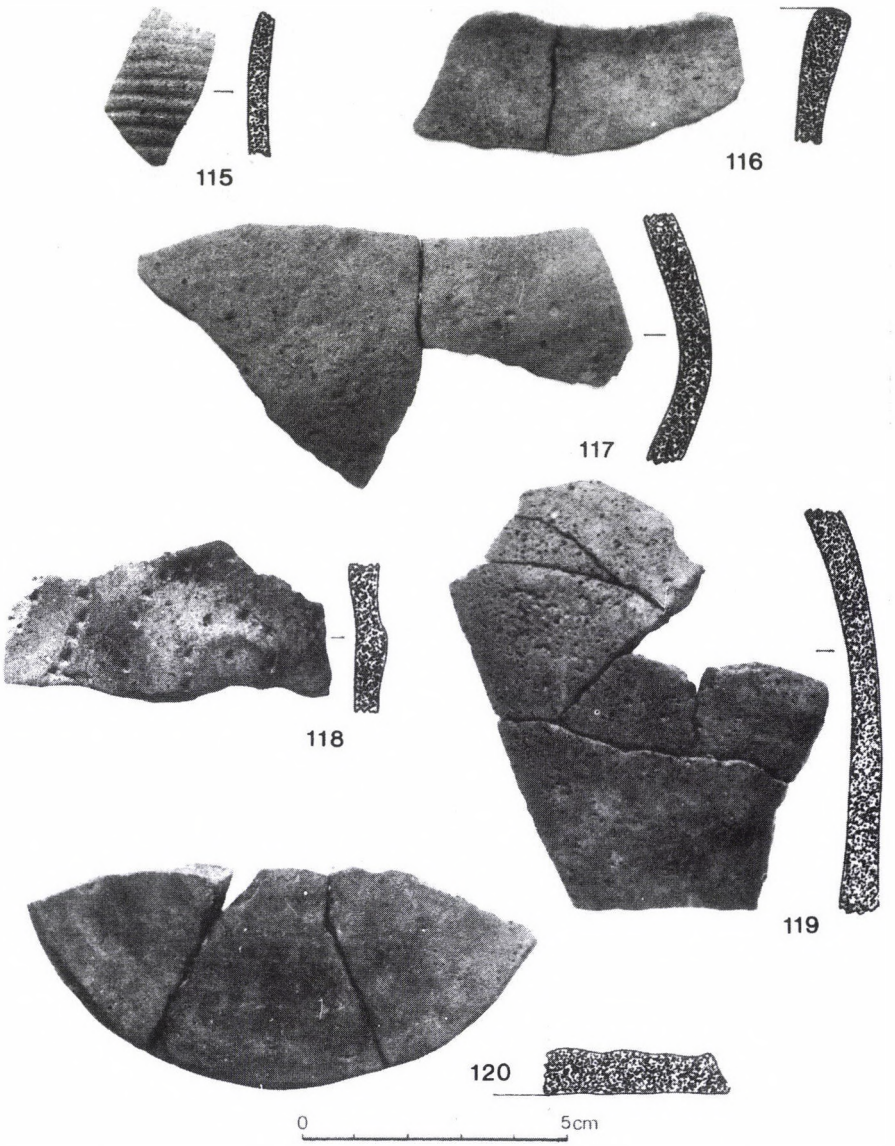
Pl. 25. Zalaszentbalázs-Pusztatető. 93-99: Feature 6.



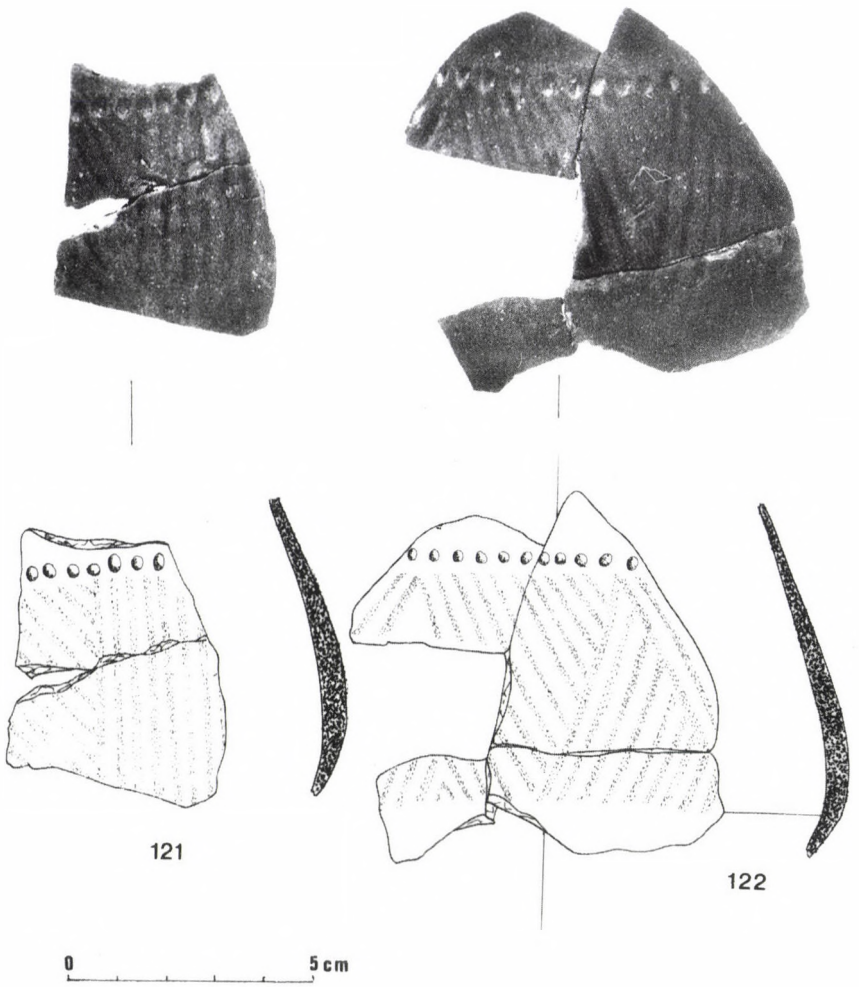
Pl. 26. Zalaszentbalázs-Pusztatető. 100-105: Feature 6.



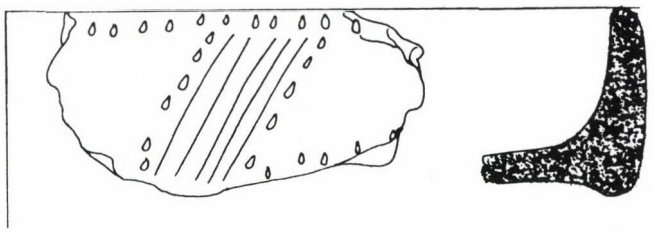
Pl. 27. Zalaszentbalázs-Pusztatető. 106-114: Feature 6.



Pl. 28. Zalaszentbalázs-Pusztatető. 115-120: Feature 6.



Pl. 29. Zalaszentbalázs-Pusztatető. 121-122: Feature 6.



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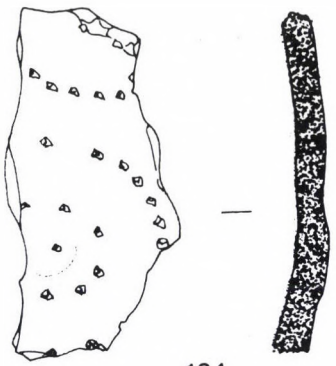

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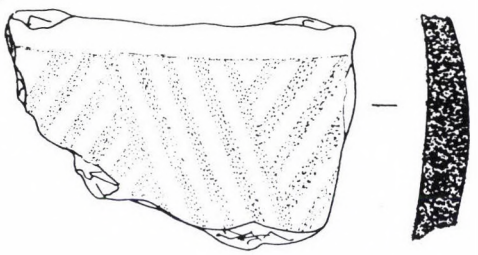
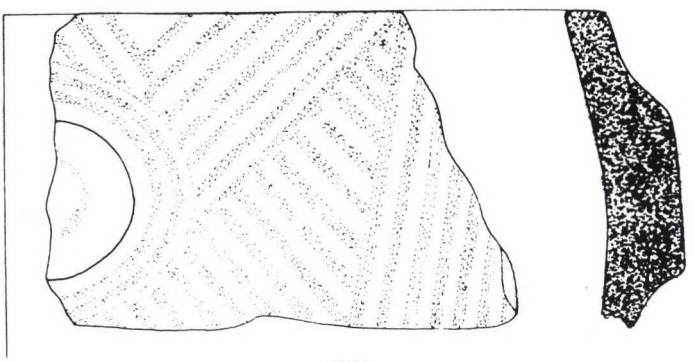
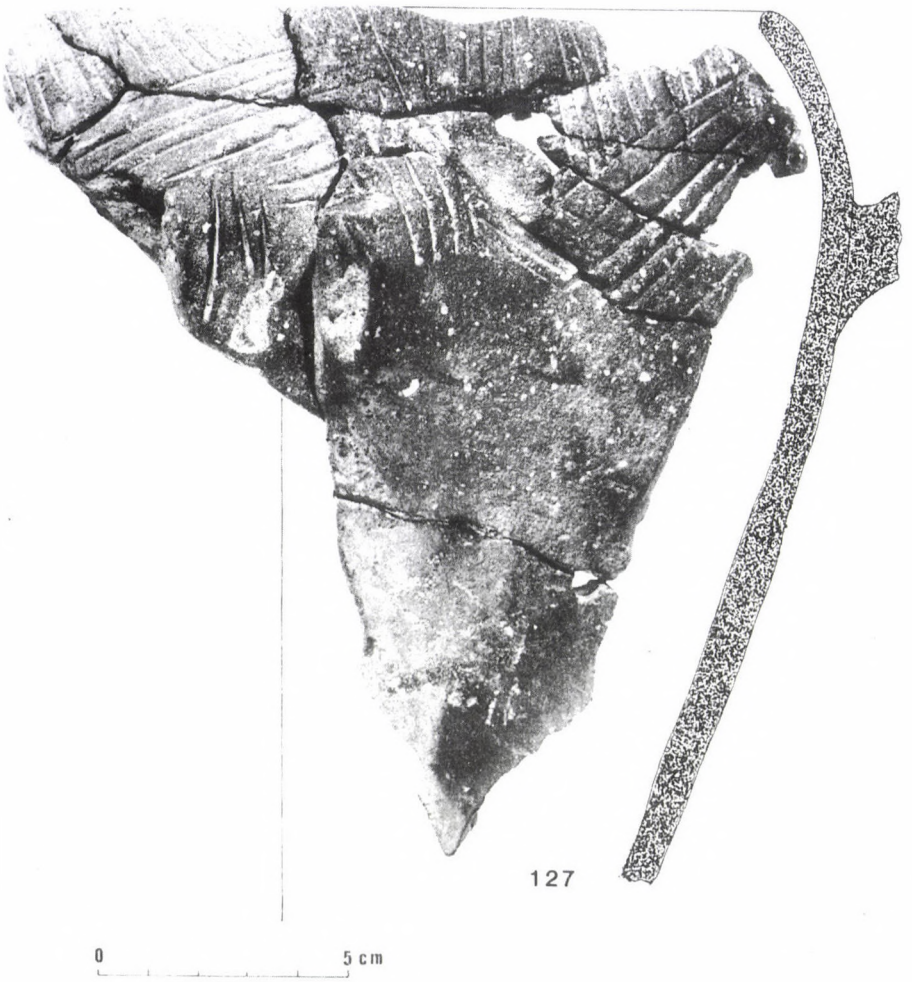


125

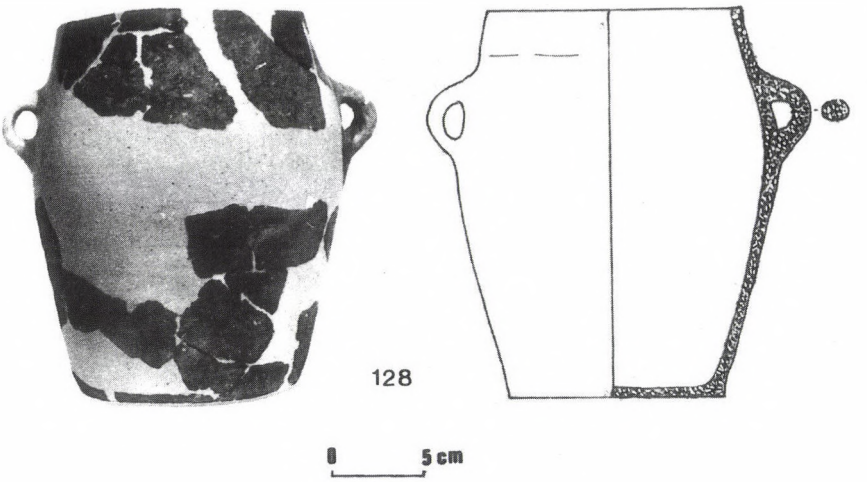


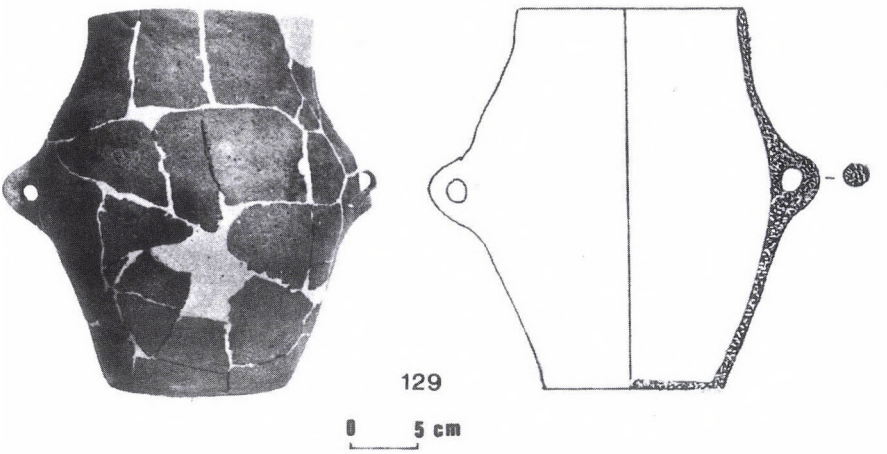
126

Pl. 30. Zalaszentbalázs-Pusztatető. 123-126: Feature 6.



Pl. 31. Zalaszentbalázs-Pusztatető. 127: Feature 6.

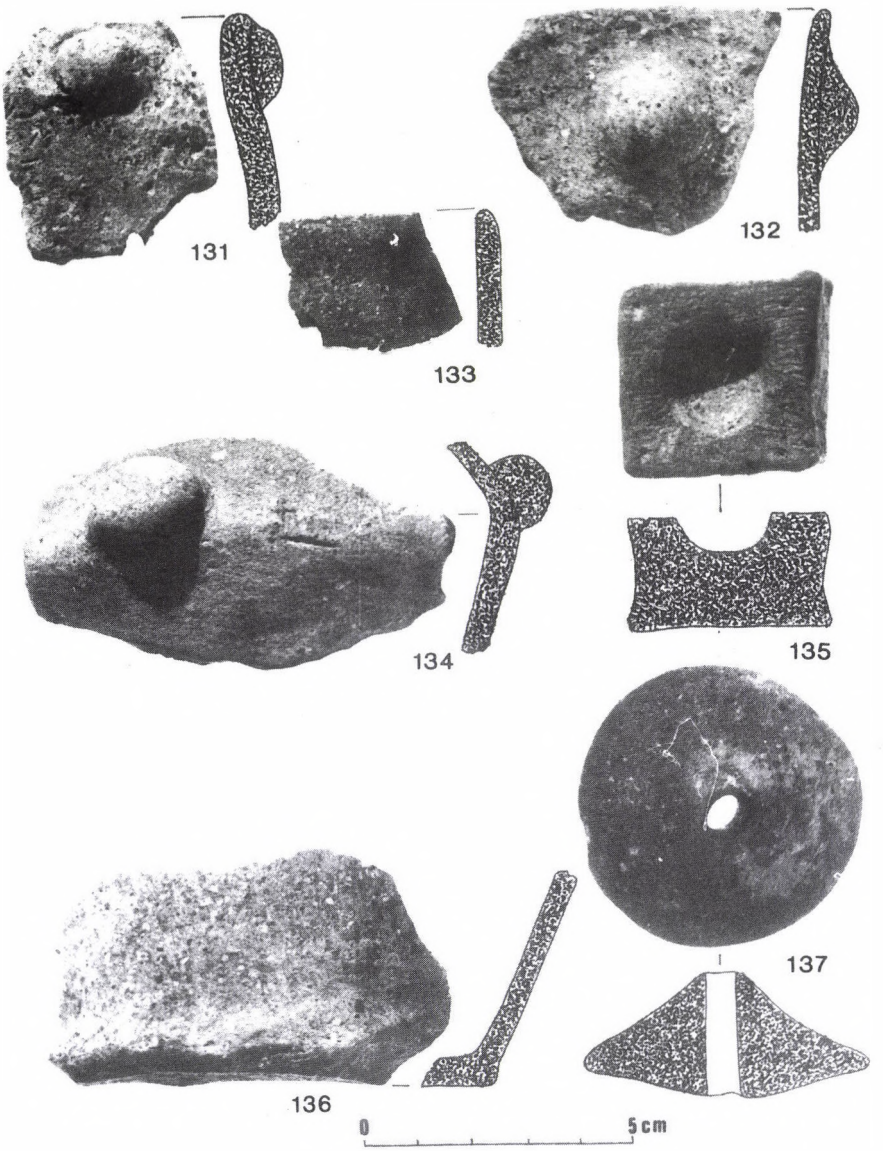




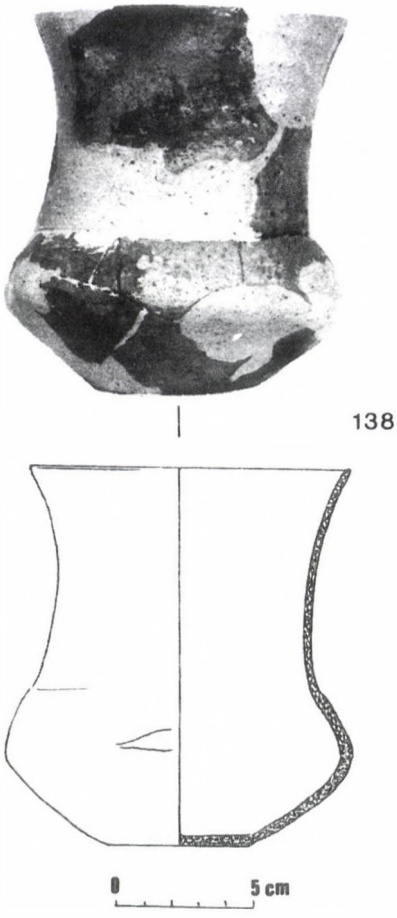
Pl. 32. Zalaszentbalázs-Pusztatető. 128-129: Feature 6.



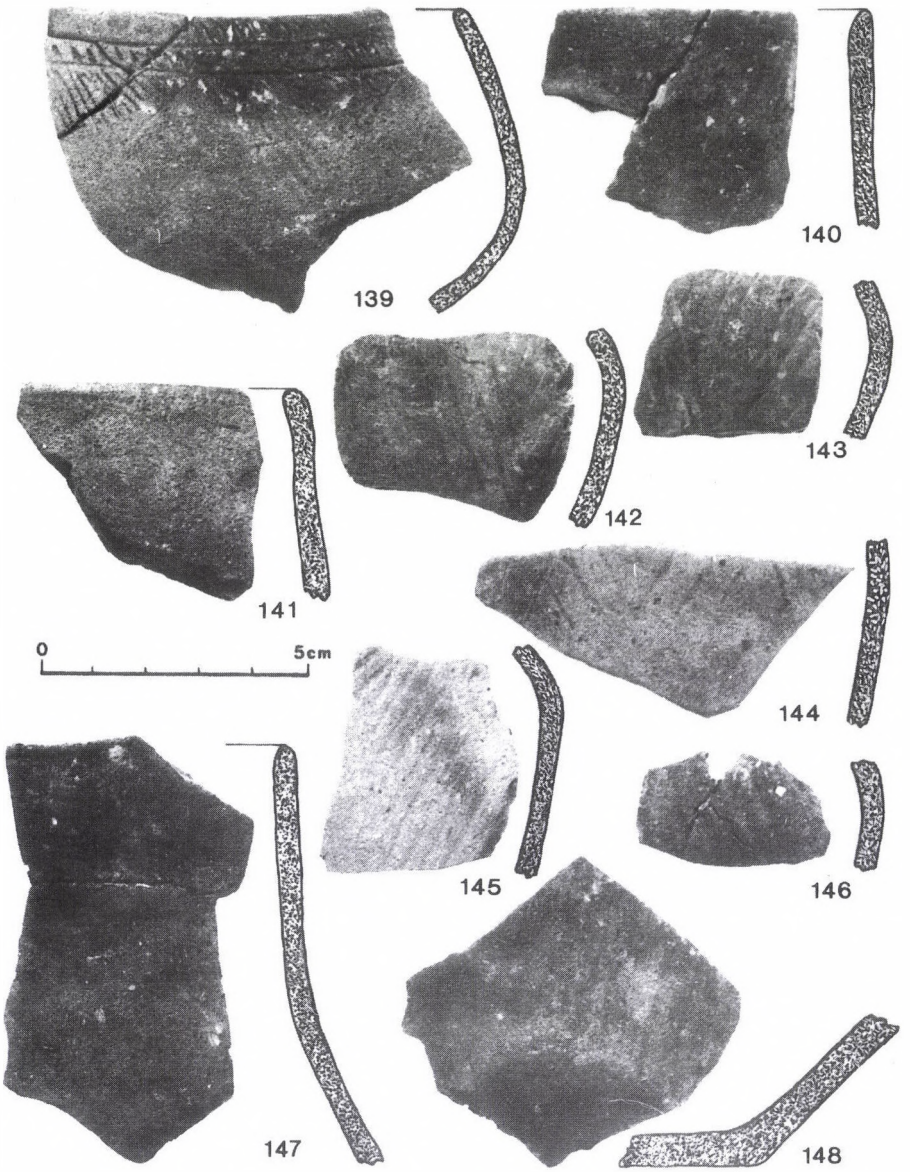
Pl. 33. Hahót-Szartóri I. and II. Map of the site.



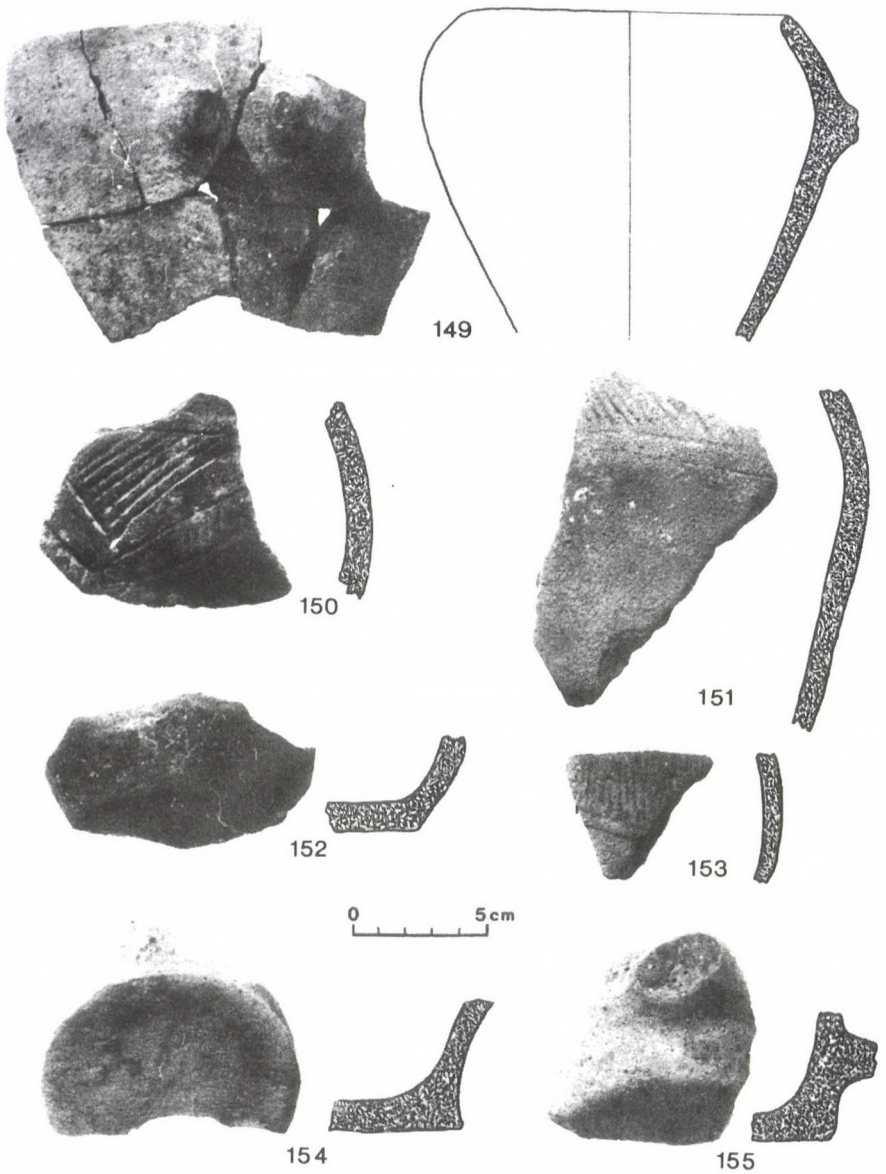
Pl. 34. Hahót-Szartóri I. 131-137: Feature C4/6.



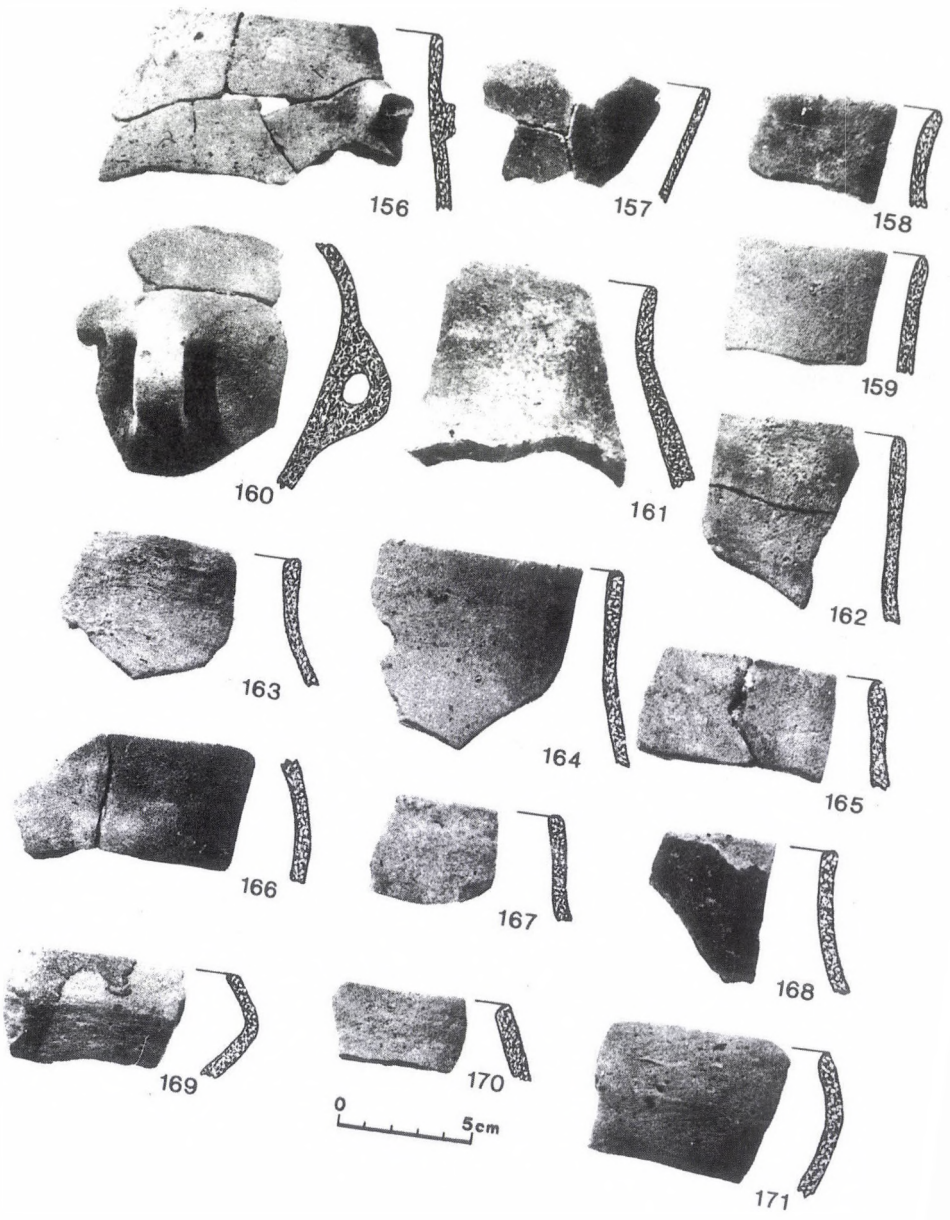
Pl. 35. Hahót-Szartóri I. 138: Feature C4/6.



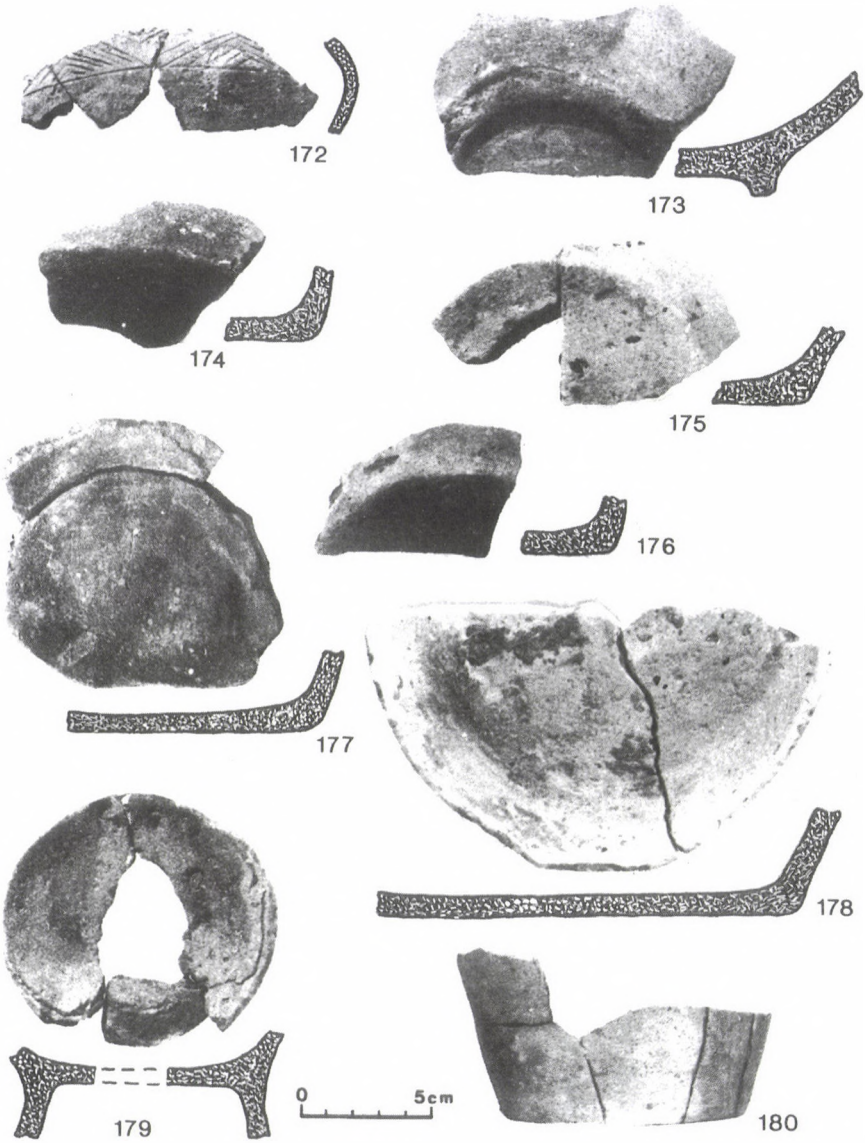
Pl. 36. Hahót-Szartóri II. 139-148: Feature 4.



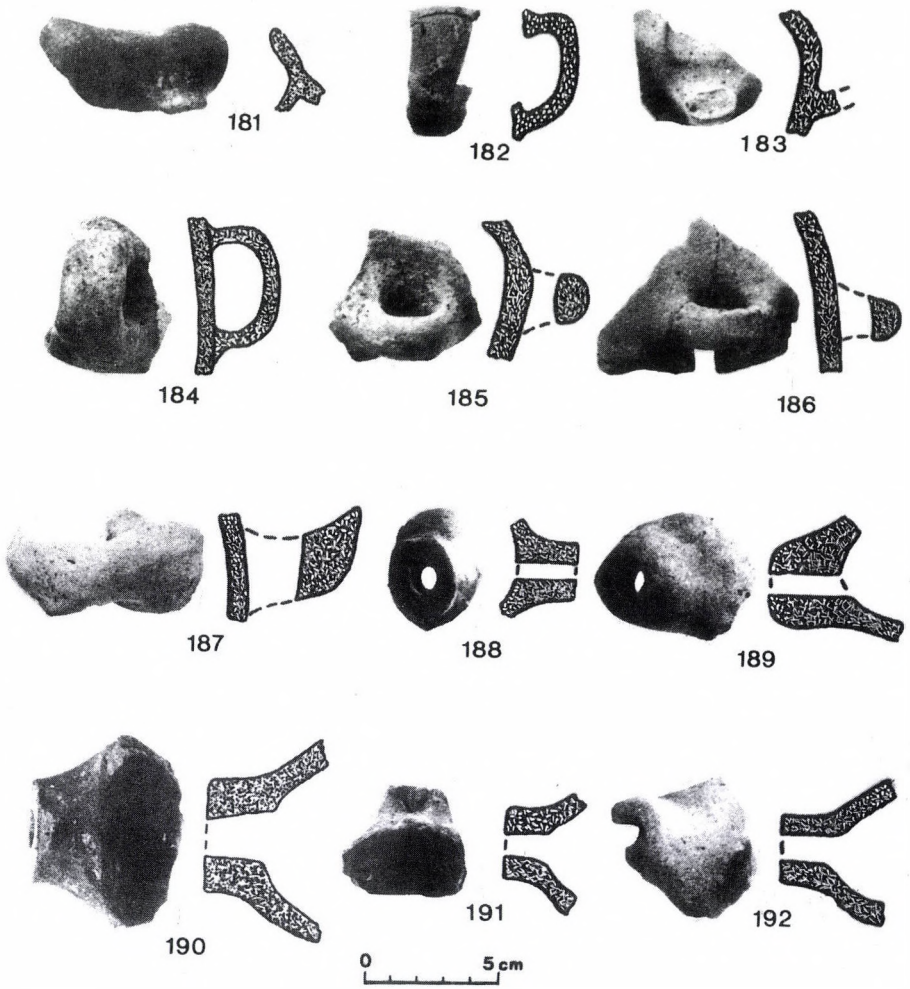
Pl. 37. Hahót-Szartóri II. 149-155: Feature 4.



Pl. 38. Hahót-Szartóri II. 156-171: Feature 3.



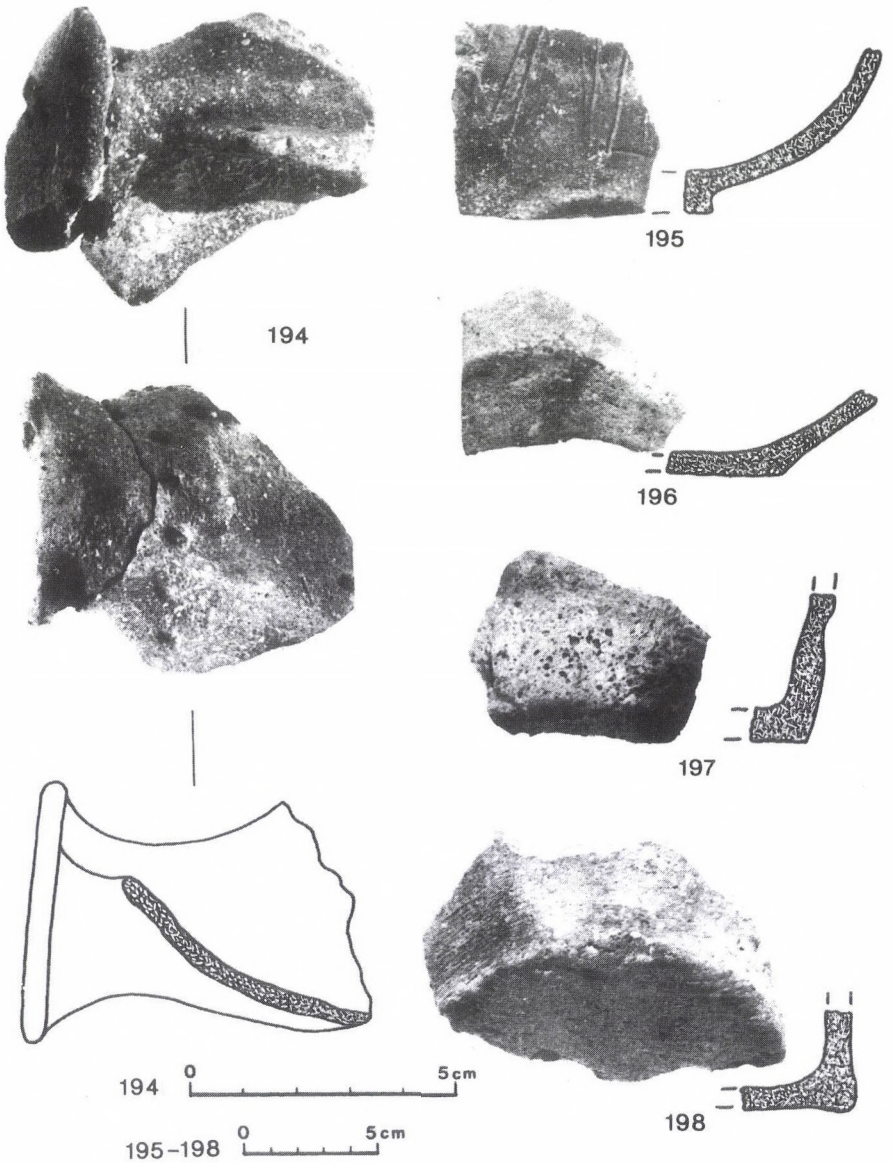
Pl. 39. Hahót-Szartóri II. 172-180: Feature 4.



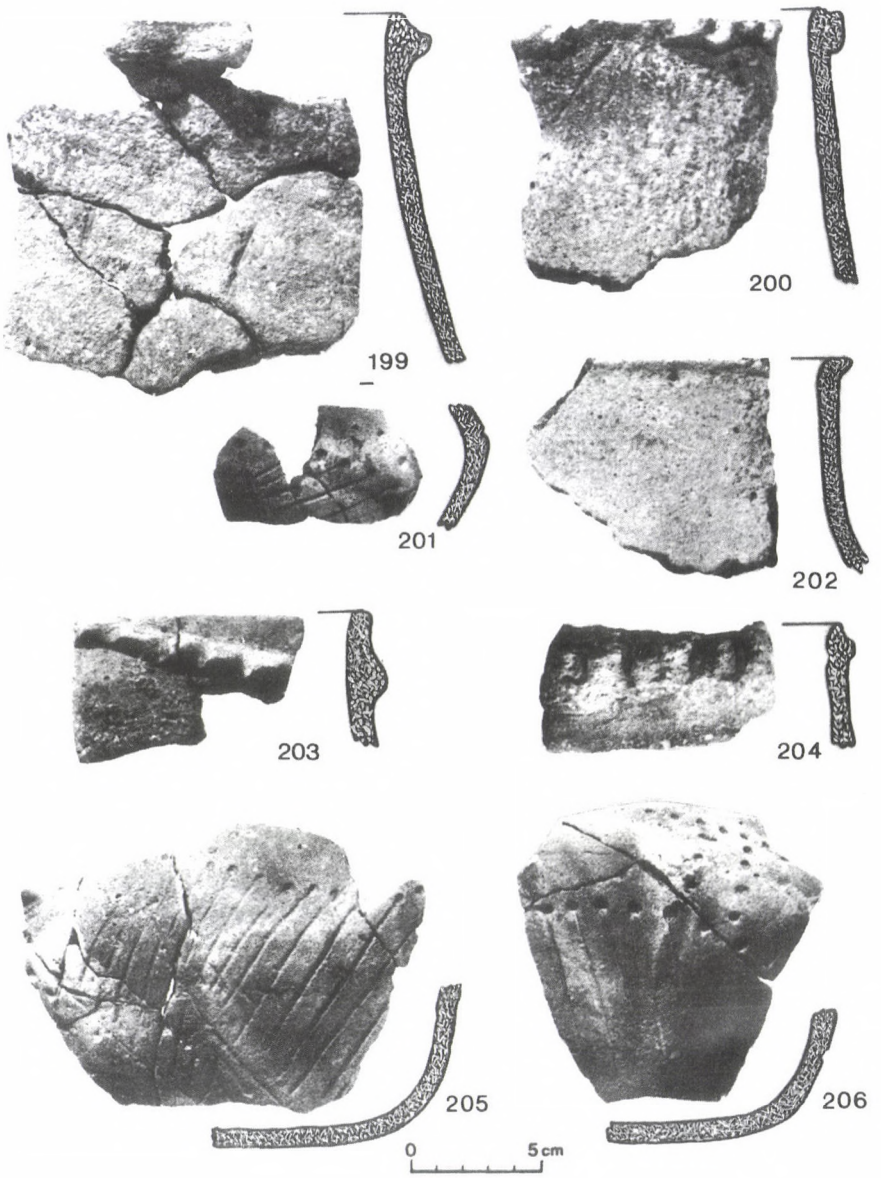
Pl. 40. Hahót-Szartóri II. 181-192: Feature 4.



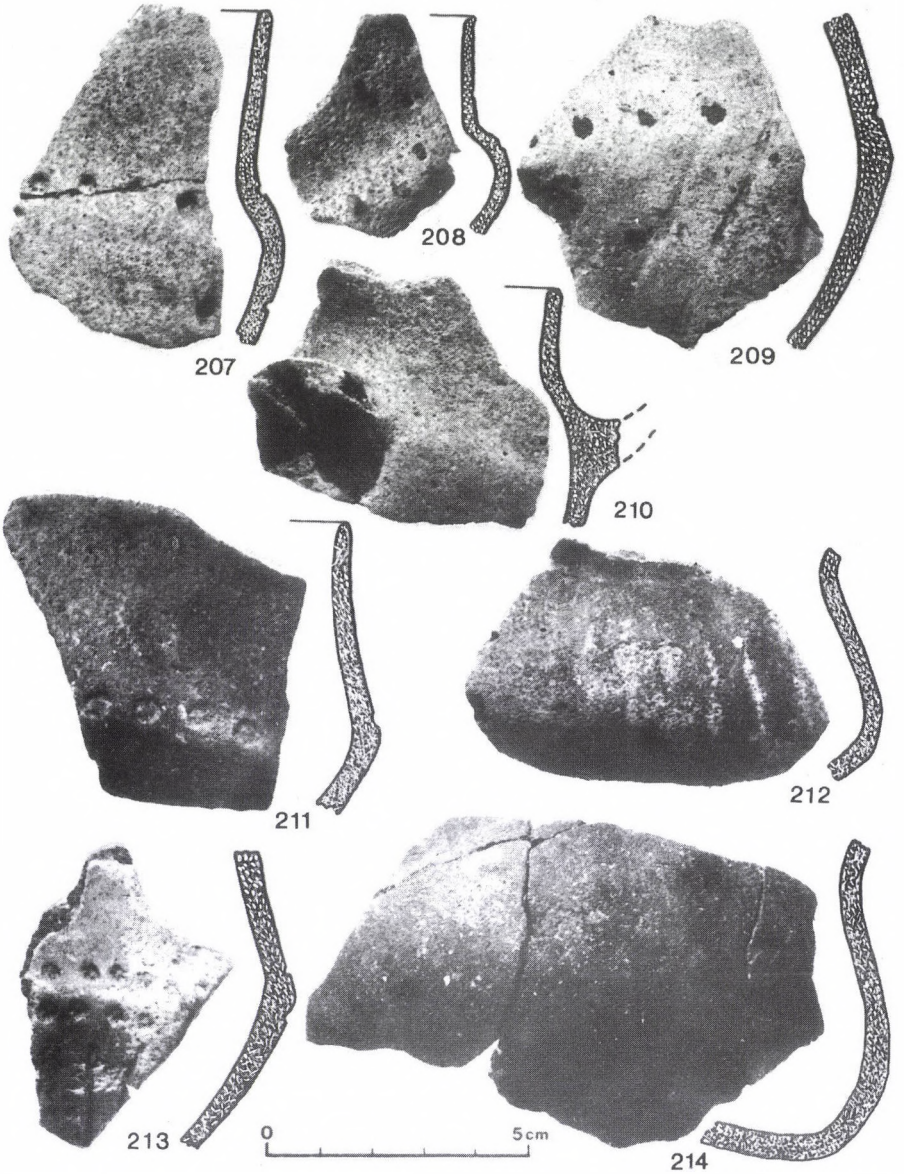
Pl. 41. Hahót-Szartóri I. 193: Feature D4/8.



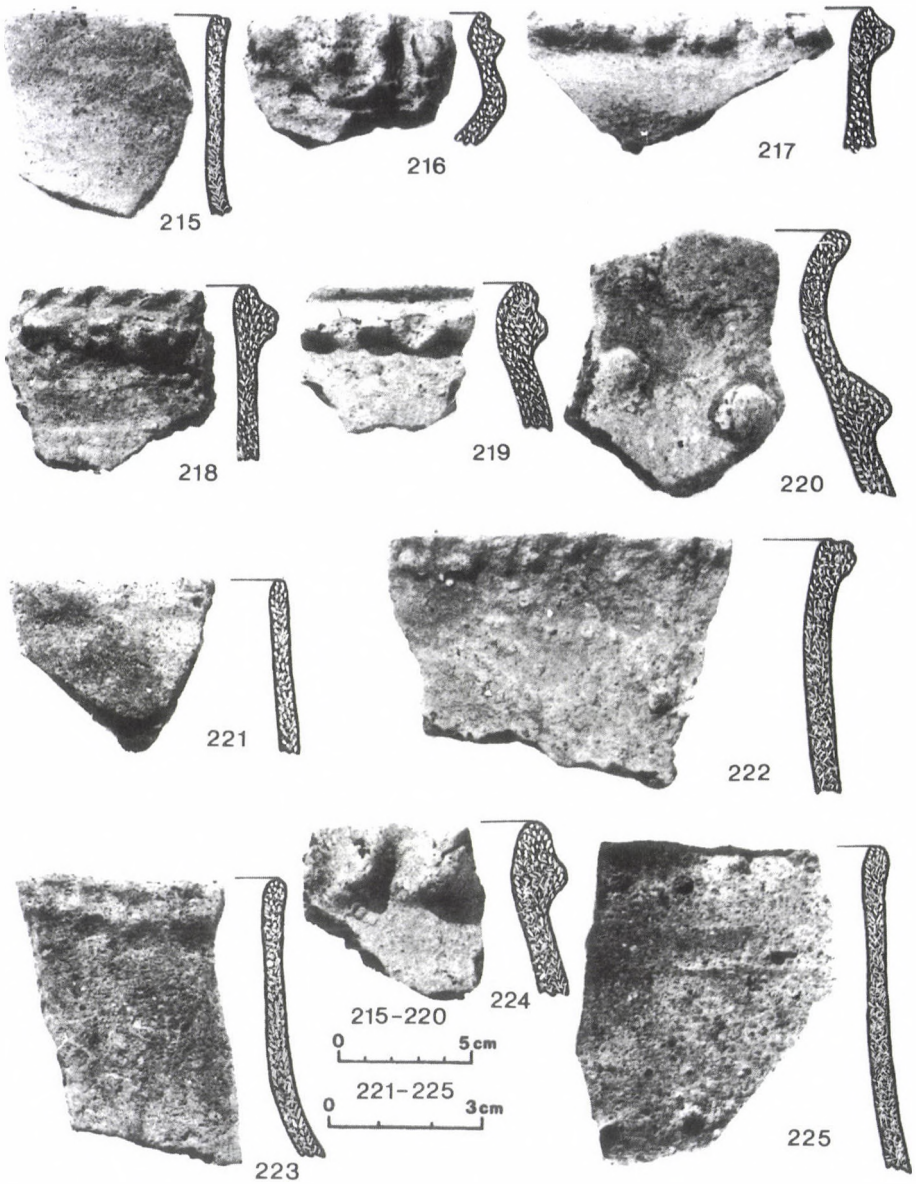
Pl. 42. Hahót-Szartóri I. 194-198: Feature D4/7.



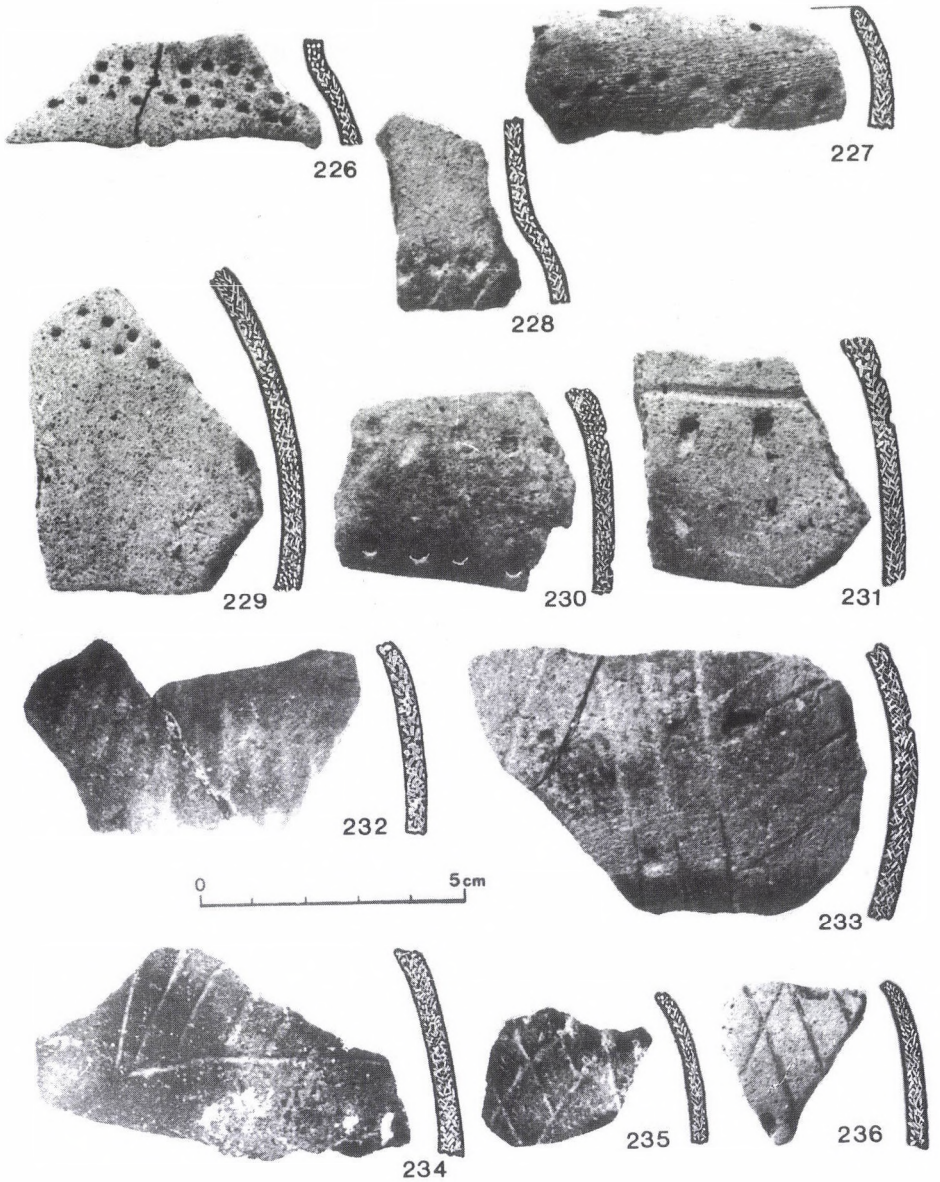
Pl. 43. Hahót-Szartóri I. 199-206: Feature D4/7.



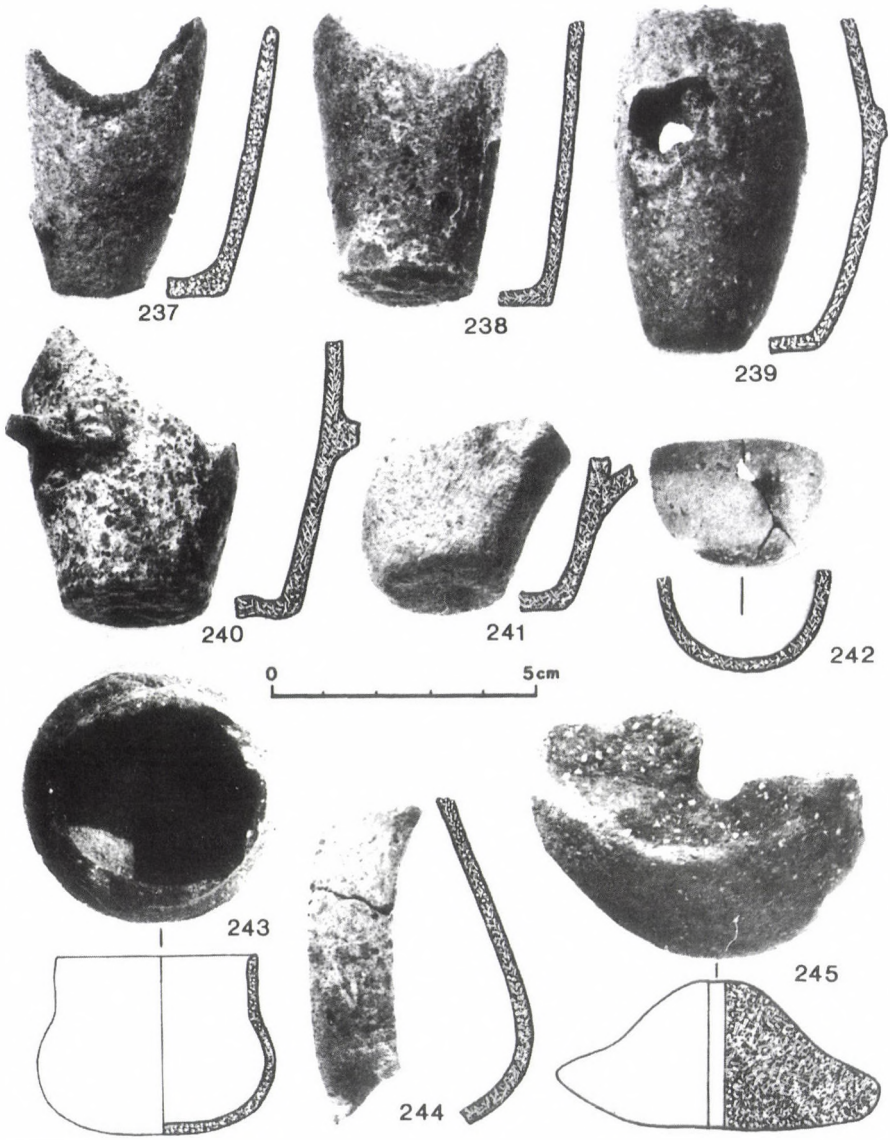
Pl. 44. Hahót-Szartóri I. 207-214: Feature D4/7.



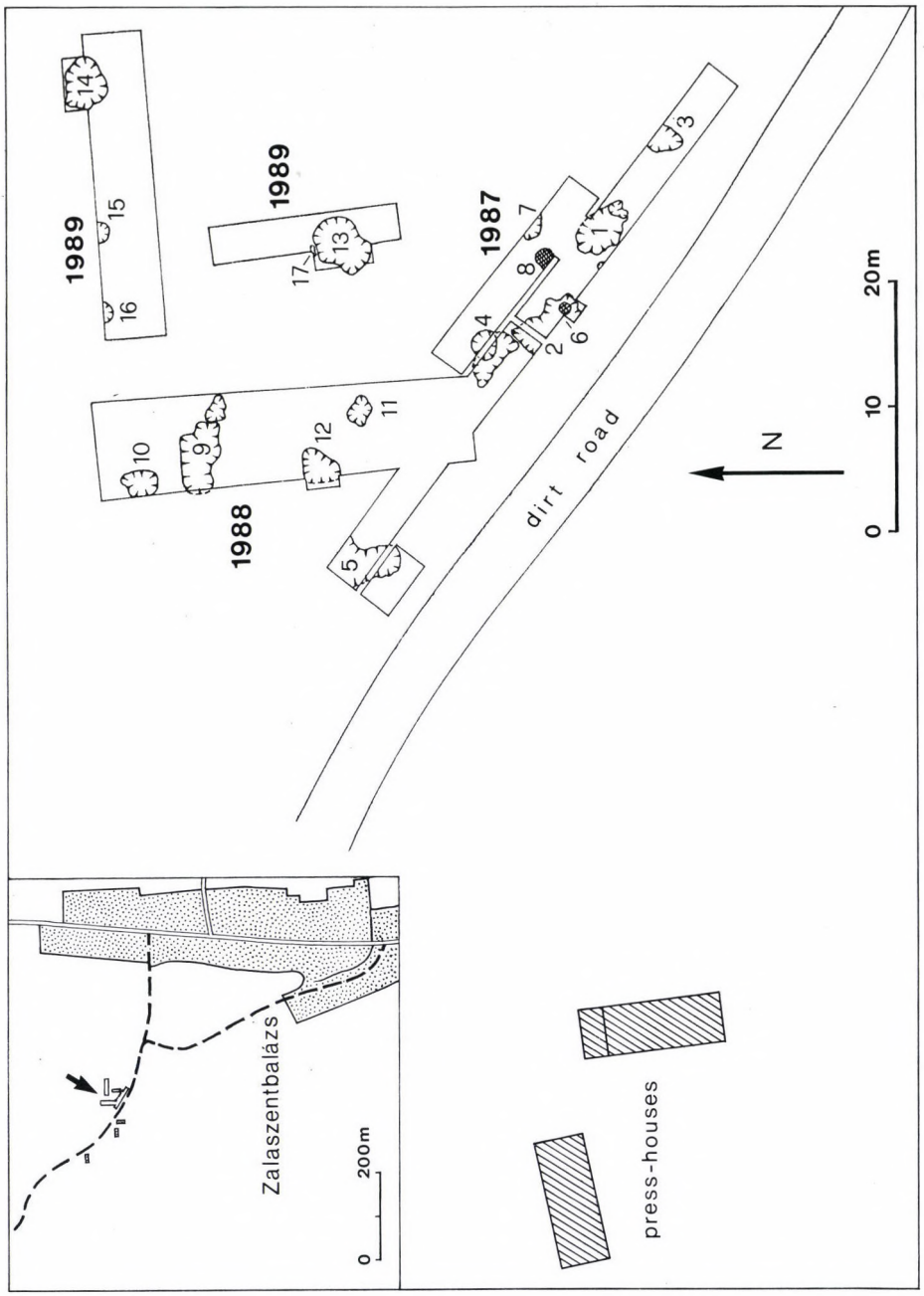
Pl. 45. Hahót-Szartóri I. 215-225: Feature D4/7.



Pl. 46. Hahót-Szartóri I. 226-236: Feature D4/7.



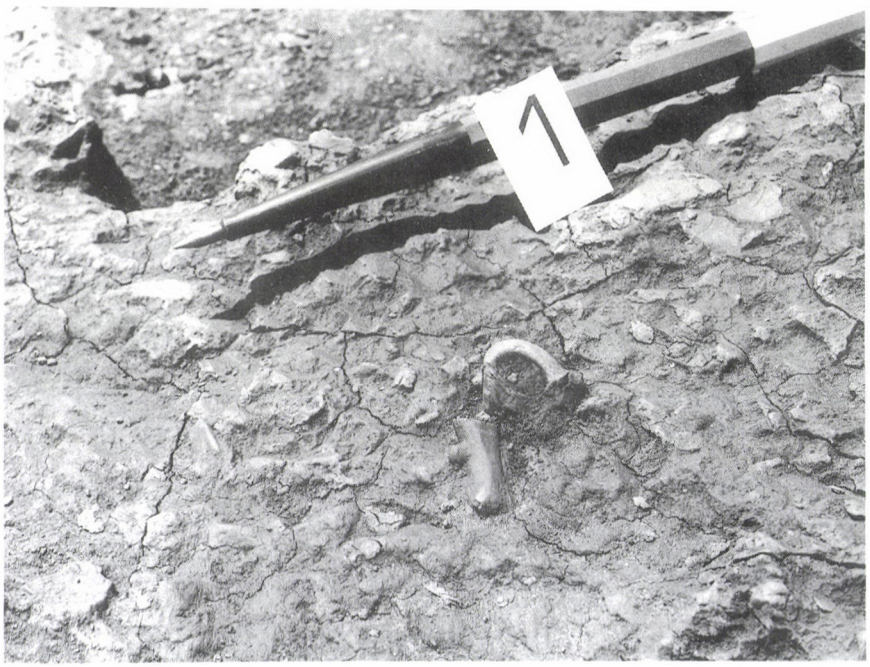
Pl. 47. Hahót-Szartóri I. 237-245: Feature D4/7.



Pl. 48. Zalaszentbalázs - Szőlőhegyi mező. Map of the excavations.

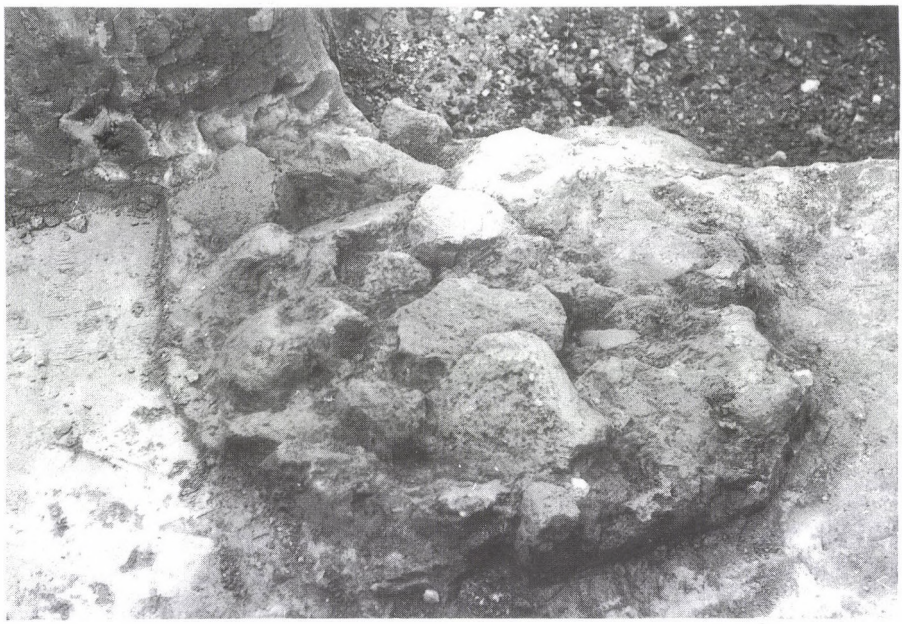


a

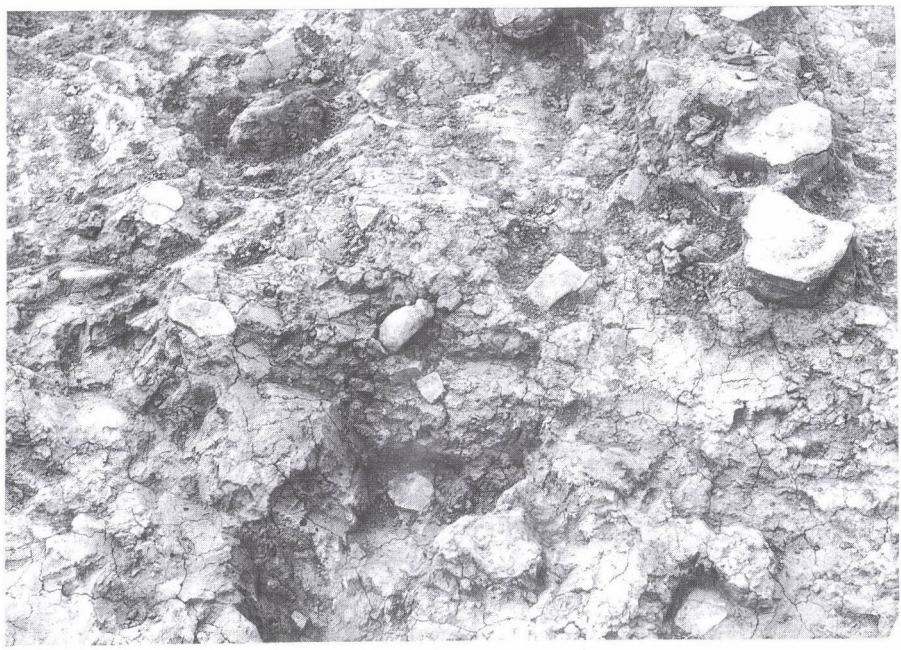


b

Pl. 49. Zalaszentbalázs - Szőlőhegyi mező. *a.*: Feature 14.; *b.*: Feature 9.

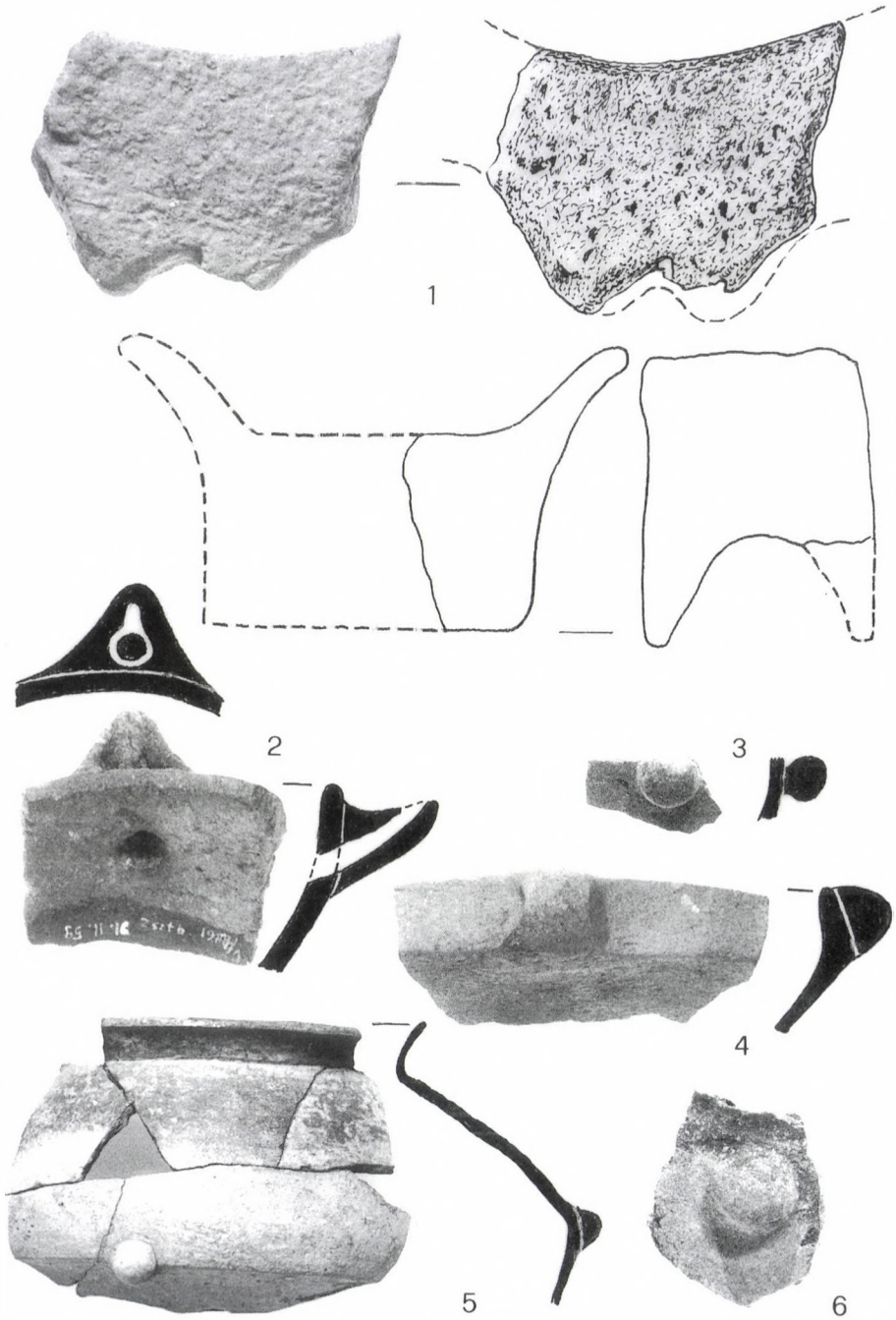


a

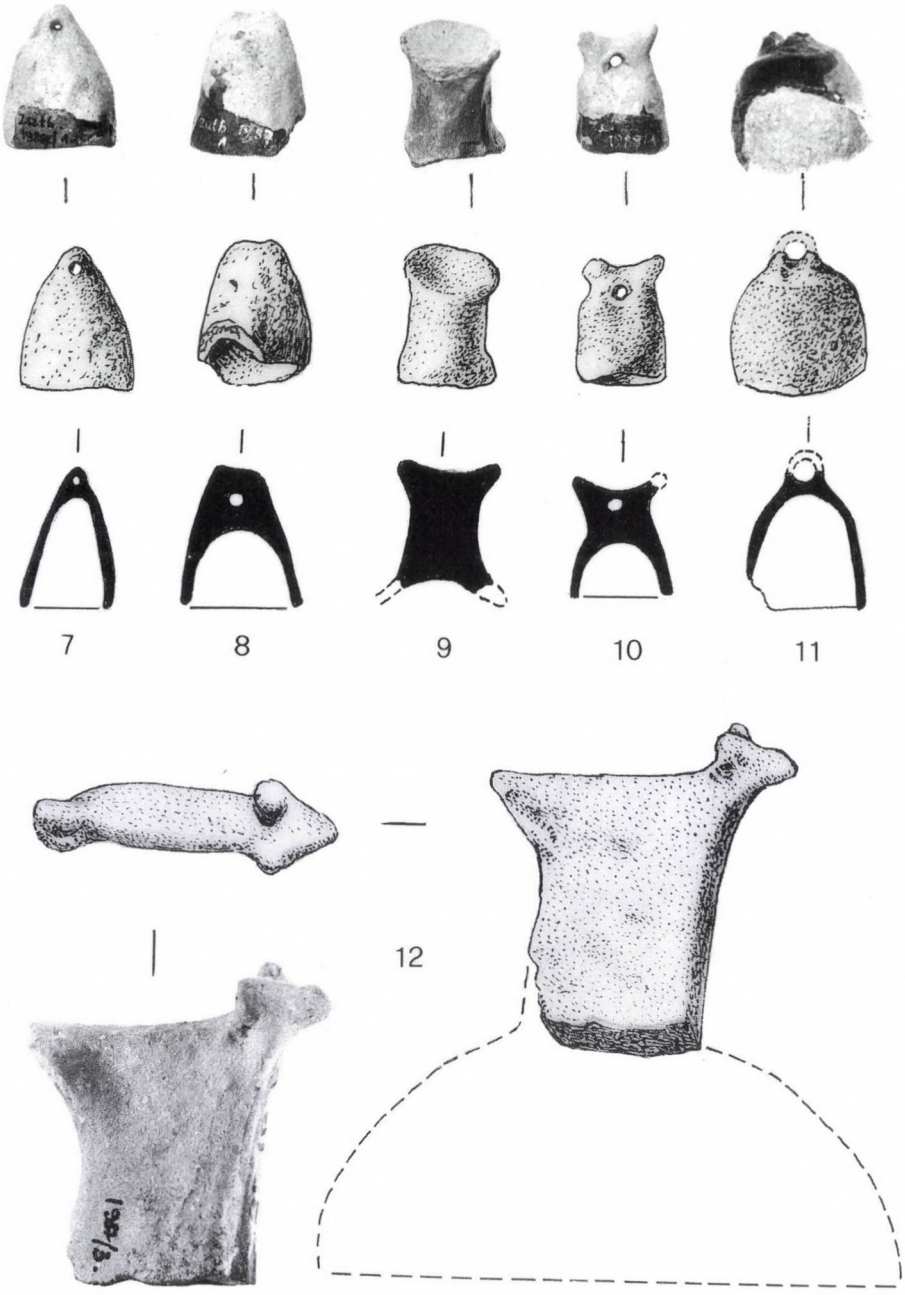


b

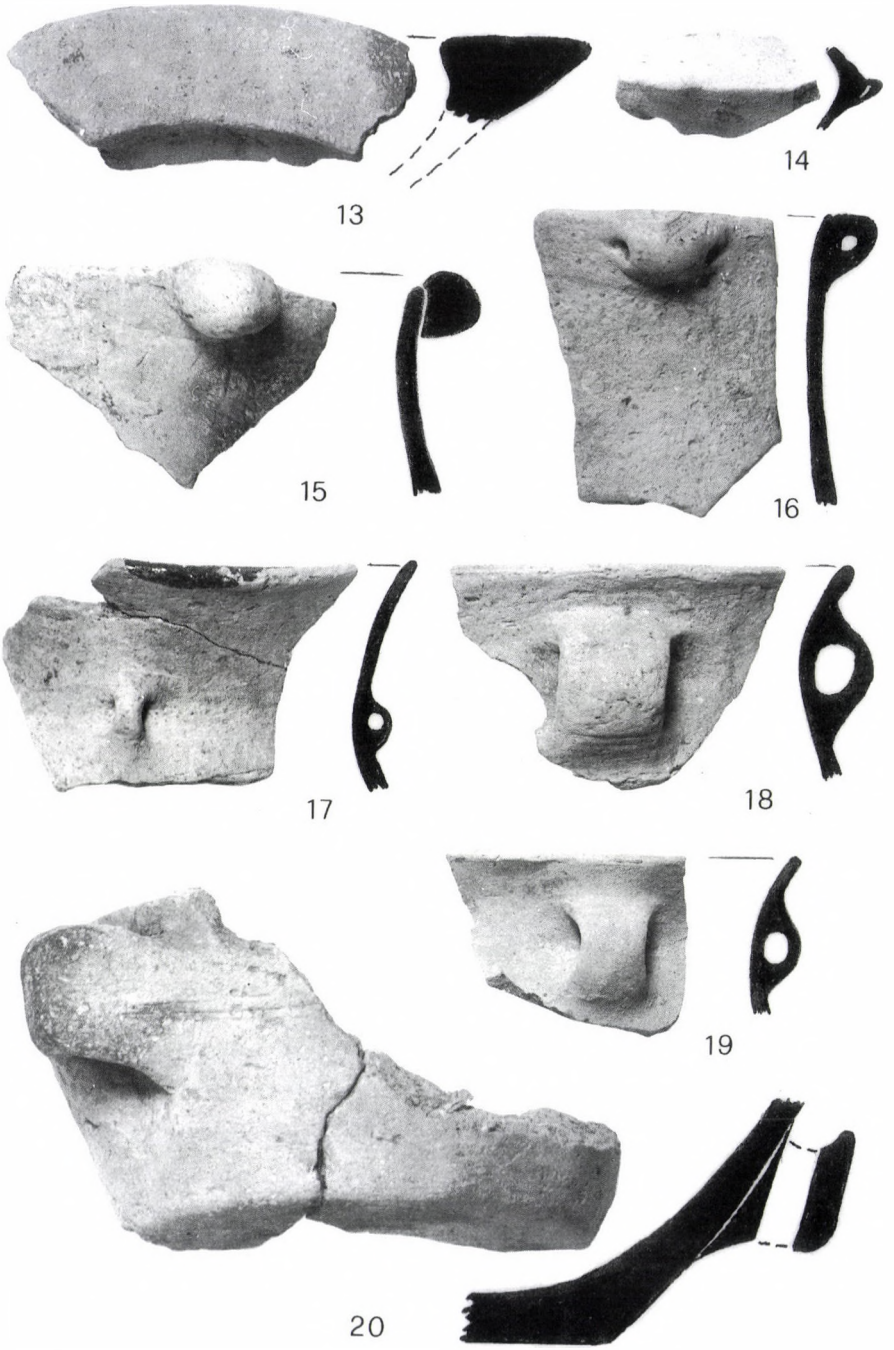
Pl. 50. Zalaszentbalázs - Szőlőhegyi mező. *a.*: Feature 6.; *b.*: Feature 1.



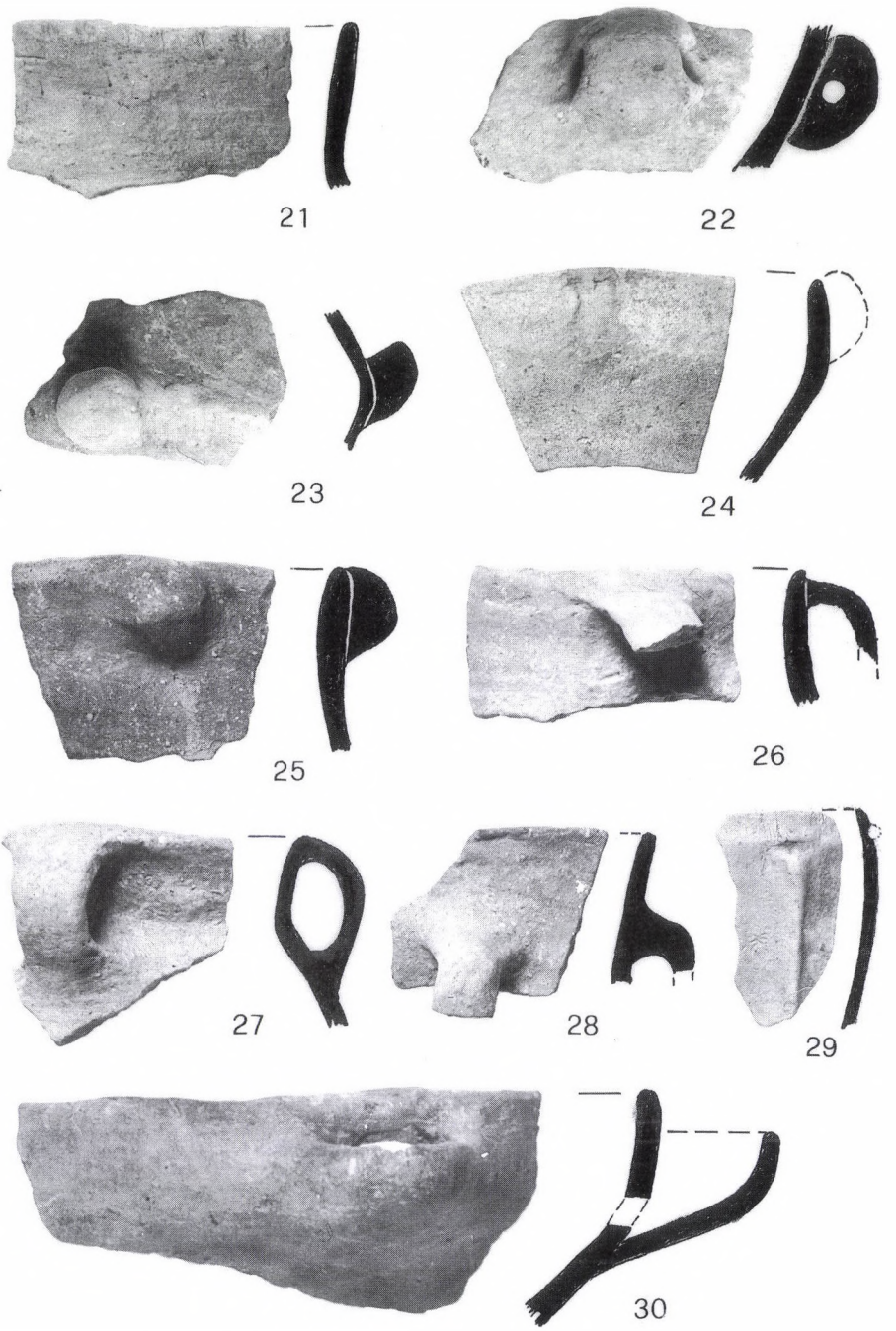
Pl. 51. Zalaszentbalázs - Szőlőhegyi mező. Feature 1. 1:2.



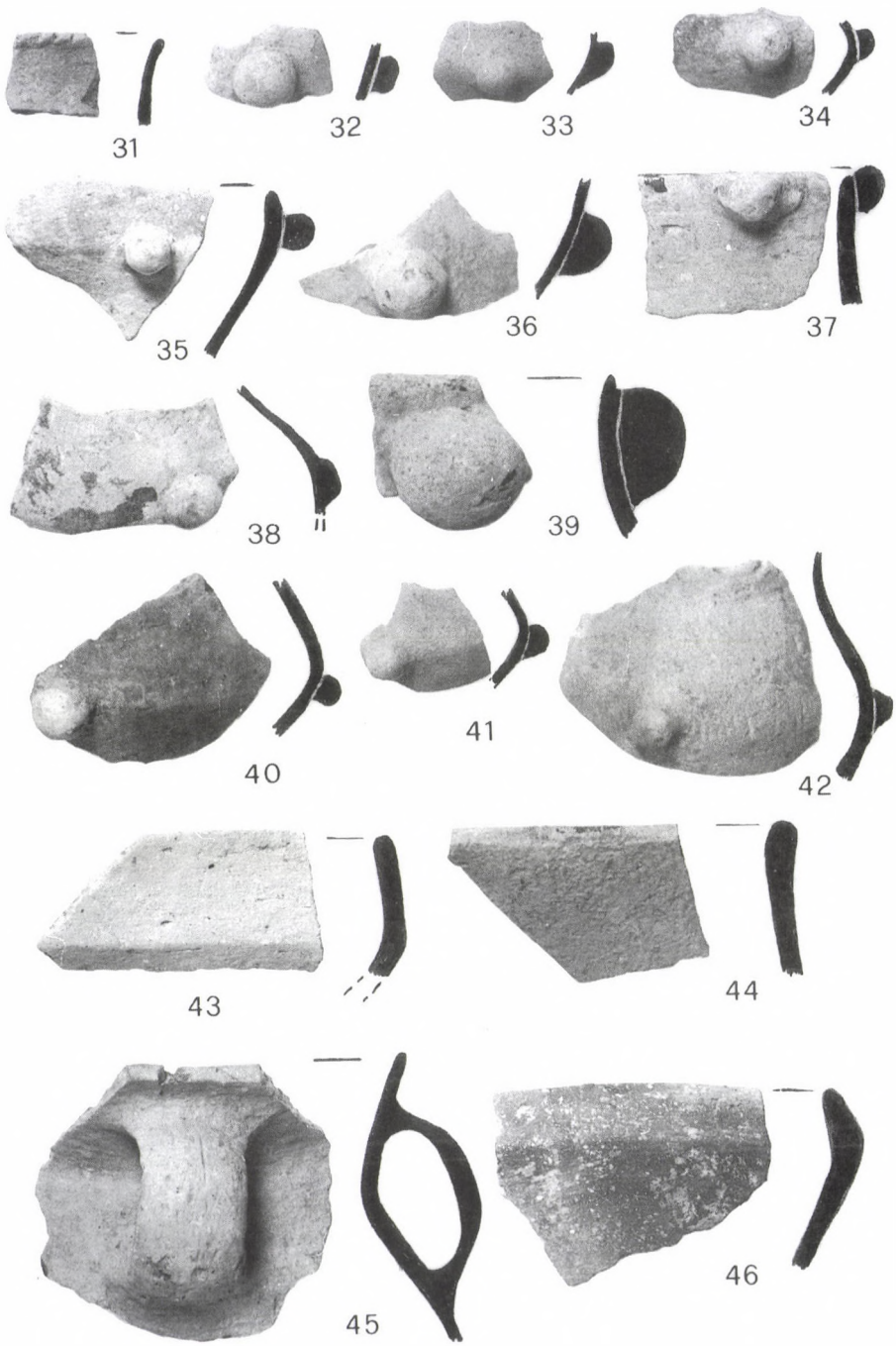
Pl. 52. Zalaszentbalázs - Szőlőhegyi mező. Feature 1 (7-11); Feature 3 (12). 1:2.



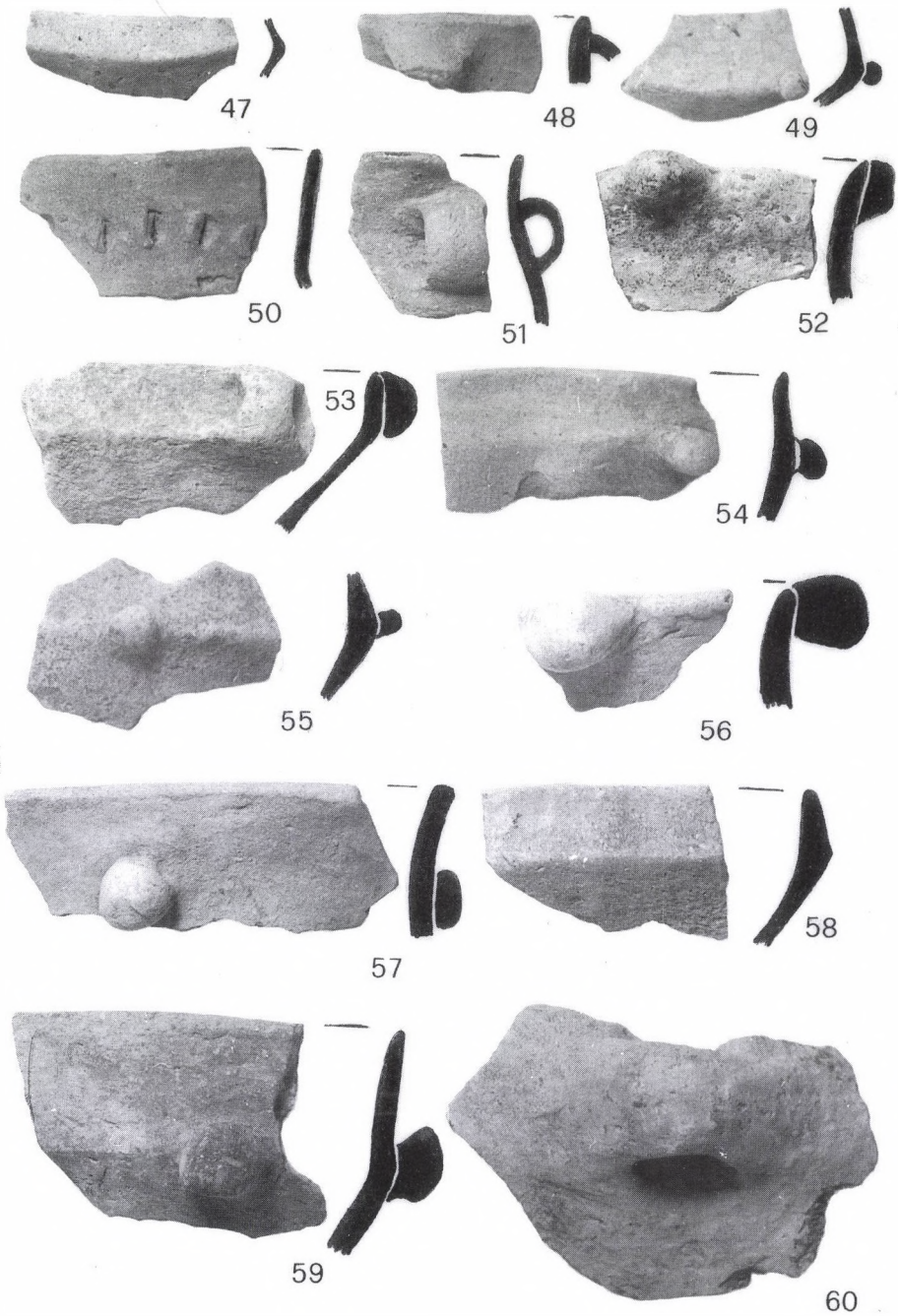
Pl. 53. Zalaszentbalázs - Szőlőhegyi mező. Feature 1. 1:2.



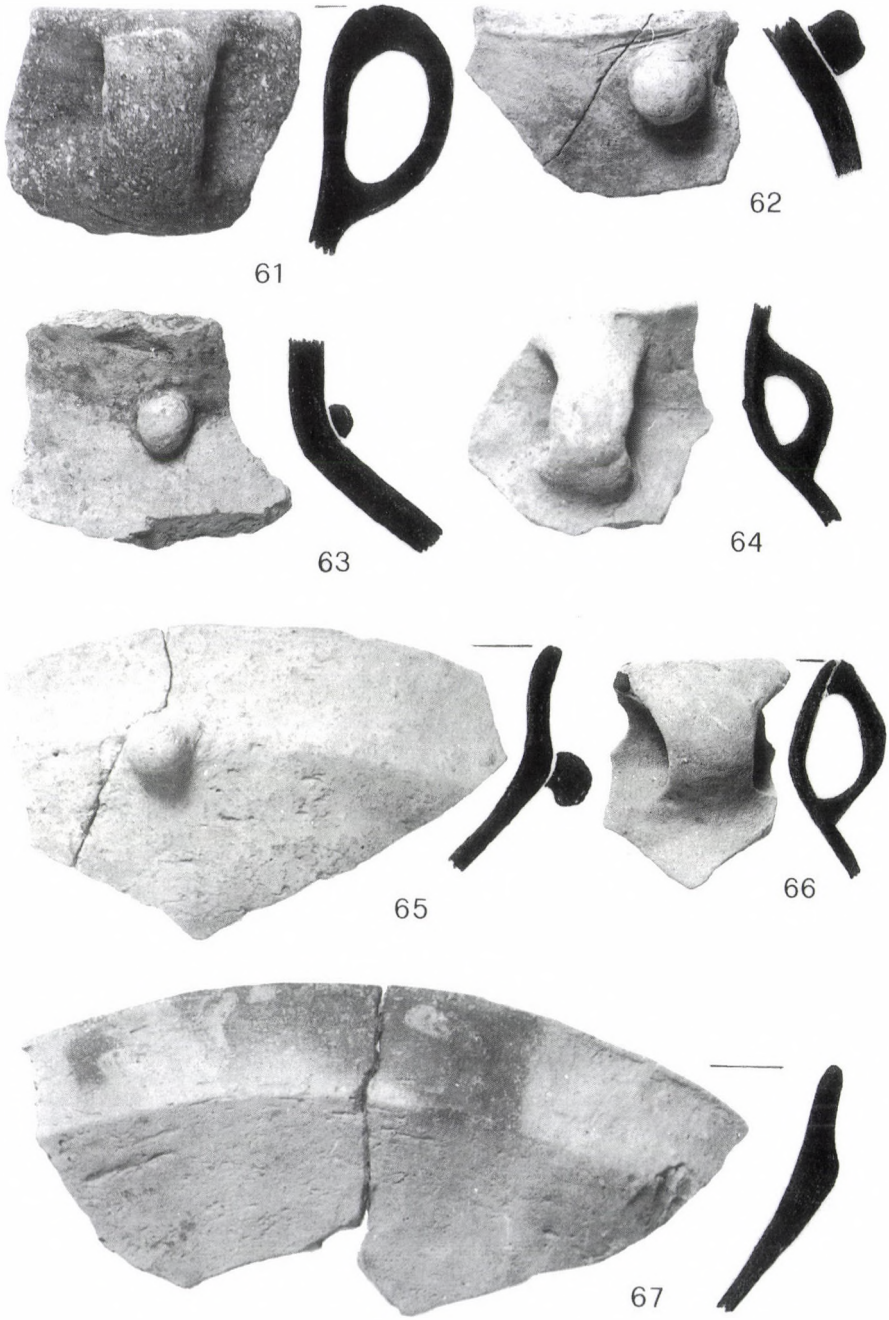
Pl. 54. Zalaszentbalázs - Szőlőhegyi mező. Feature 1. 1:2.



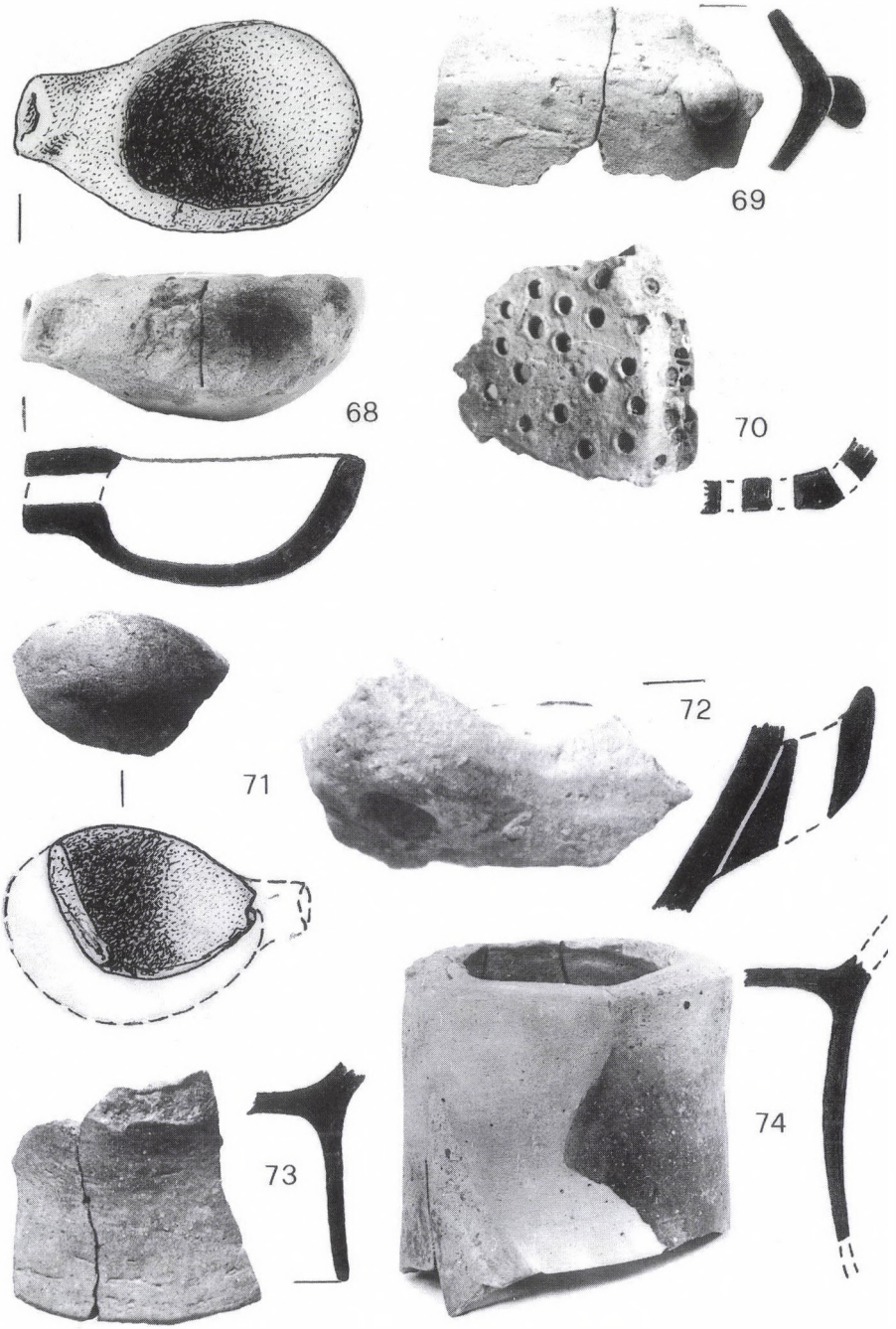
Pl. 55. Zalaszentbalázs - Szőlőhegyi mező. Feature 1. 1:2.



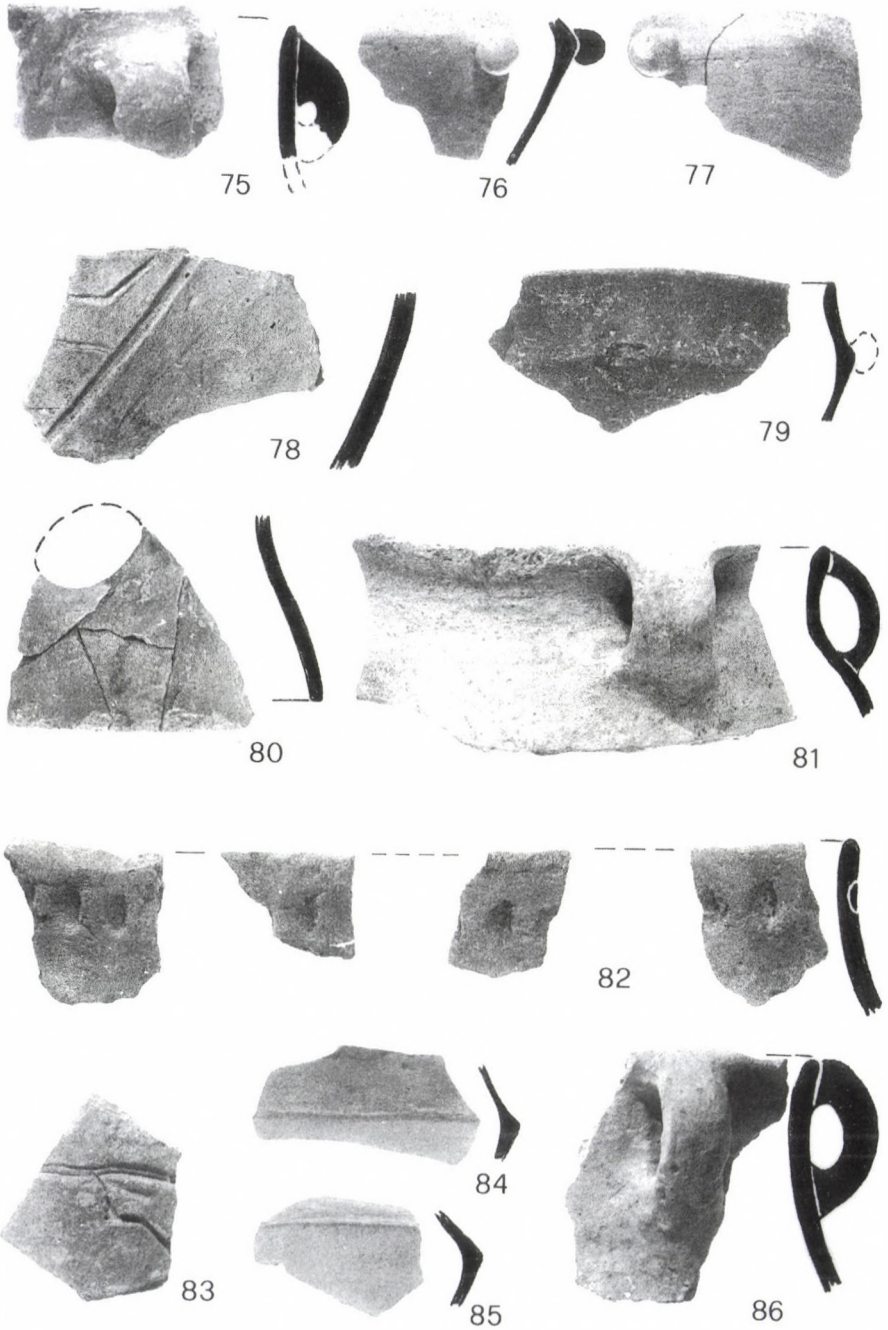
Pl. 56. Zalaszentbalázs - Szőlőhegyi mező. Feature 1. 1:2.



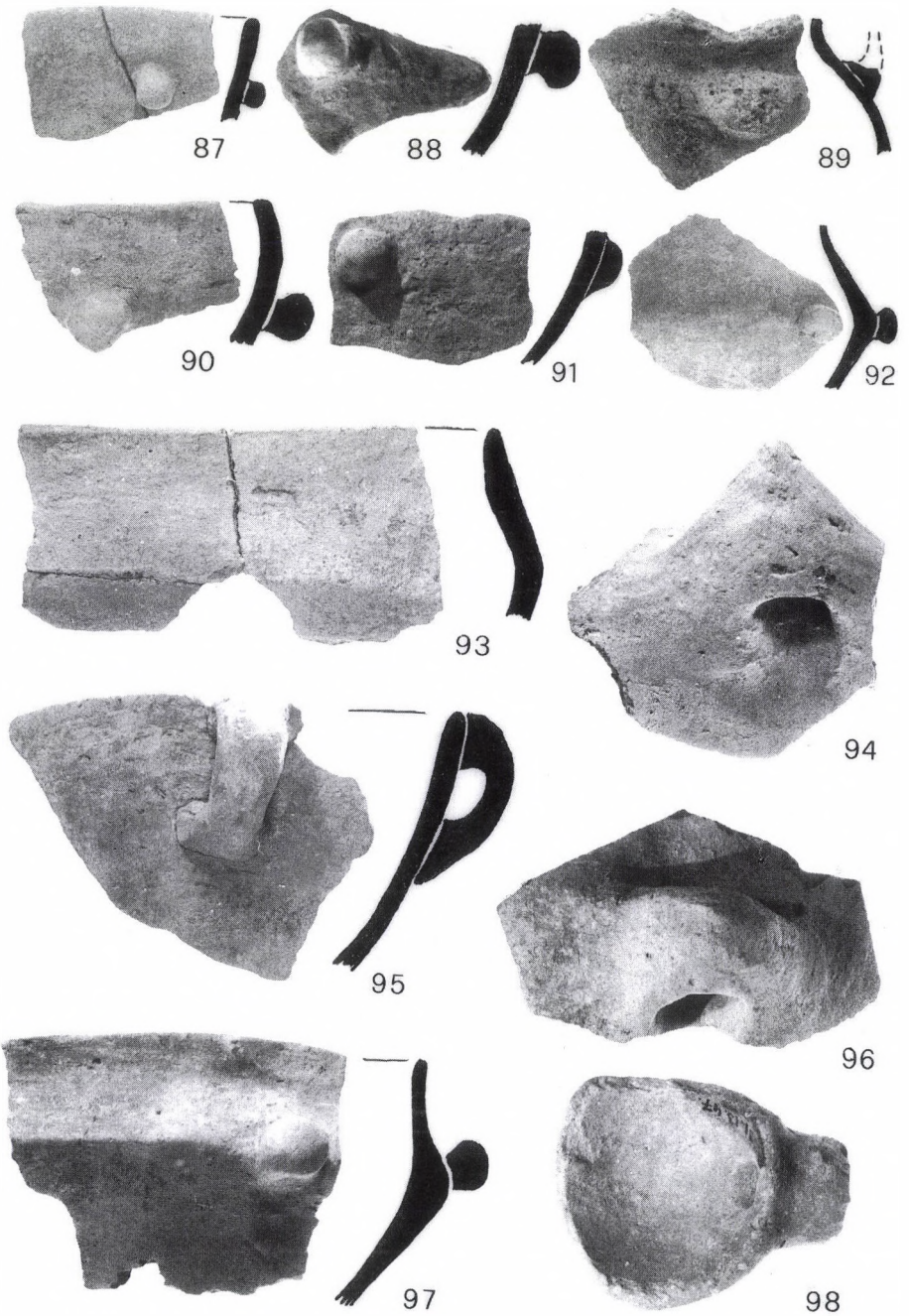
Pl. 57. Zalaszentbalázs - Szőlőhegyi mező. Feature 1. 1:2.



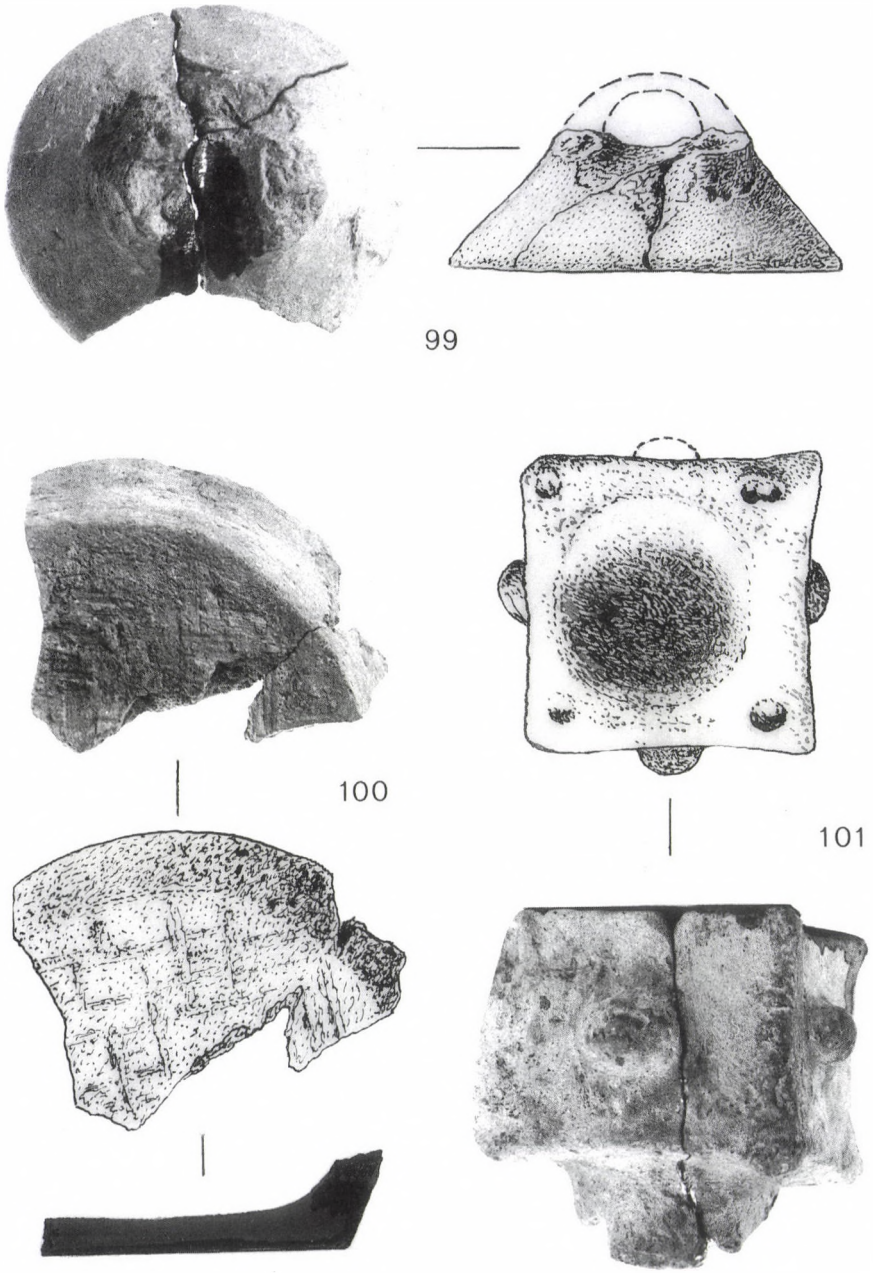
Pl. 58. Zalaszentbalázs - Szőlőhegyi mező. Feature 2. 1:2.



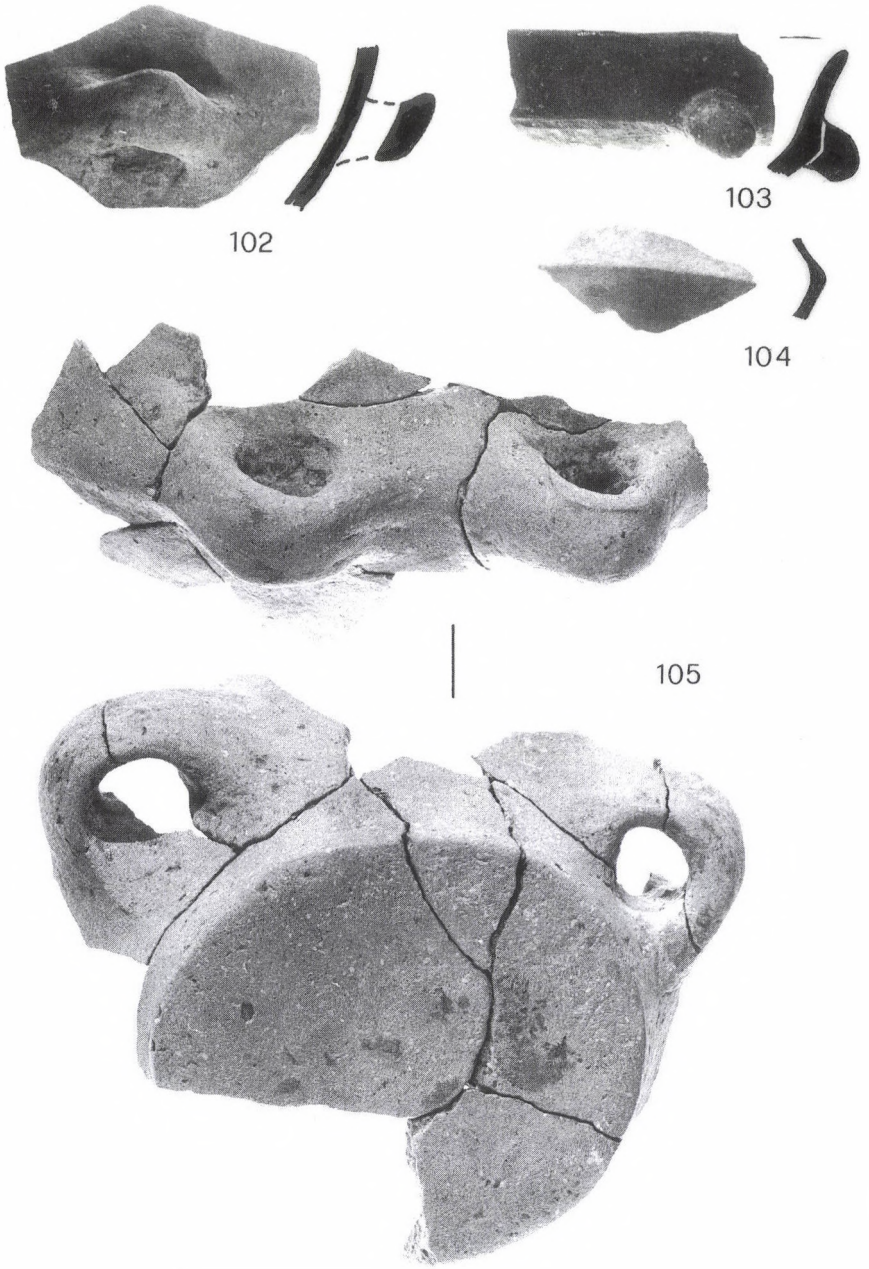
Pl. 59. Zalaszentbalázs - Szőlőhegyi mező. Feature 4 (75, 78, 80-81); trench II. (76-77, 79); Feature 5 (83-86). 1:2.



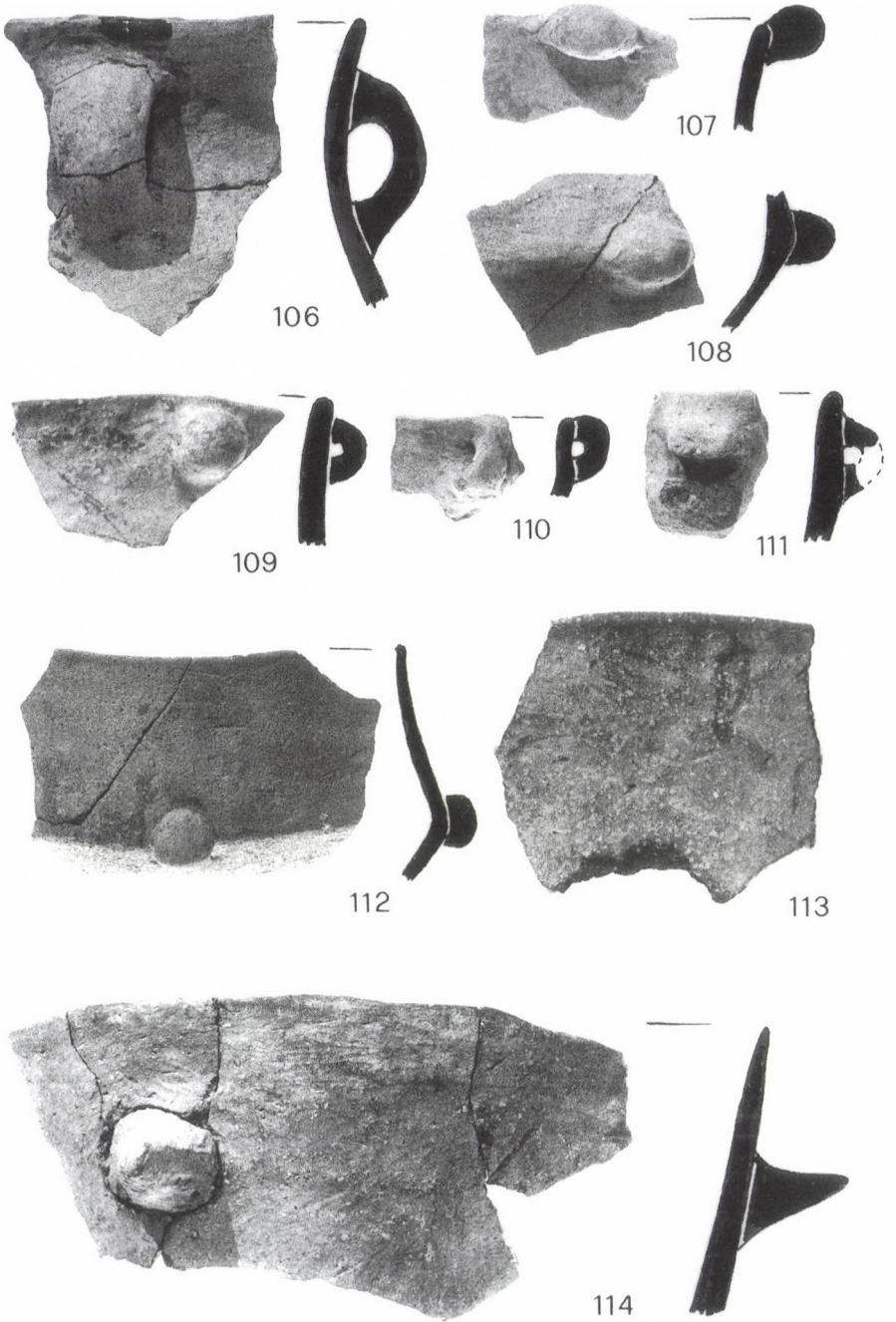
Pl. 60. Zalaszentbalázs - Szőlőhegyi mező. Feature 5. 1:2.



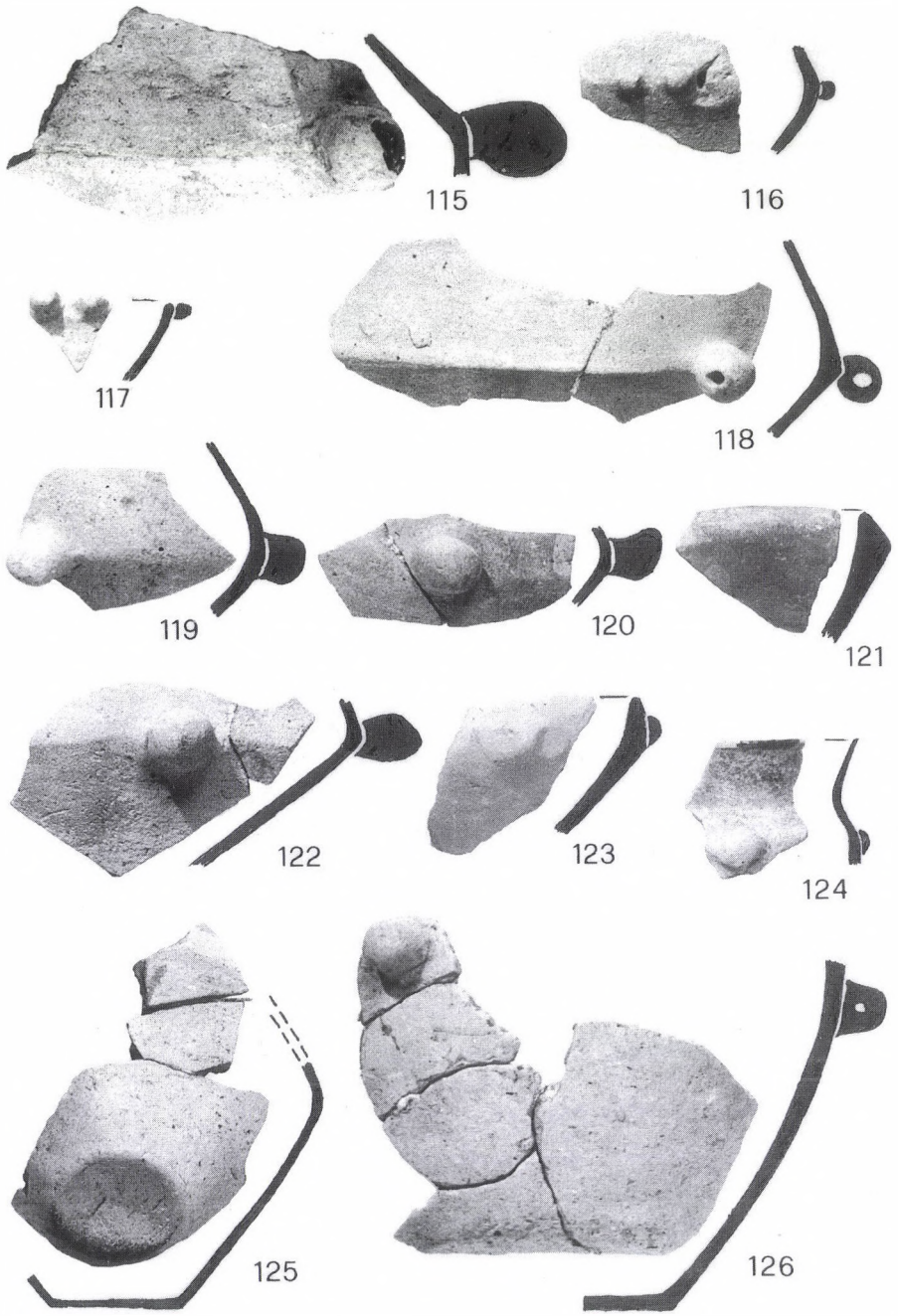
Pl. 61. Zalaszentbalázs - Szőlőhegyi mező. Feature 9 (99-100); surface collection (101). 1:1.



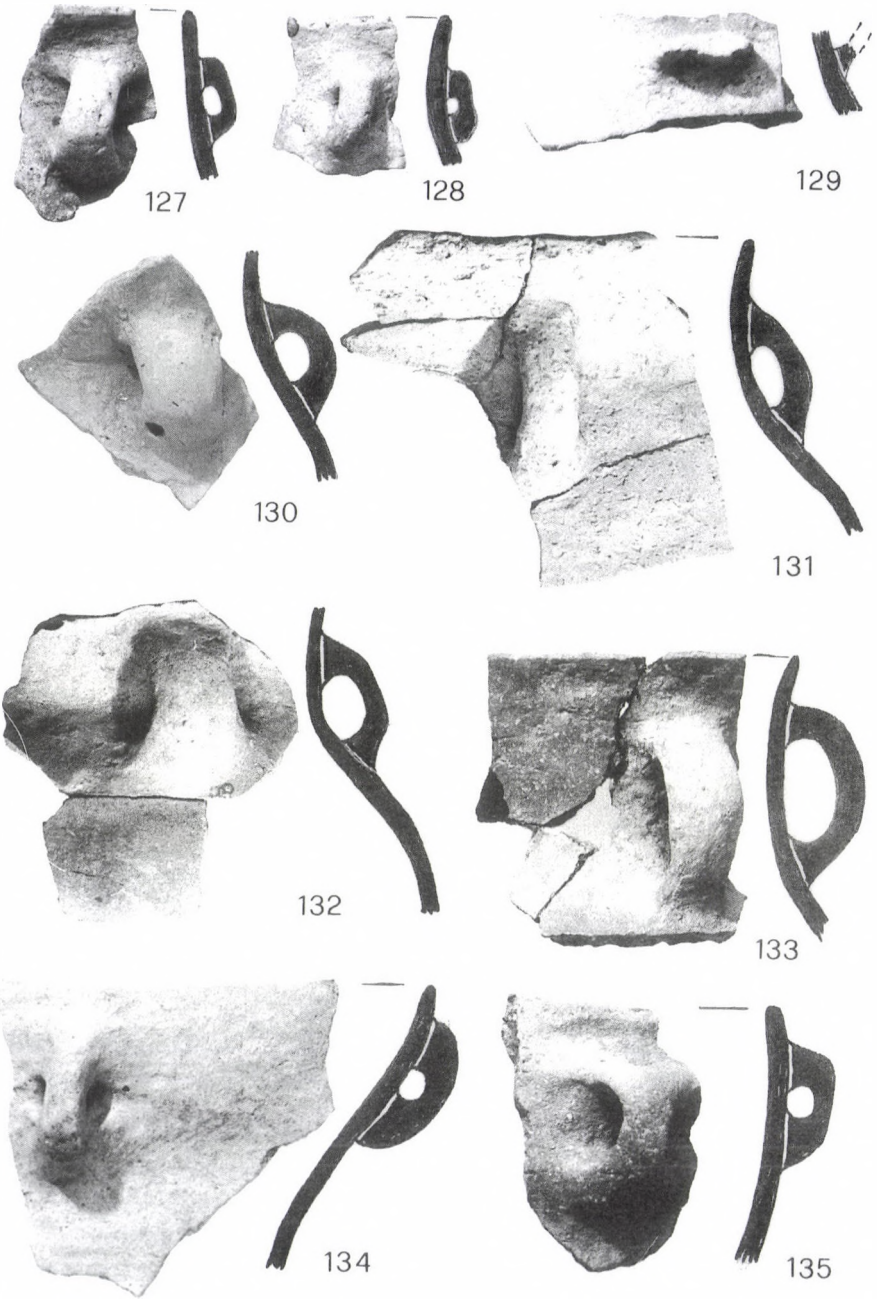
Pl. 62. Zalaszentbalázs - Szőlőhegyi mező. Feature 9. 1:2.



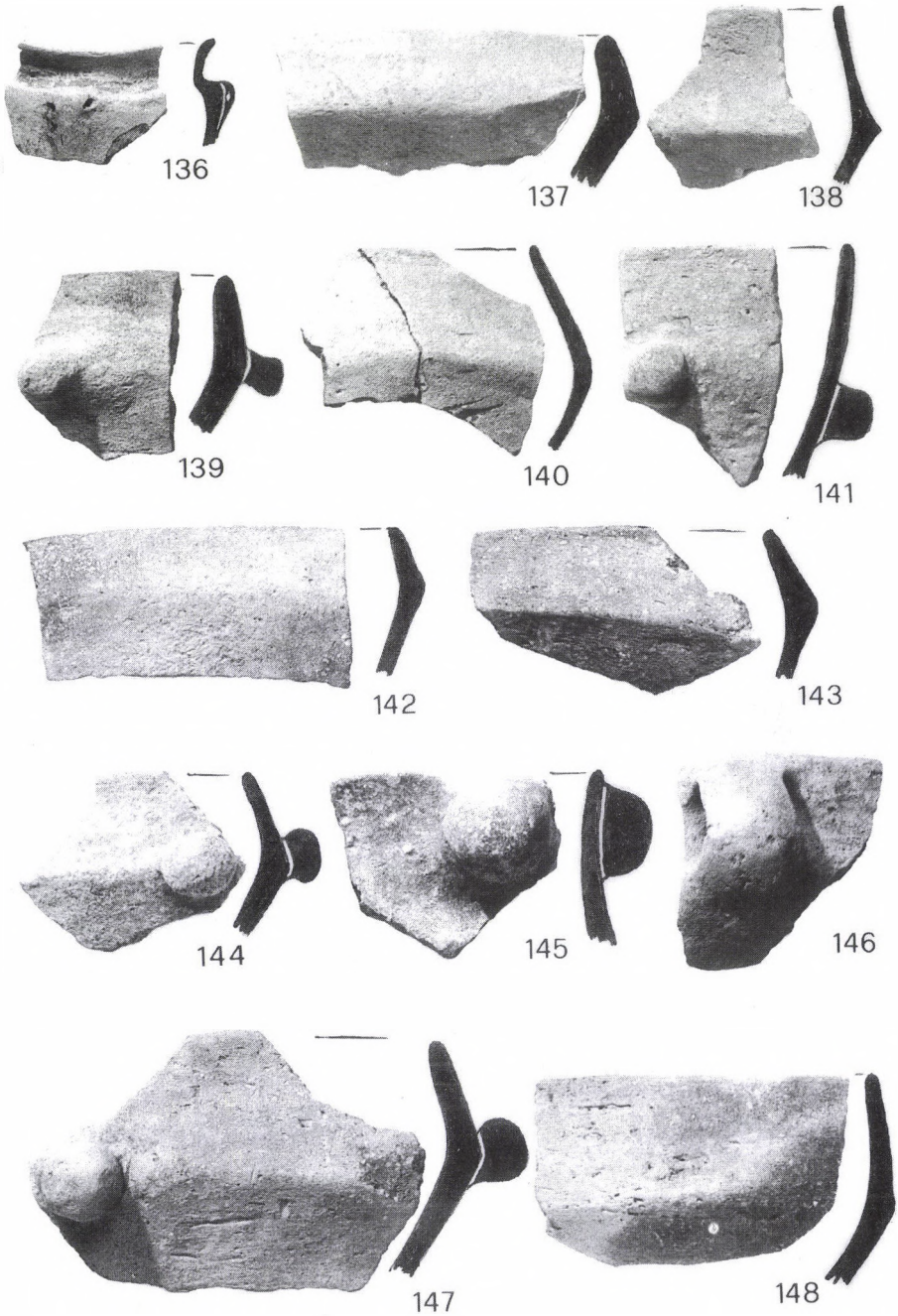
Pl. 63. Zalaszentbalázs - Szőlőhegyi mező. Feature 9. 1:2.



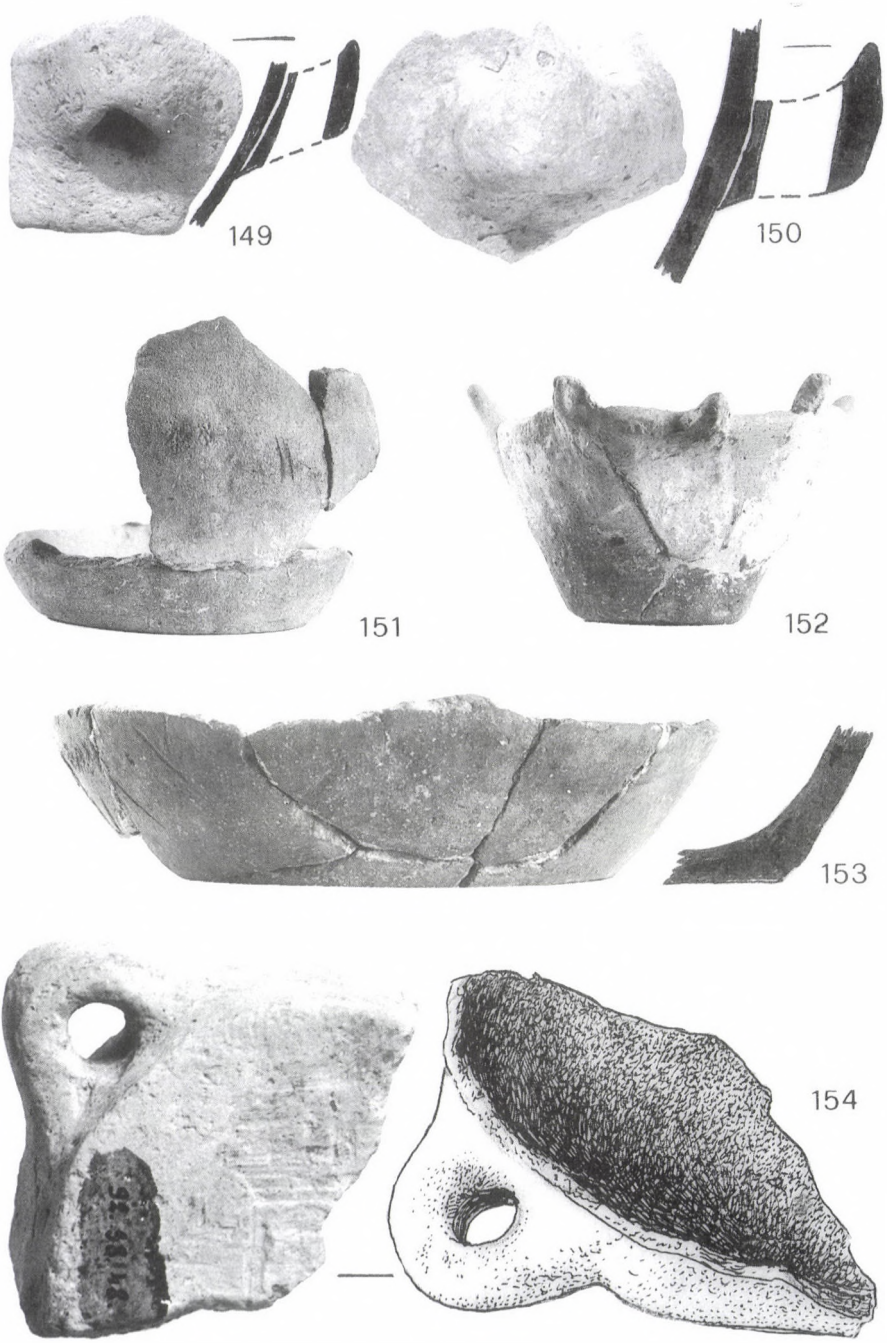
Pl. 64. Zalaszentbalázs - Szőlőhegyi mező. Feature 13. 1:2.



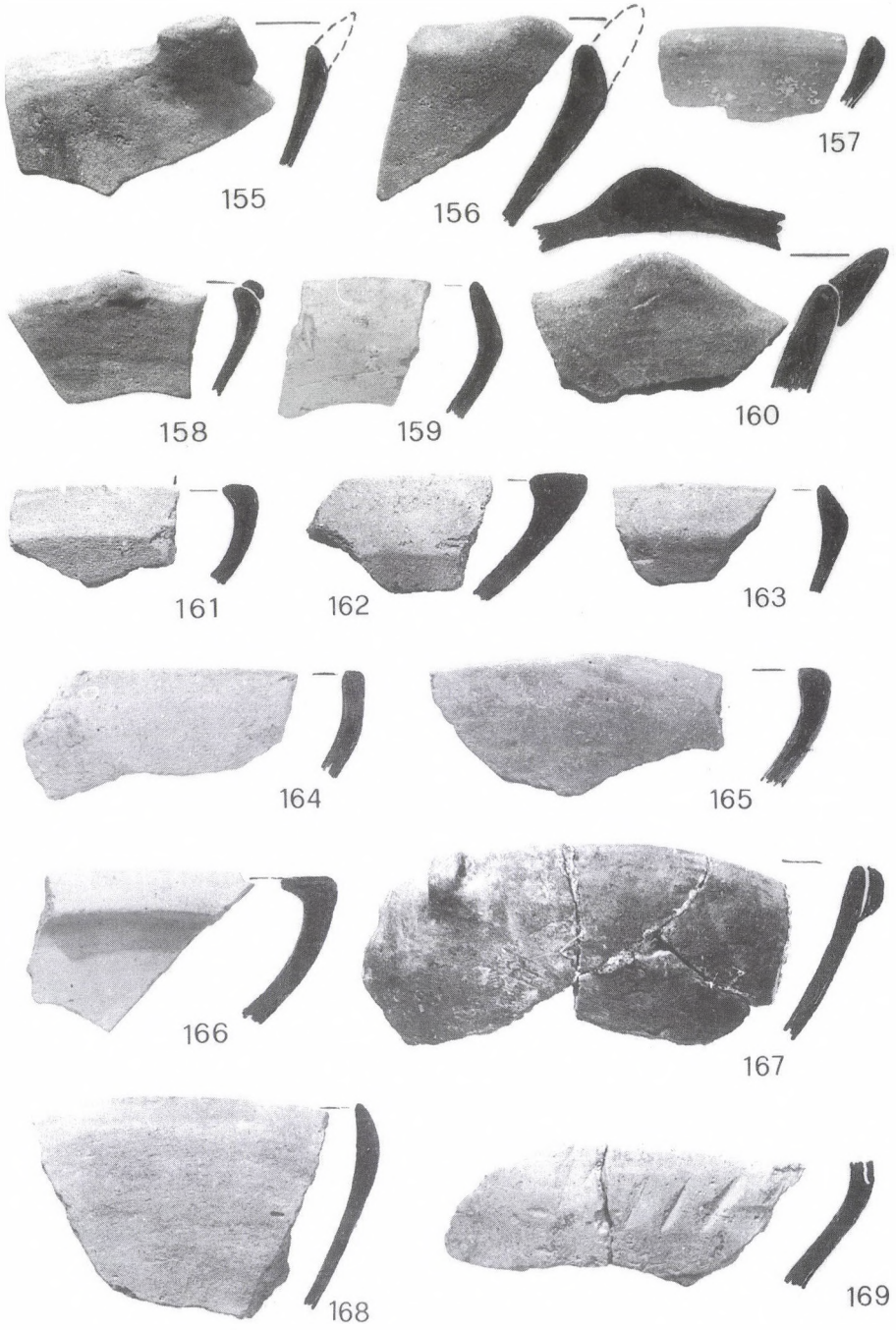
Pl. 65. Zalaszentbalázs - Szőlőhegyi mező. Feature 13. 1:2.



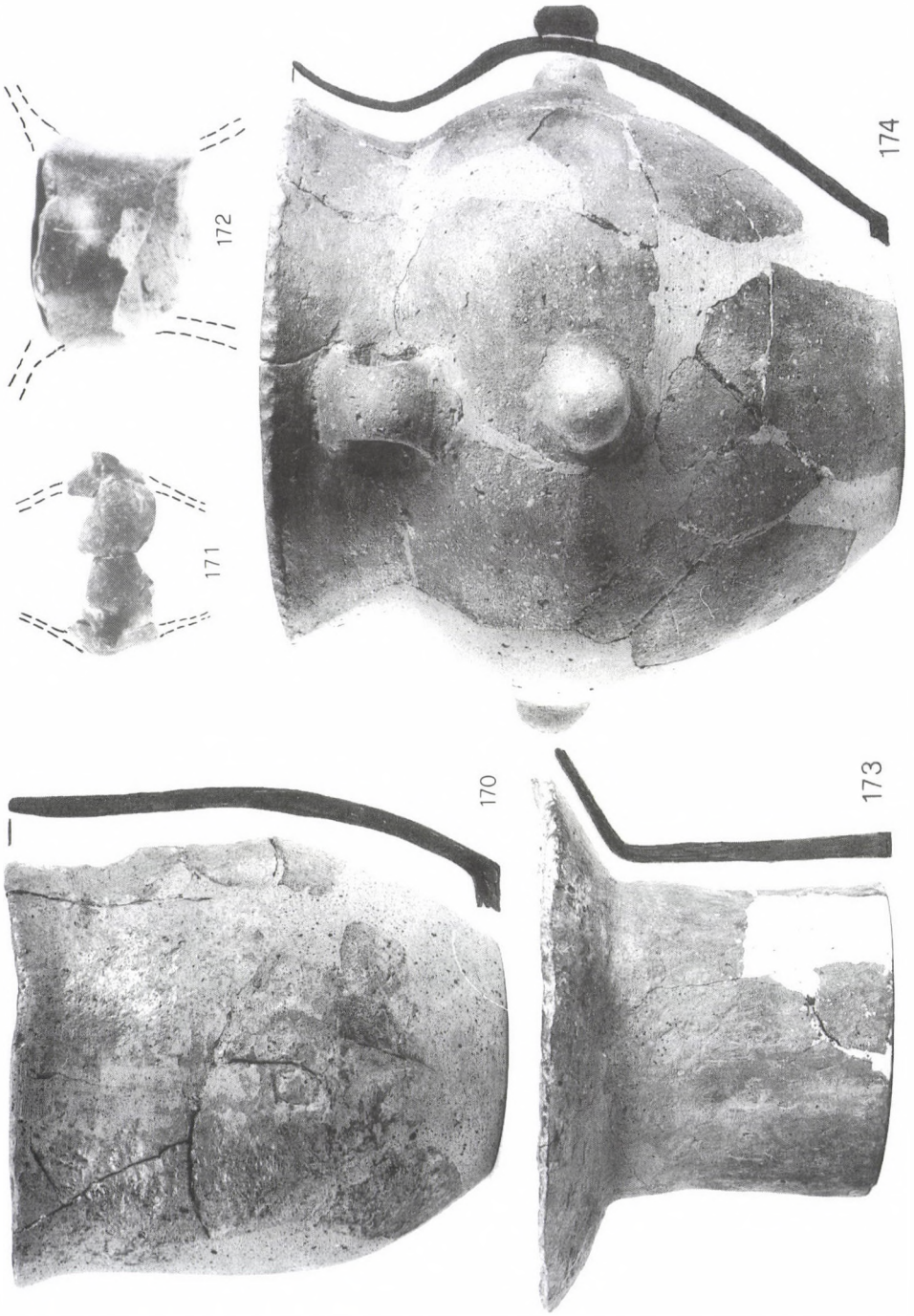
Pl. 66. Zalaszentbalázs - Szőlőhegyi mező. Feature 13. 1:2.



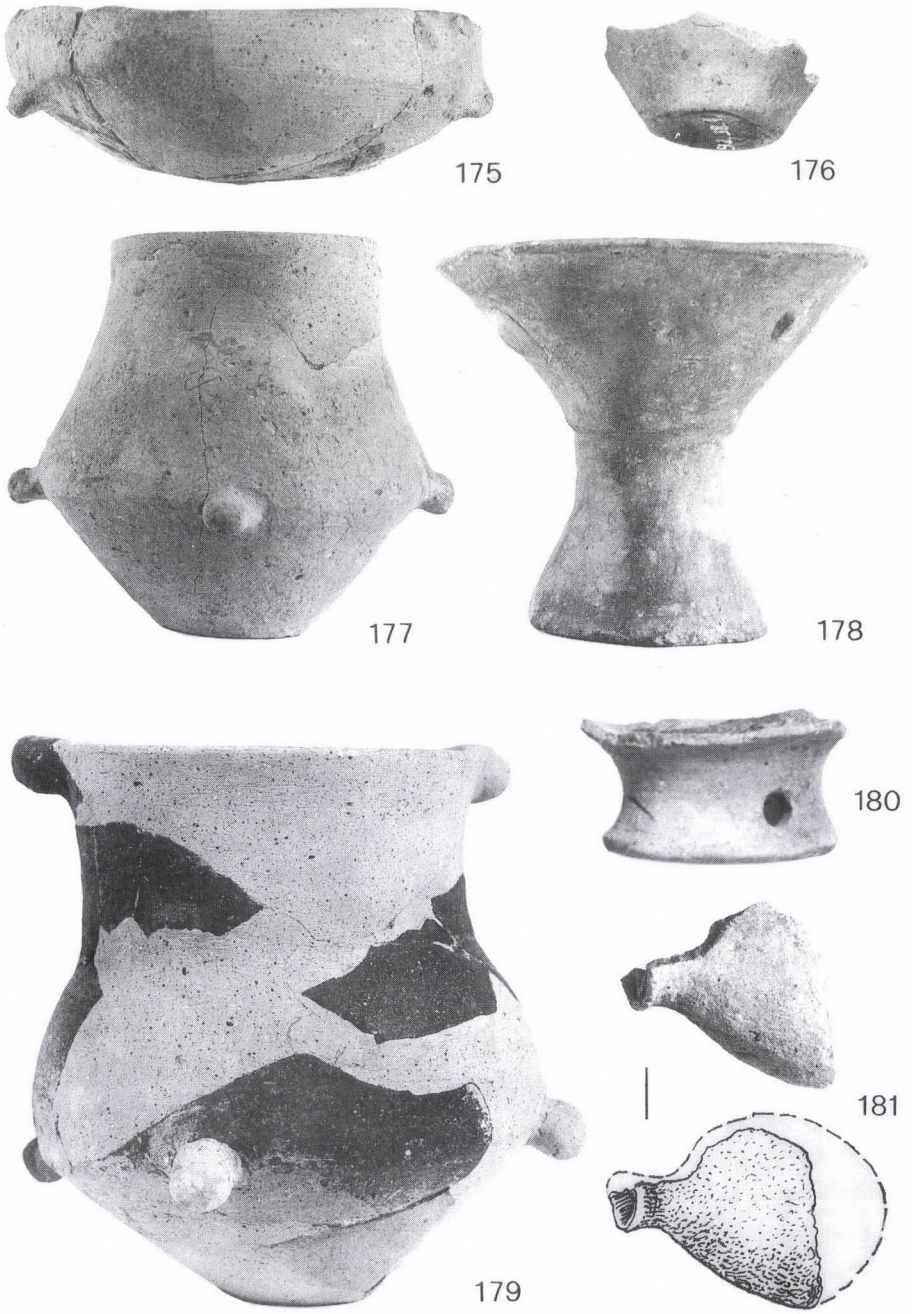
Pl. 67. Zalaszentbalázs - Szőlőhegyi mező. Feature 14. 1:2.



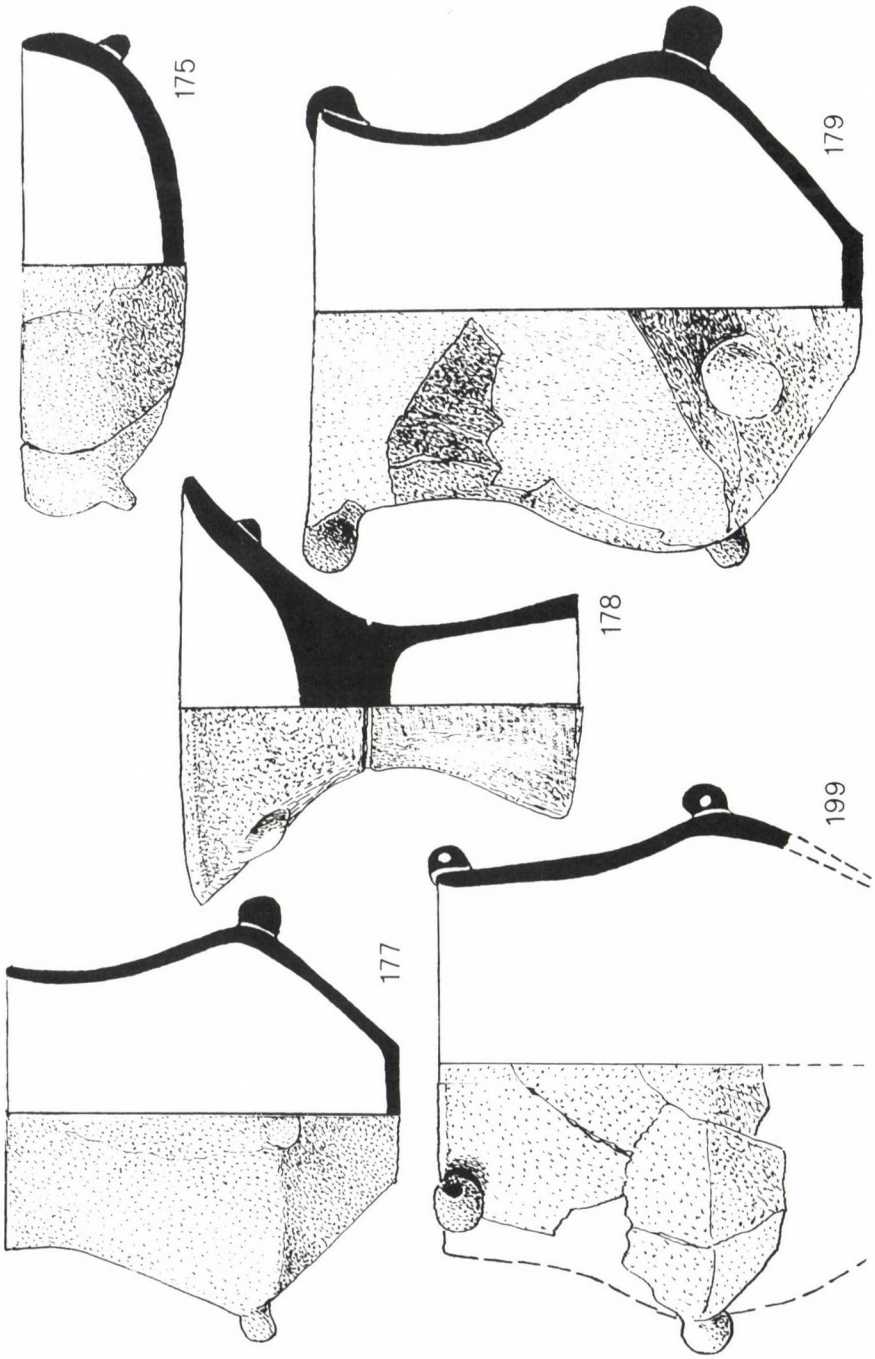
Pl. 68. Zalaszentbalázs - Szőlőhegyi mező. Feature 14. 1:2.



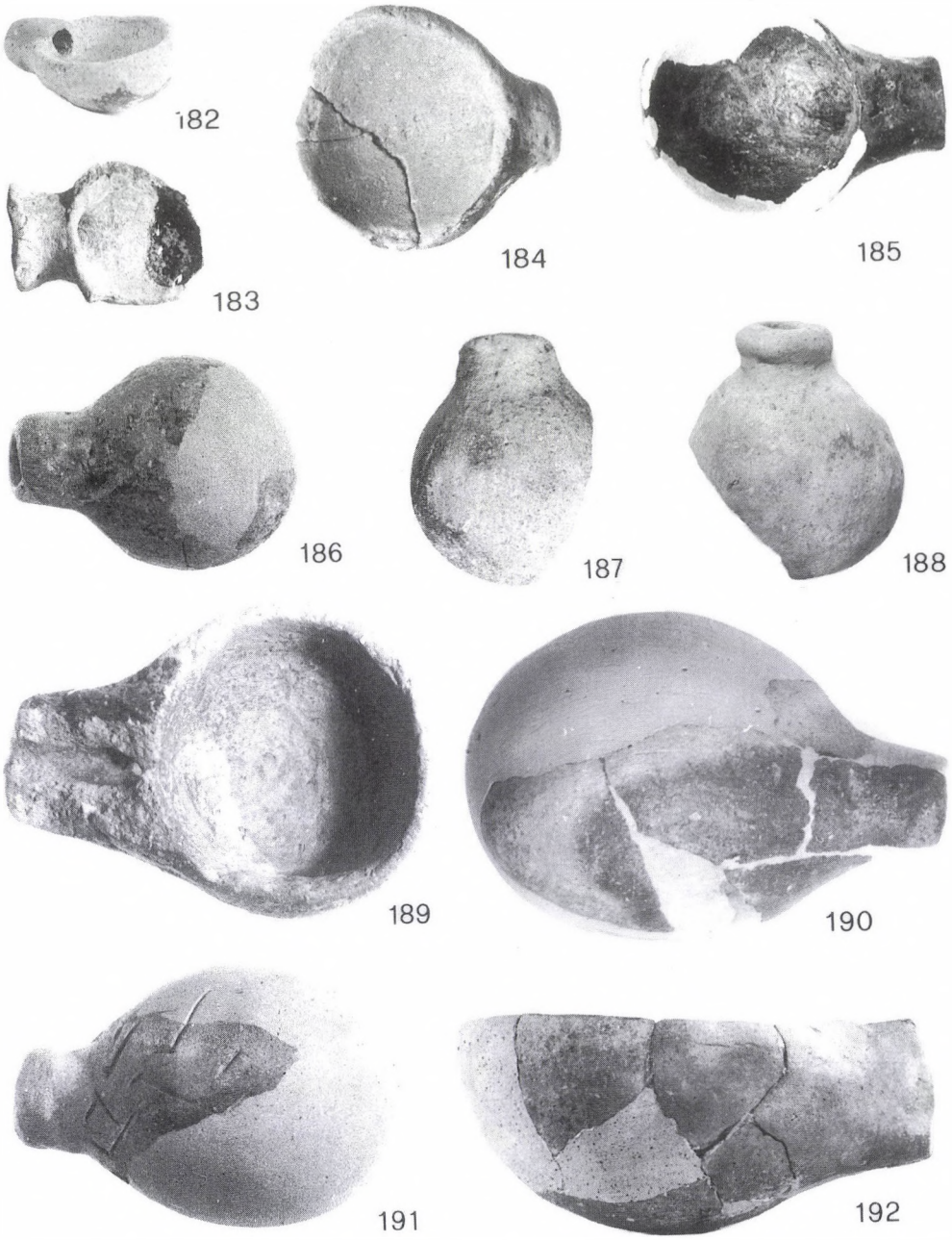
Pl. 69. Zalaszentbalázs - Szőlőhegyi mező. Feature 13 (170-173); Feature 14 (174). 1:2



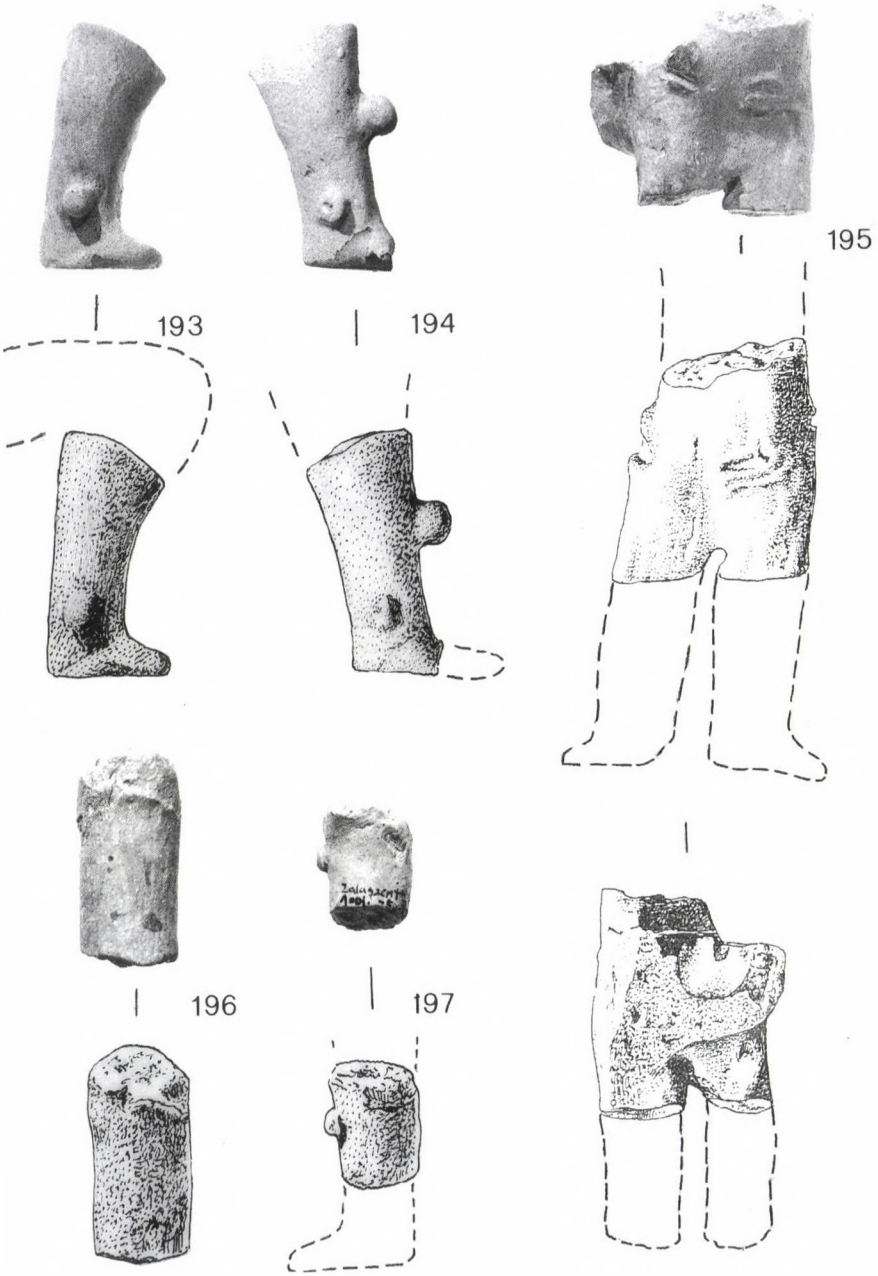
Pl. 70. Zalaszentbalázs - Szőlőhegyi mező. Feature 13 (175, 177-181); Feature 14 (176). 1:2.



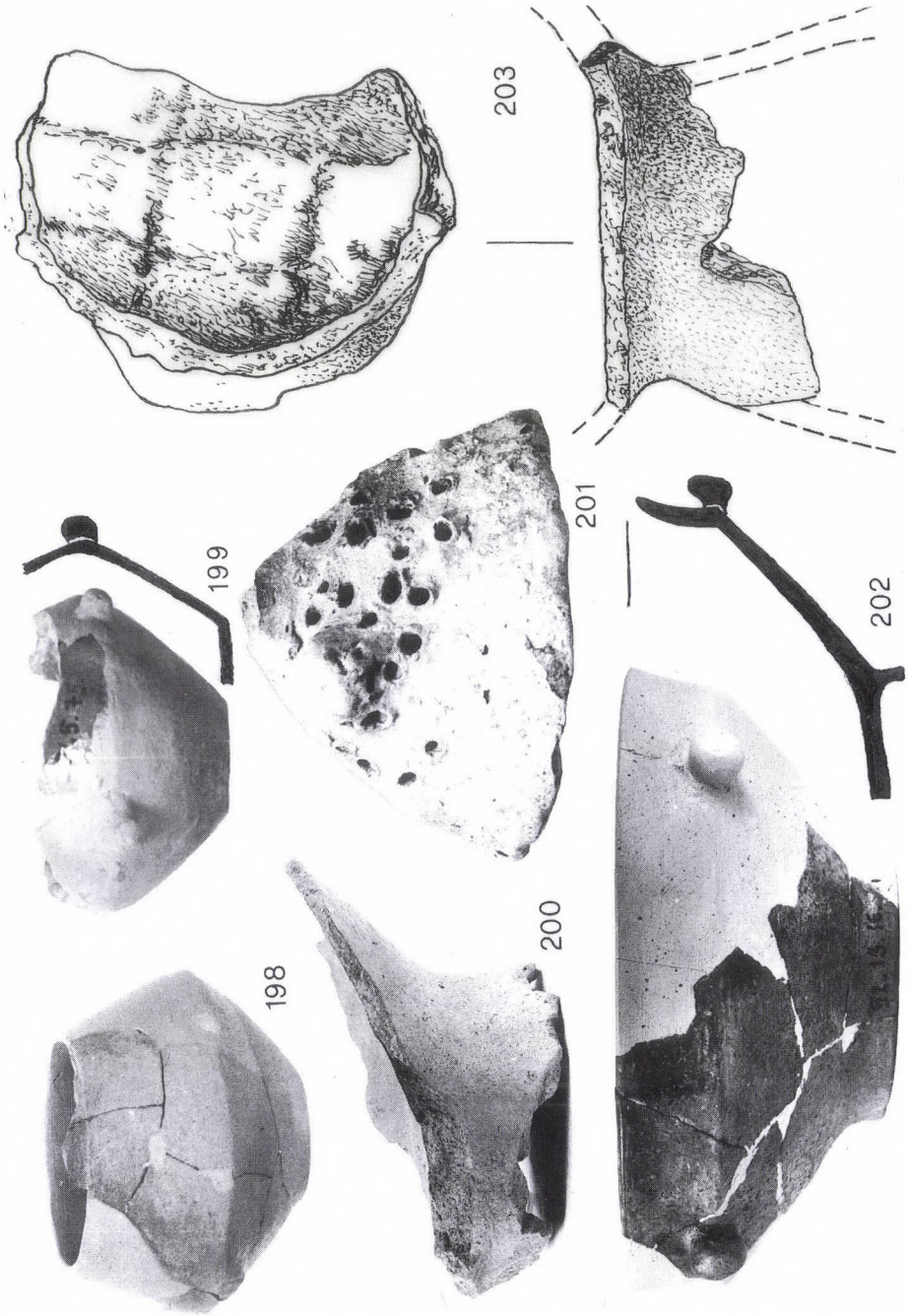
Pl. 71. Zalaszentbalázs - Szőlőhegyi mező. Feature 13. 1:2.



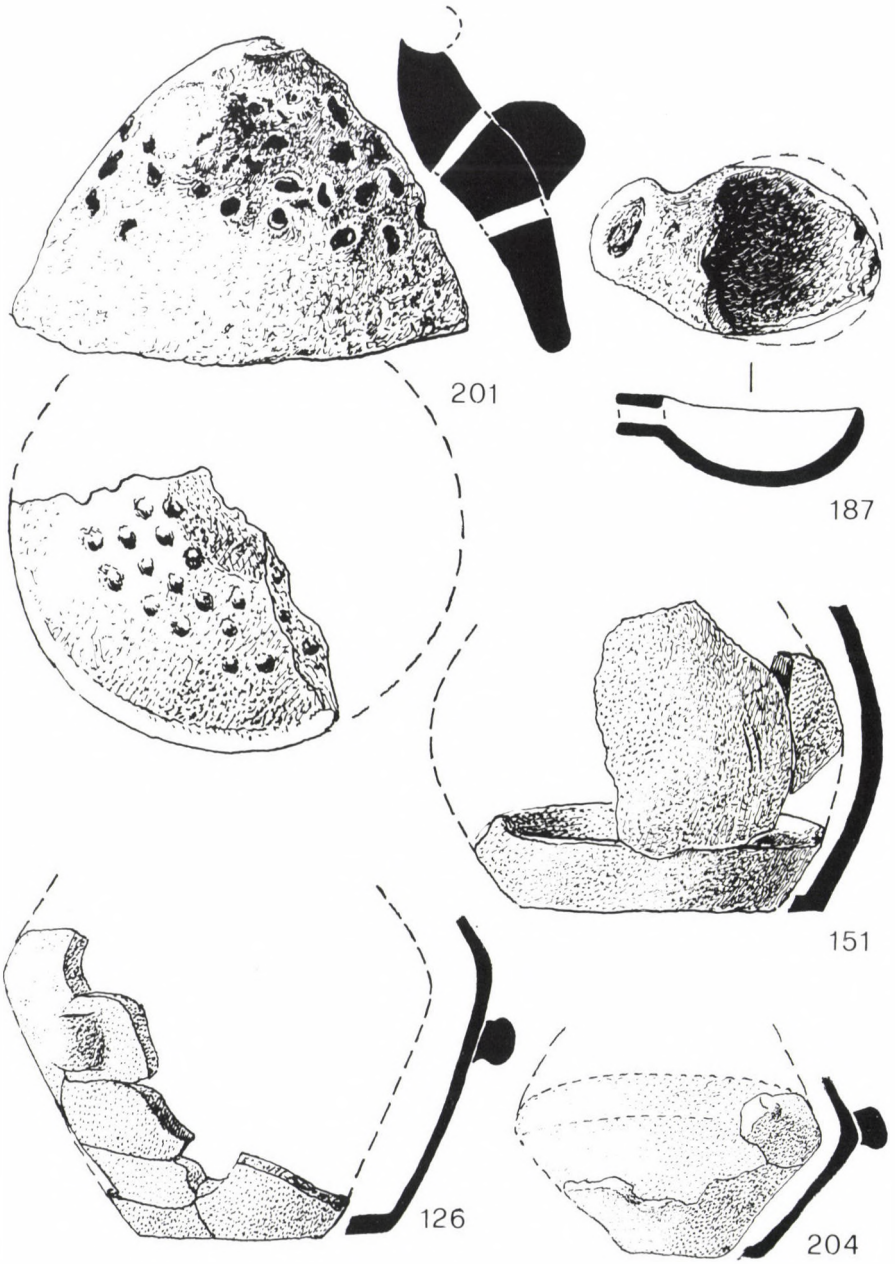
Pl. 72. Zalaszentbalázs - Szőlőhegyi mező. Feature 13 (182, 187); Feature 2 (183); Feature 1 (184, 188-190); Feature 12 (185); trenche III (186, 191); Feature 15 (192). 1:2.



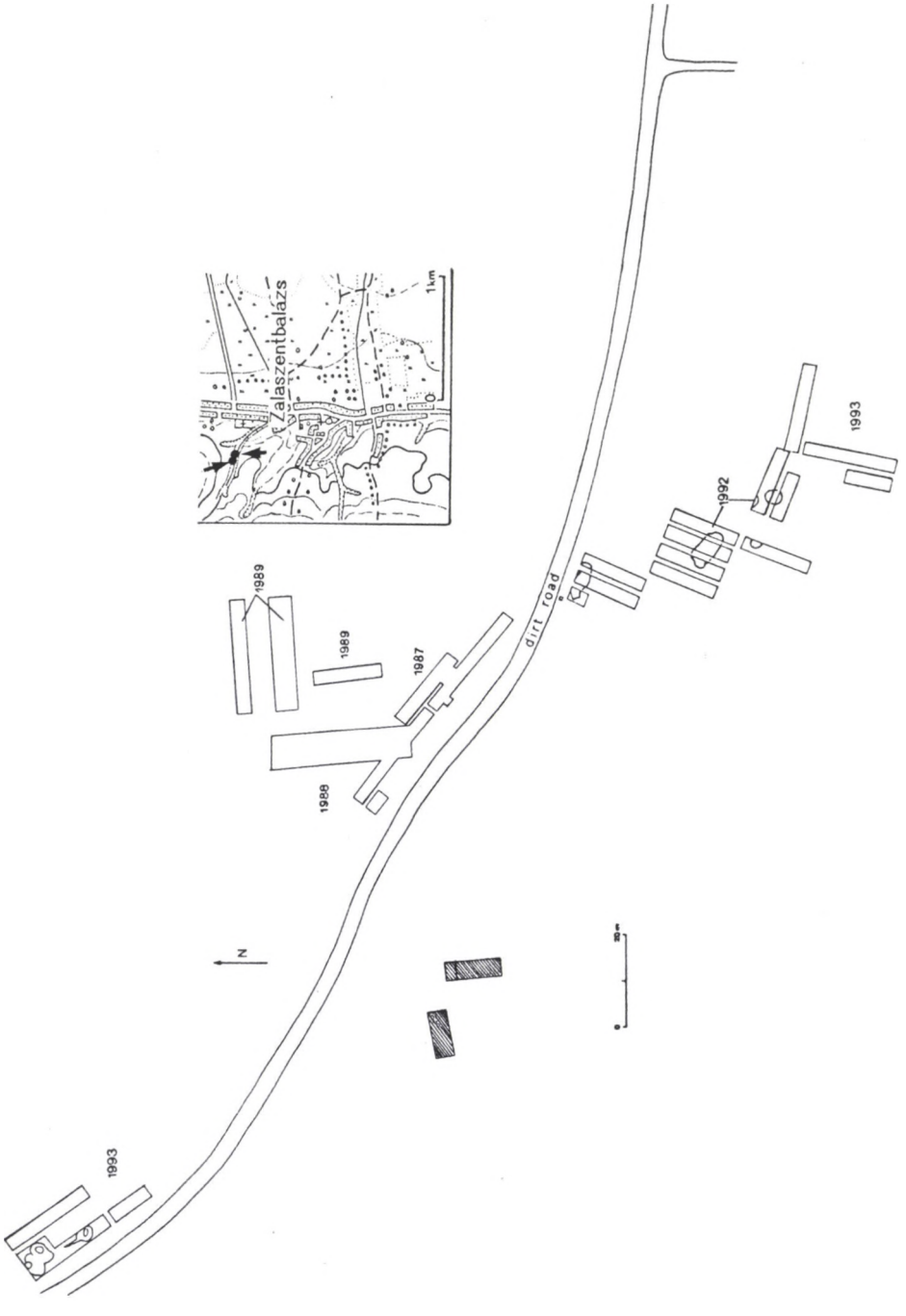
Pl. 73. Zalaszentbalázs - Szőlőhegyi mező. Feature 9 (193-194), Feature 1 (195), Feature 14 (196), Feature 13 (197). 1:2.



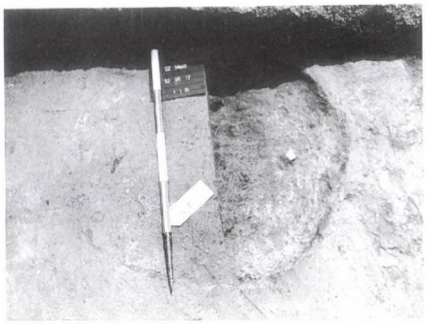
Pl. 74. Zalaszentbalázs - Szőlőhegyi mező. Trenche II (198); Feature 13 (199-201); Feature 12 (202); Feature 1 (203). 1:2.



Pl. 75. Zalaszentbalázs - Szőlőhegyi mező. Feature 13 (126, 187, 201); Feature 14 (151); Feature 1 (204). 1:2.



Pl. 76. Zalaszentbalázs-Szőlőhegyi mező. Map of the site.



a) Trench 1, House 1, detail



b) Trench 6, House 2, burnt remains



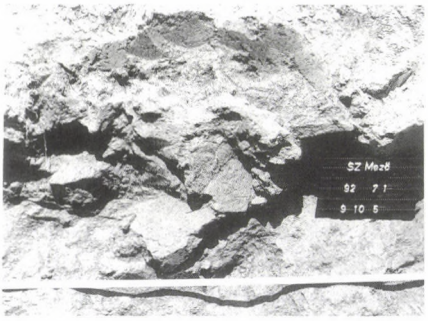
c) Trench 6, House 2, detail



d) Trench 5, House 2, fireplace



e) Trenches 9-10, House 3, burnt remains



f) Trenches 9-10, House3, wattle - and -daub

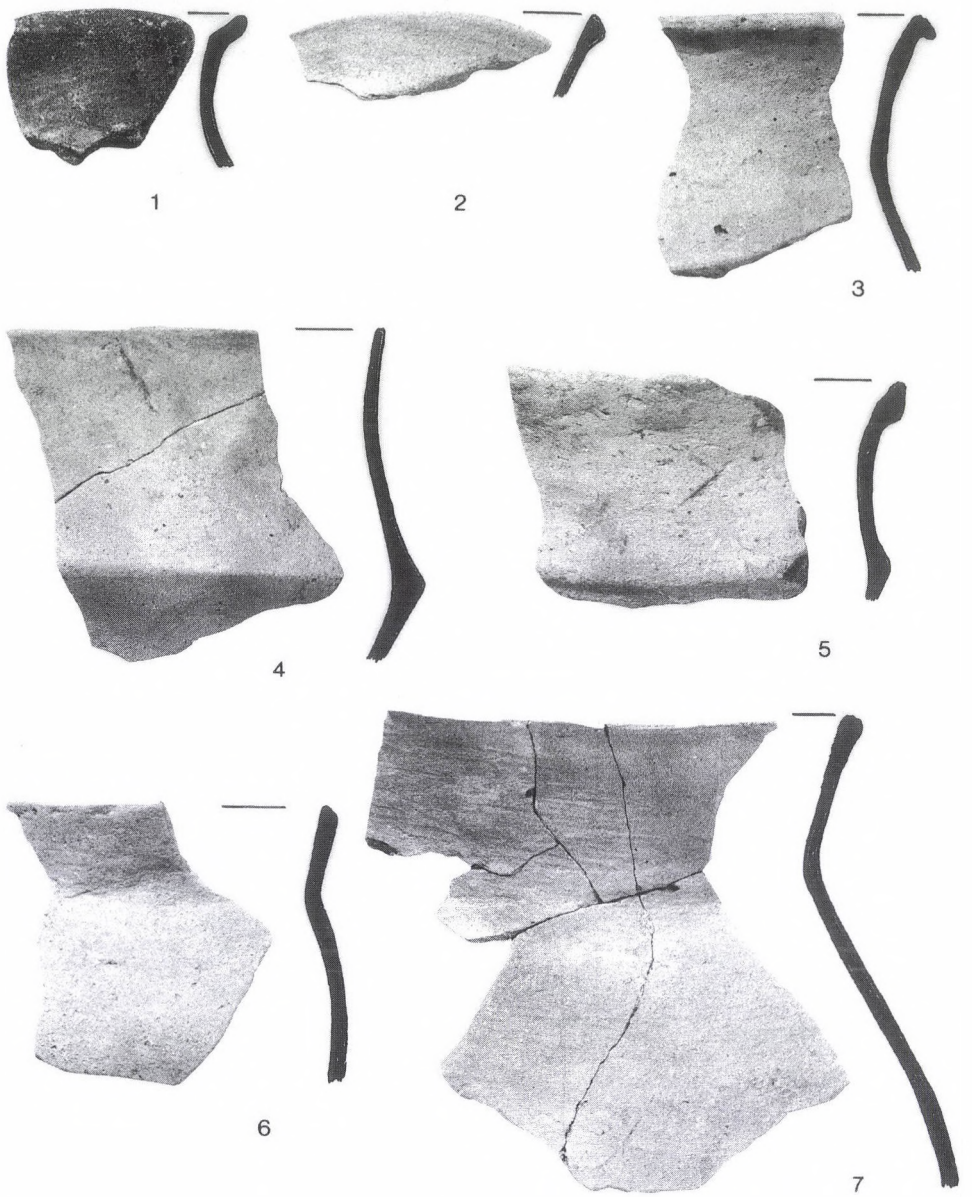


g) Trenches 9-10, House 3, detail



h) Trenches 9-10, House 3, postholes

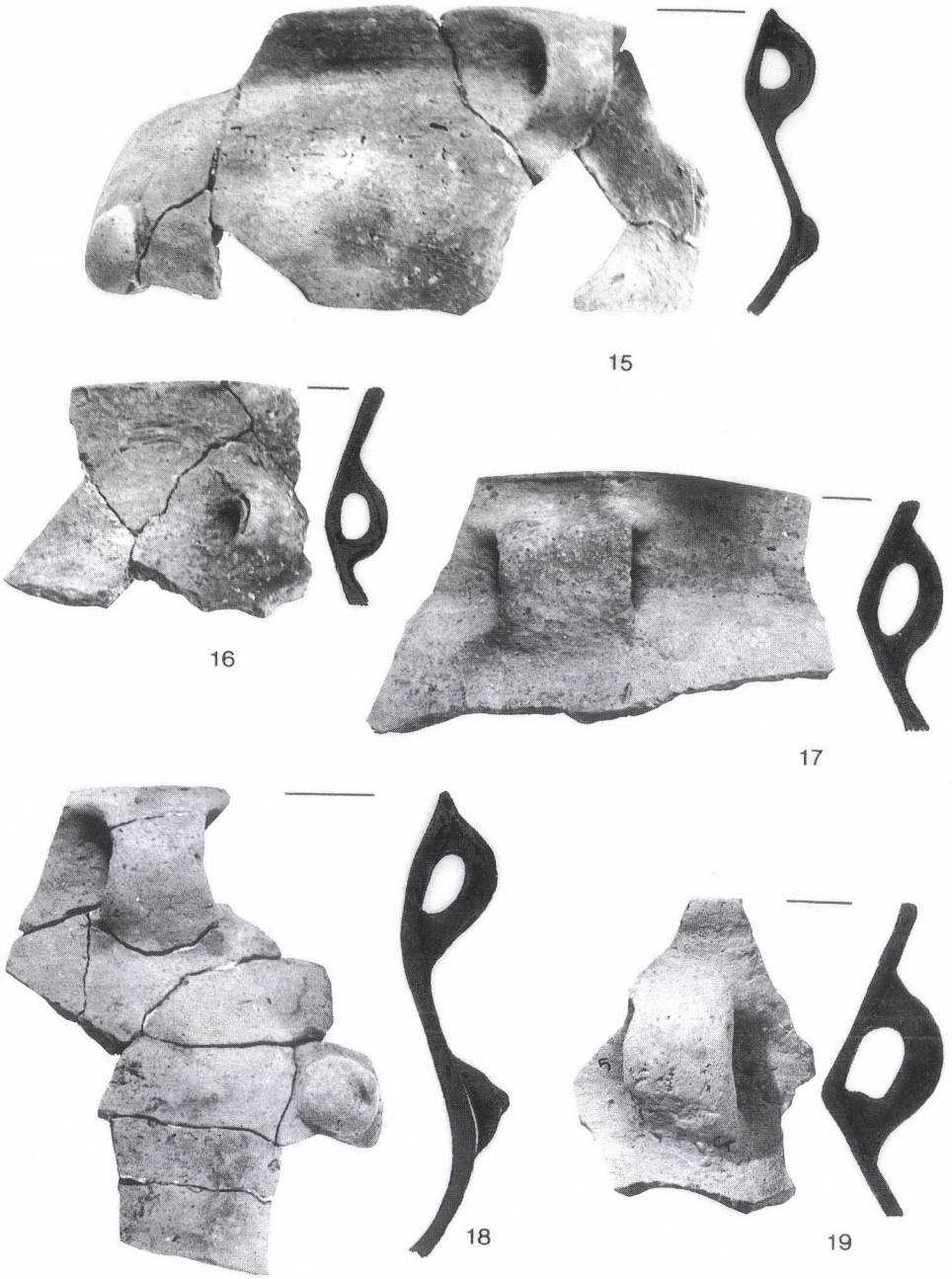
Pl. 77. Zalaszentbalázs-Szőlőhegyi mező.



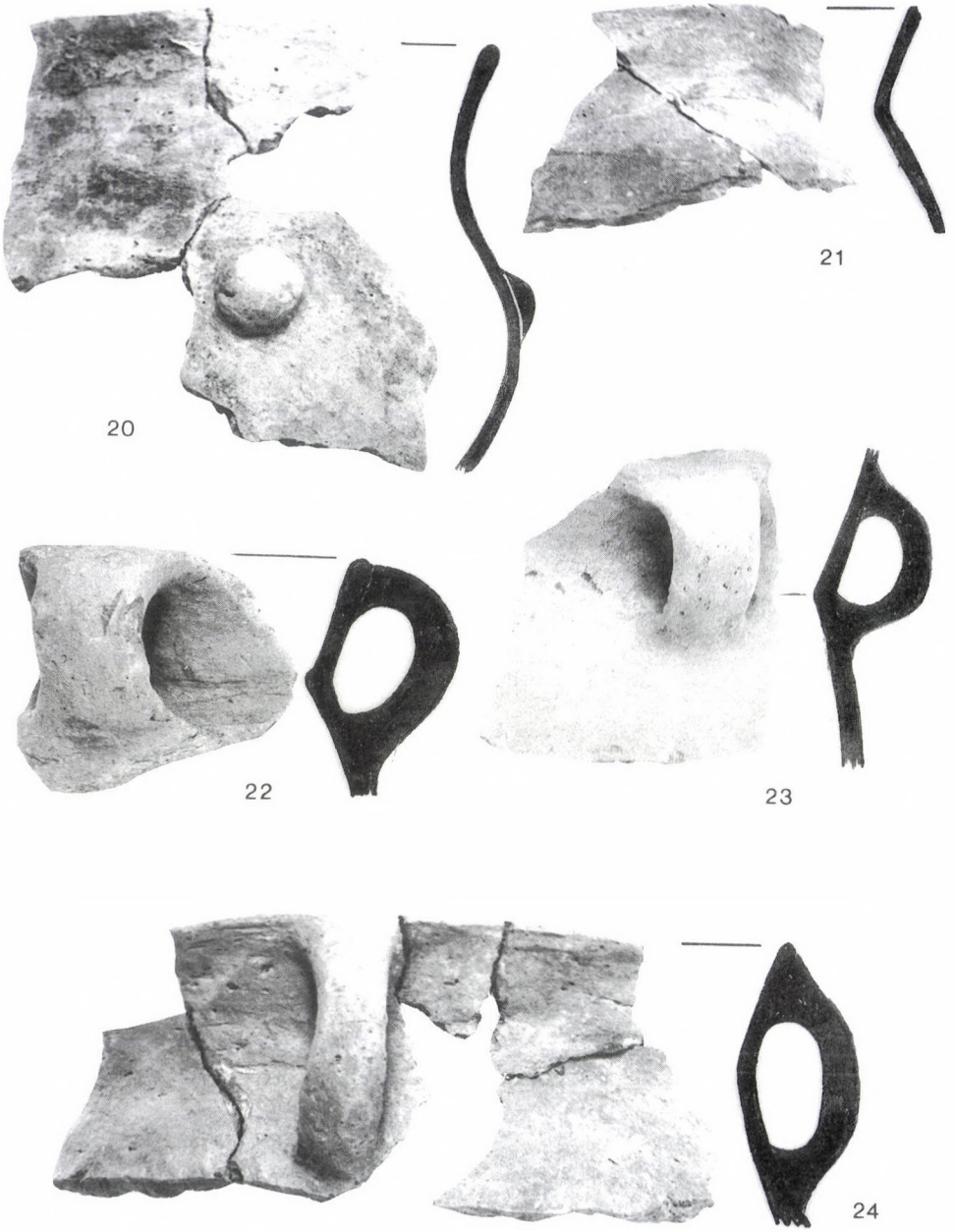
Pl. 78. Zalaszentbalázs-Szőlőhegyi mező. 1-7: House 1.



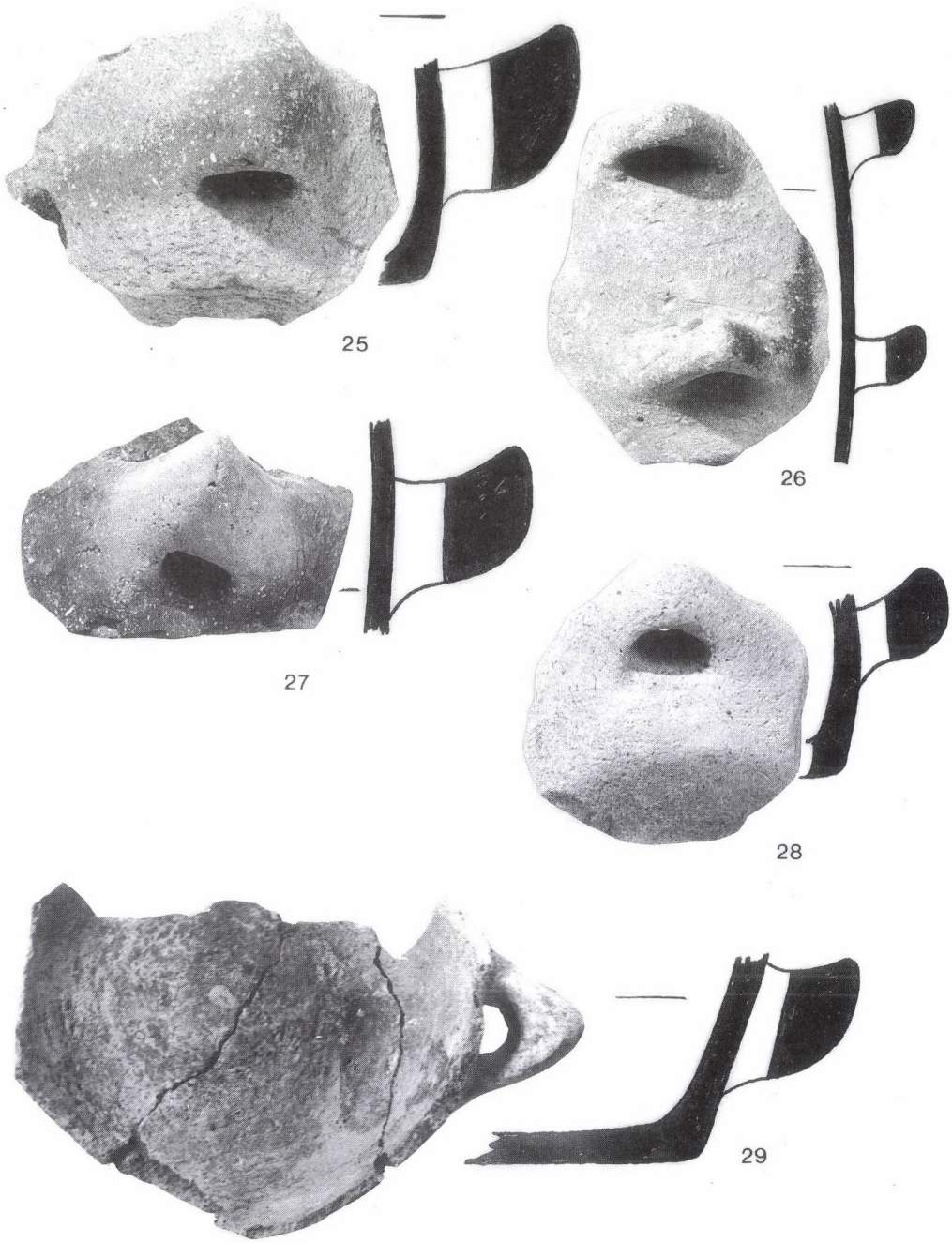
Pl. 79. Zalaszentbalázs-Szőlőhegyi mező. 8-14: House 2.



Pl. 80. Zalaszentbalázs-Szőlőhegyi mező. 15, 17, 18: Pit 2; 16: Pit 1; 19: House 1.



Pl. 81. Zalaszentbalázs-Szőlőhegyi mező. 20: Pit 2; 21-24: Pit 5.



Pl. 82. Zalaszentbalázs-Szőlőhegyi mező. 25: House 1; 26-28: House 2; 29: Pit 2.



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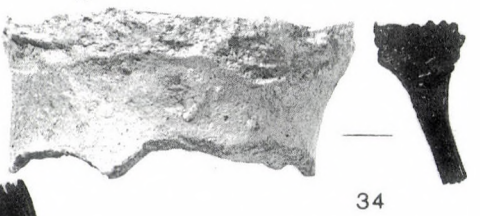

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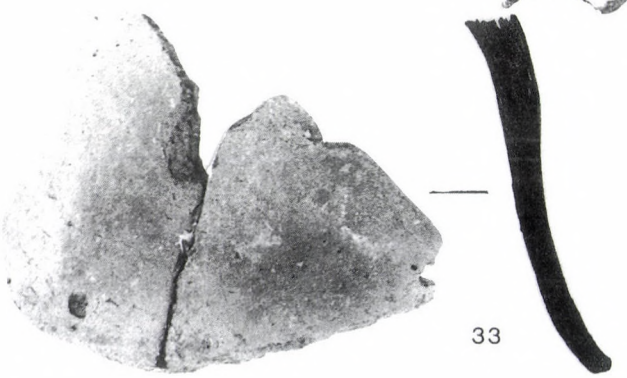

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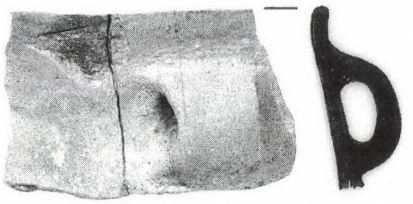
Pl. 83. Zalaszentbalázs-Szőlőhegyi mező. 30, 34.



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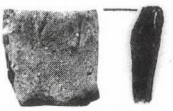

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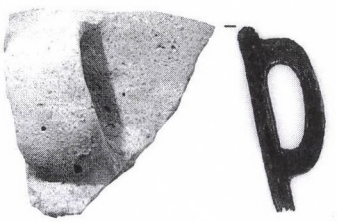

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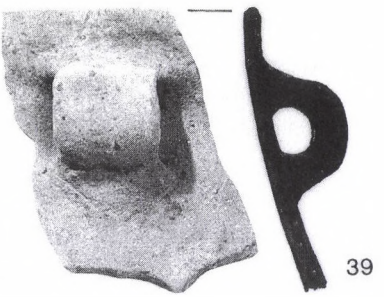

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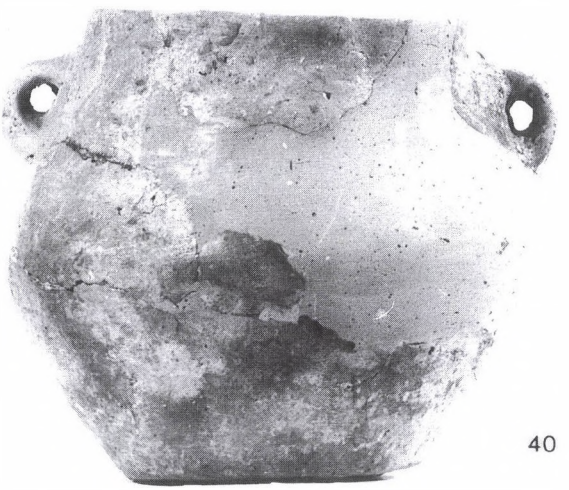

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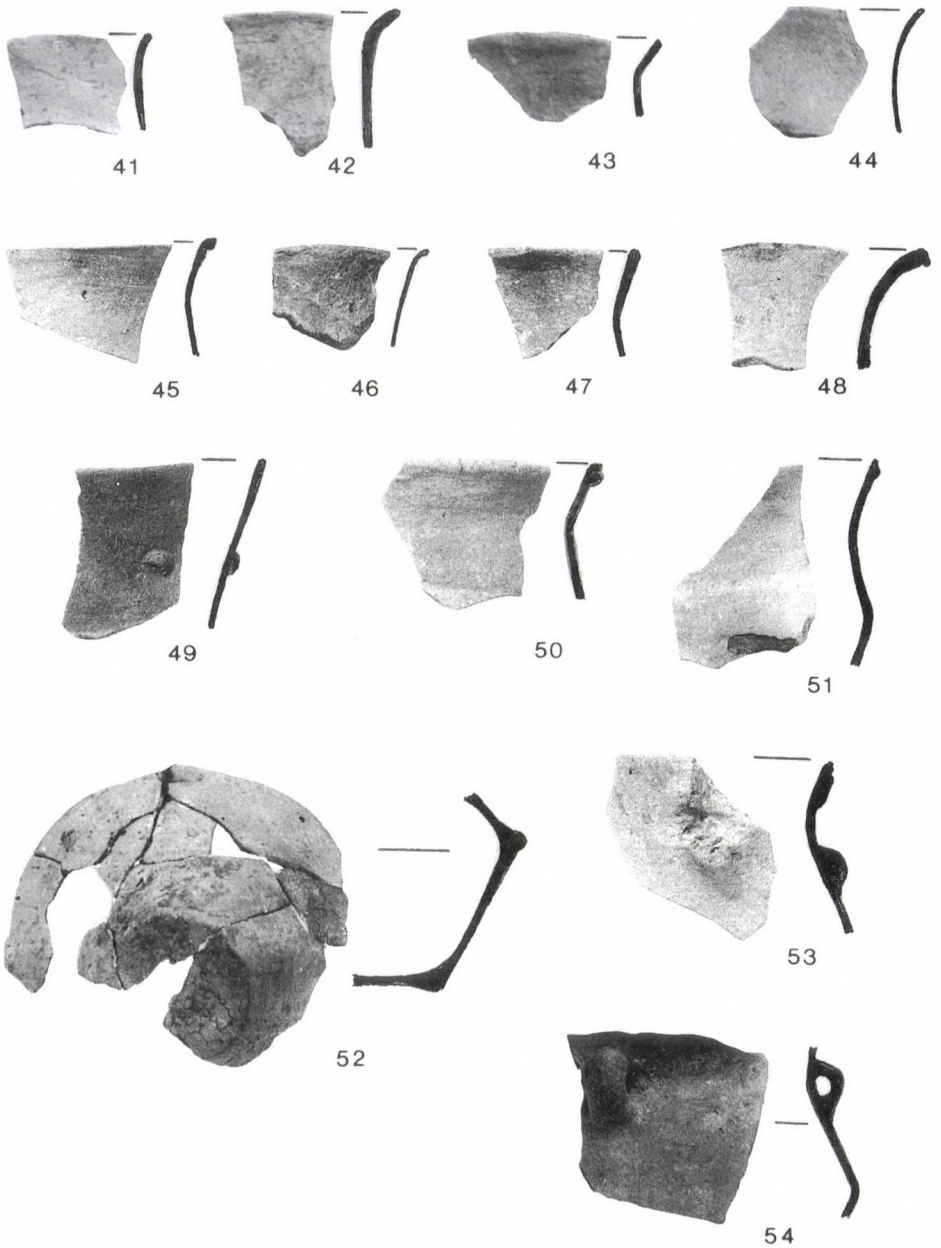
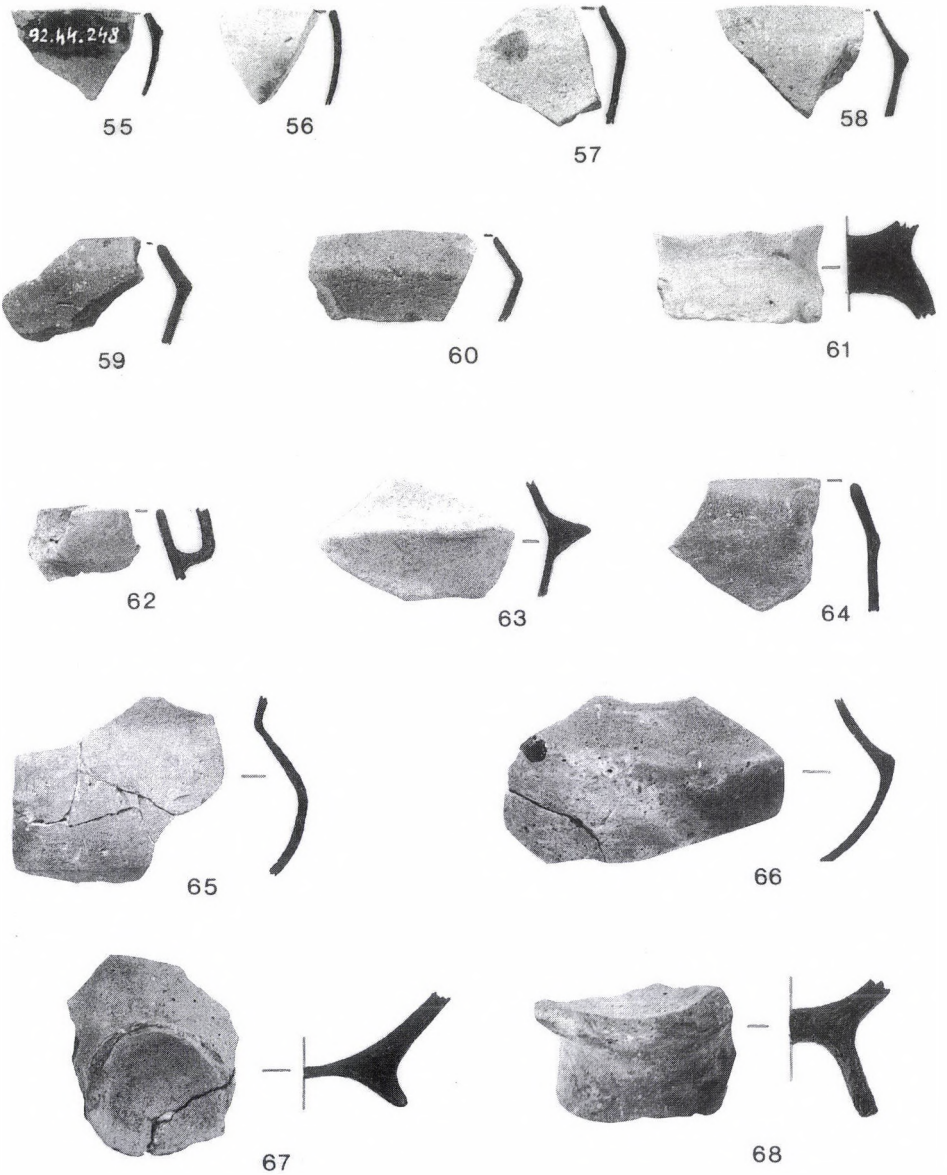
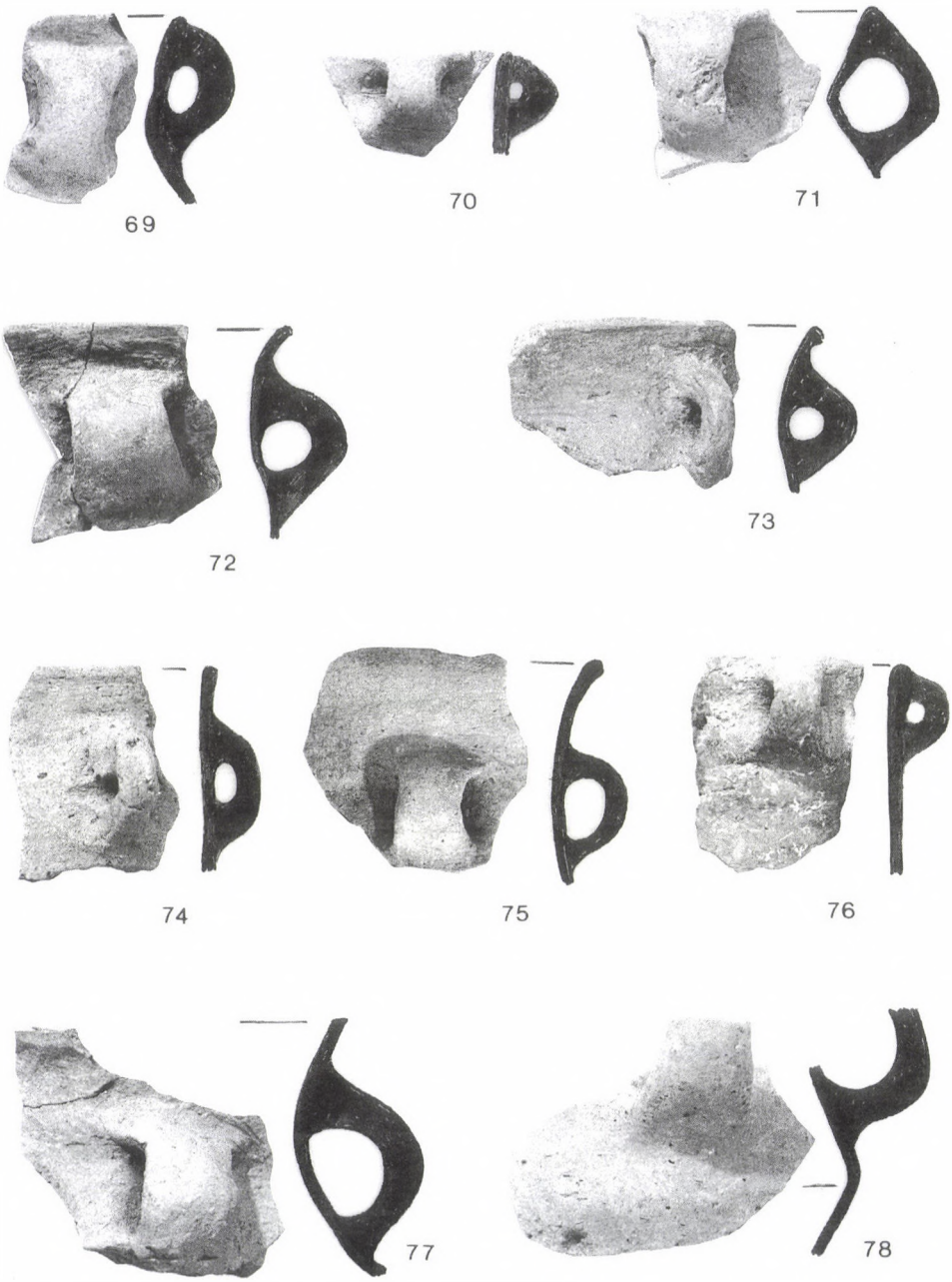
Pl. 84. Zalaszentbalázs-Szőlőhegyi mező. 35-39:House 2, 40 Pit 2.



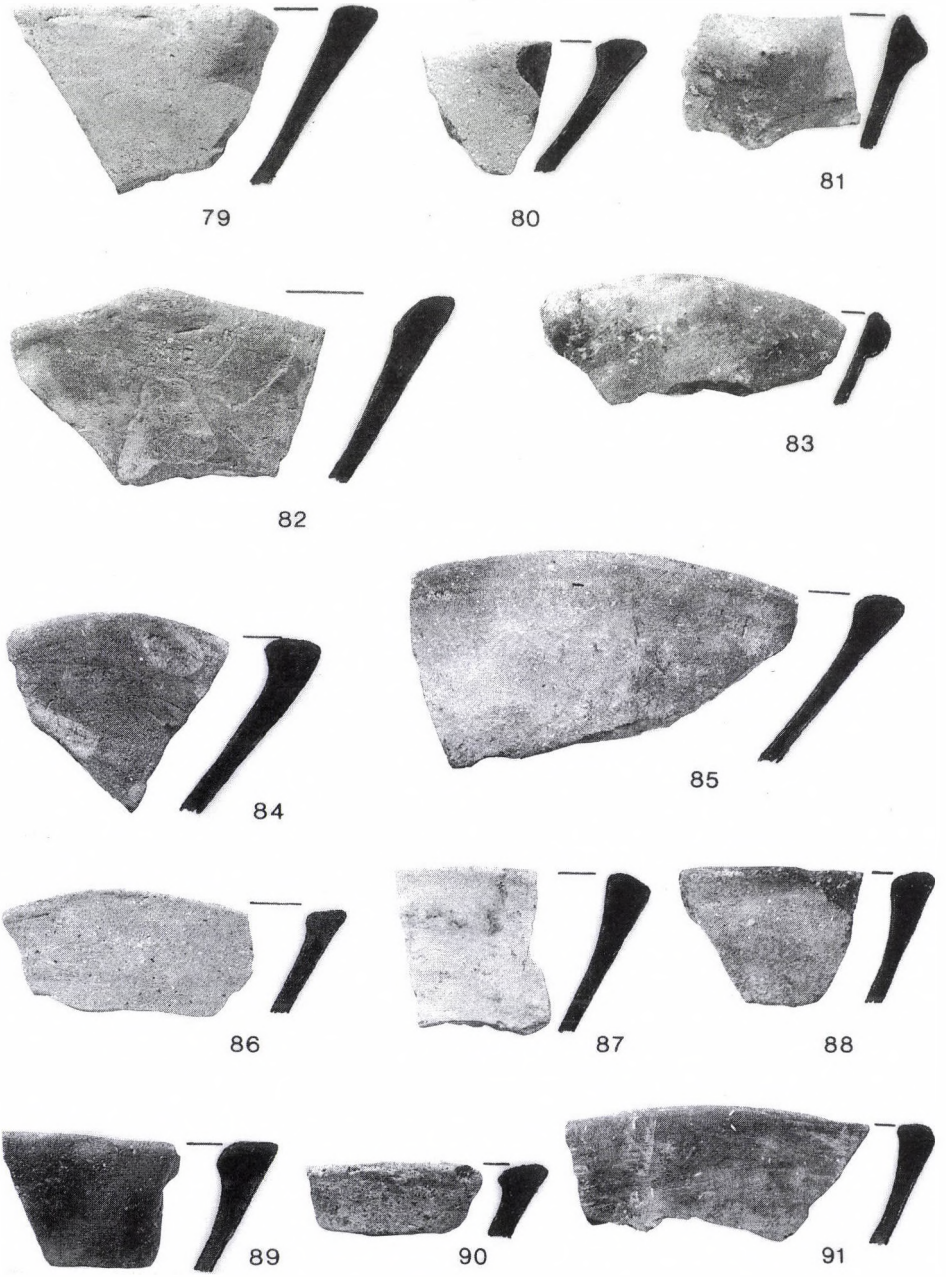
Pl. 85. Zalaszentbalázs-Szőlőhegyi mező. 41-44: Pit 5; 52,54:Pit 2; 53.



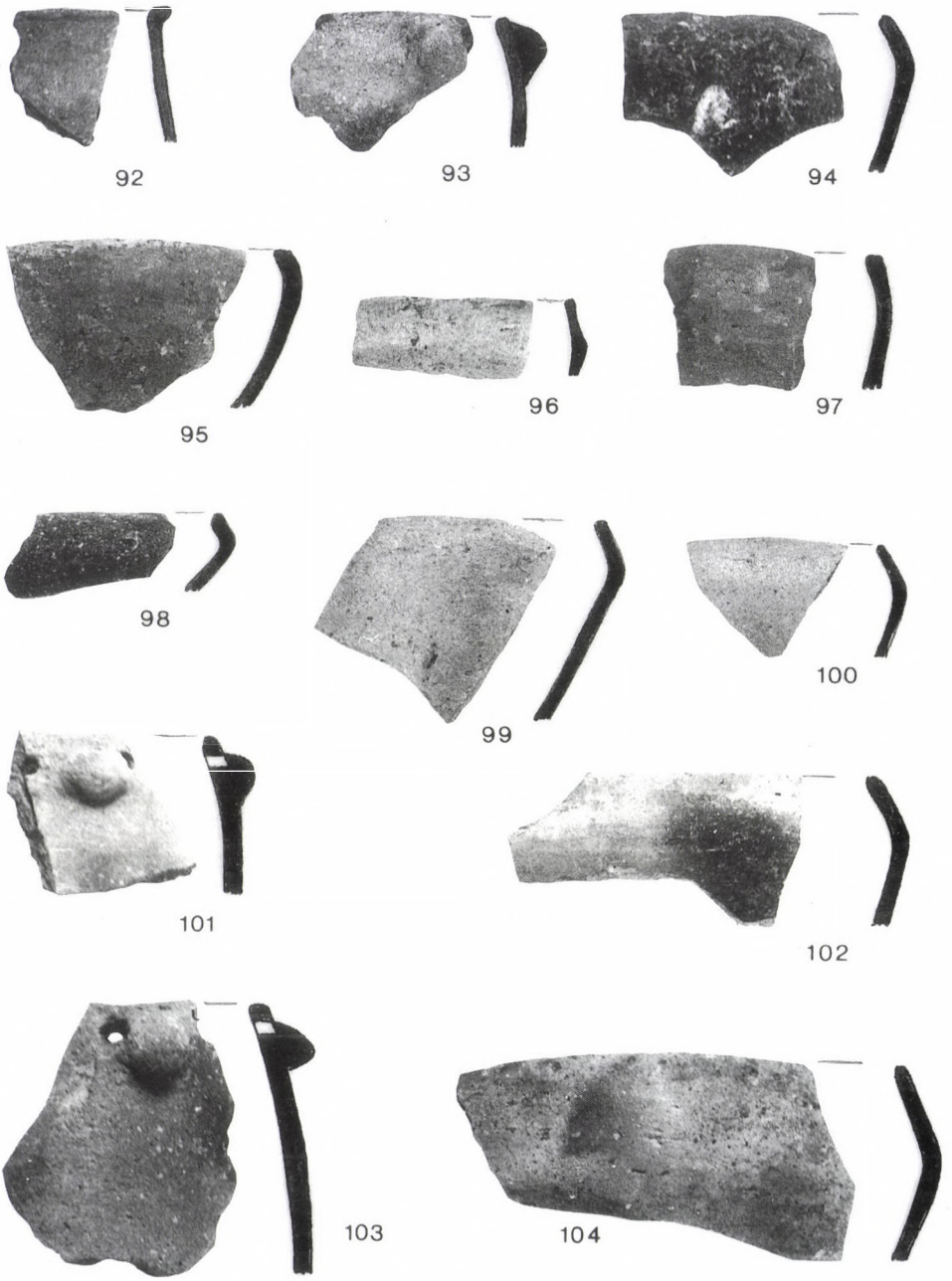
Pl. 86. Zalaszentbalázs-Szőlőhegyi mező. 55-56: House 2; 67: Pit 1; 68: Pit 2.



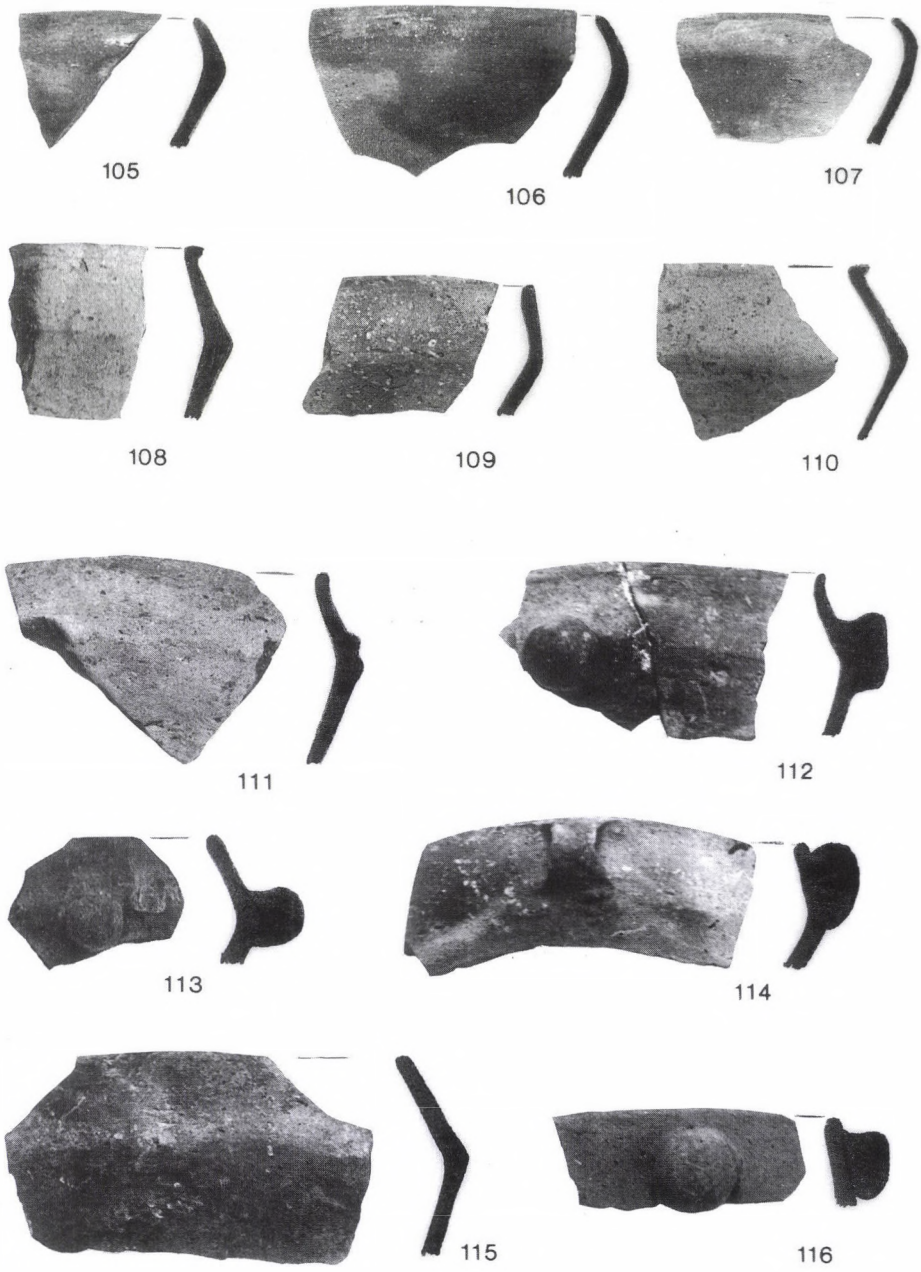
Pl. 87. Zalaszentbalázs-Szőlőhegyi mező. 69, 78: House 1; 70-77: House 2.



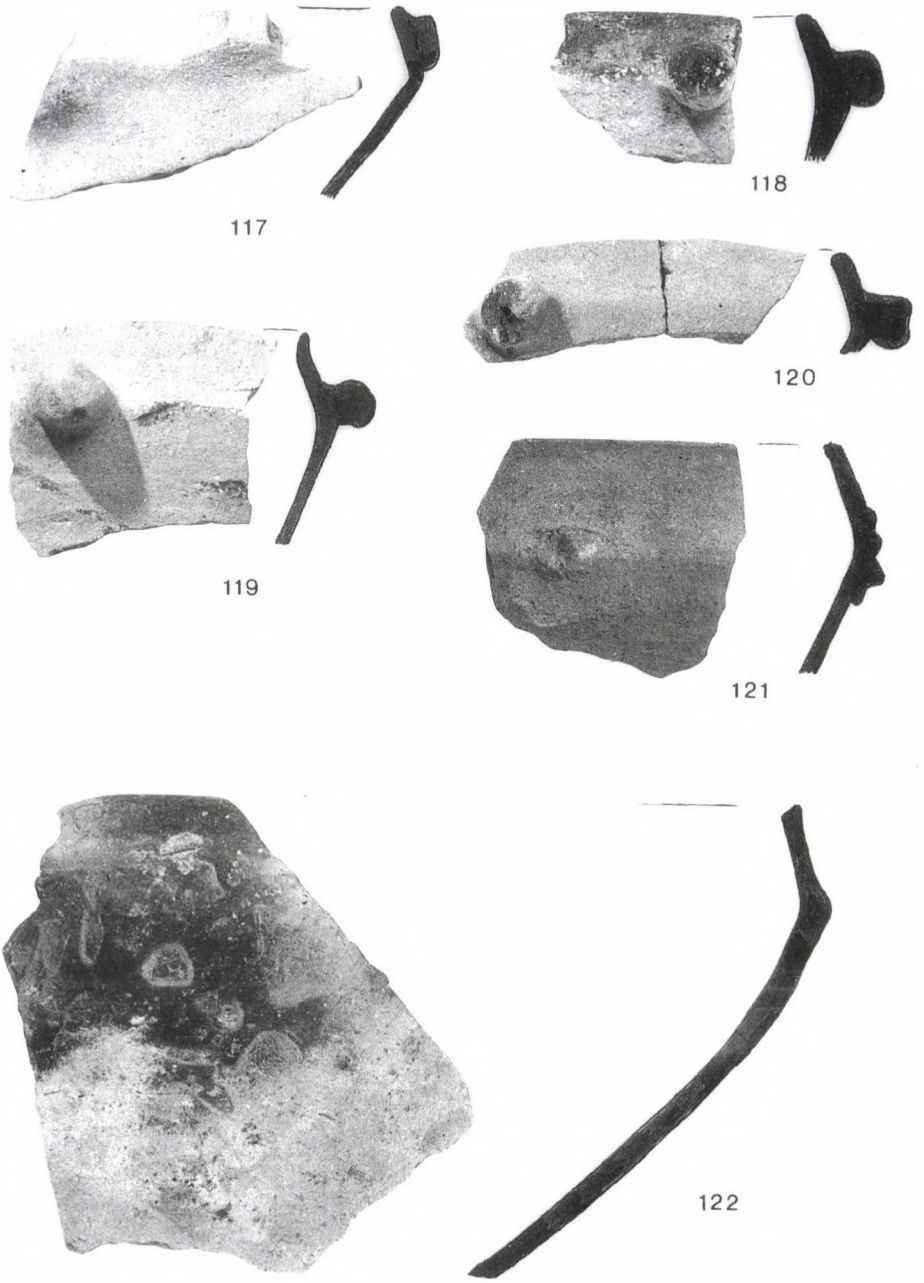
Pl. 88. Zalaszentbalázs-Szőlőhegyi mező. 79-91: House 2.



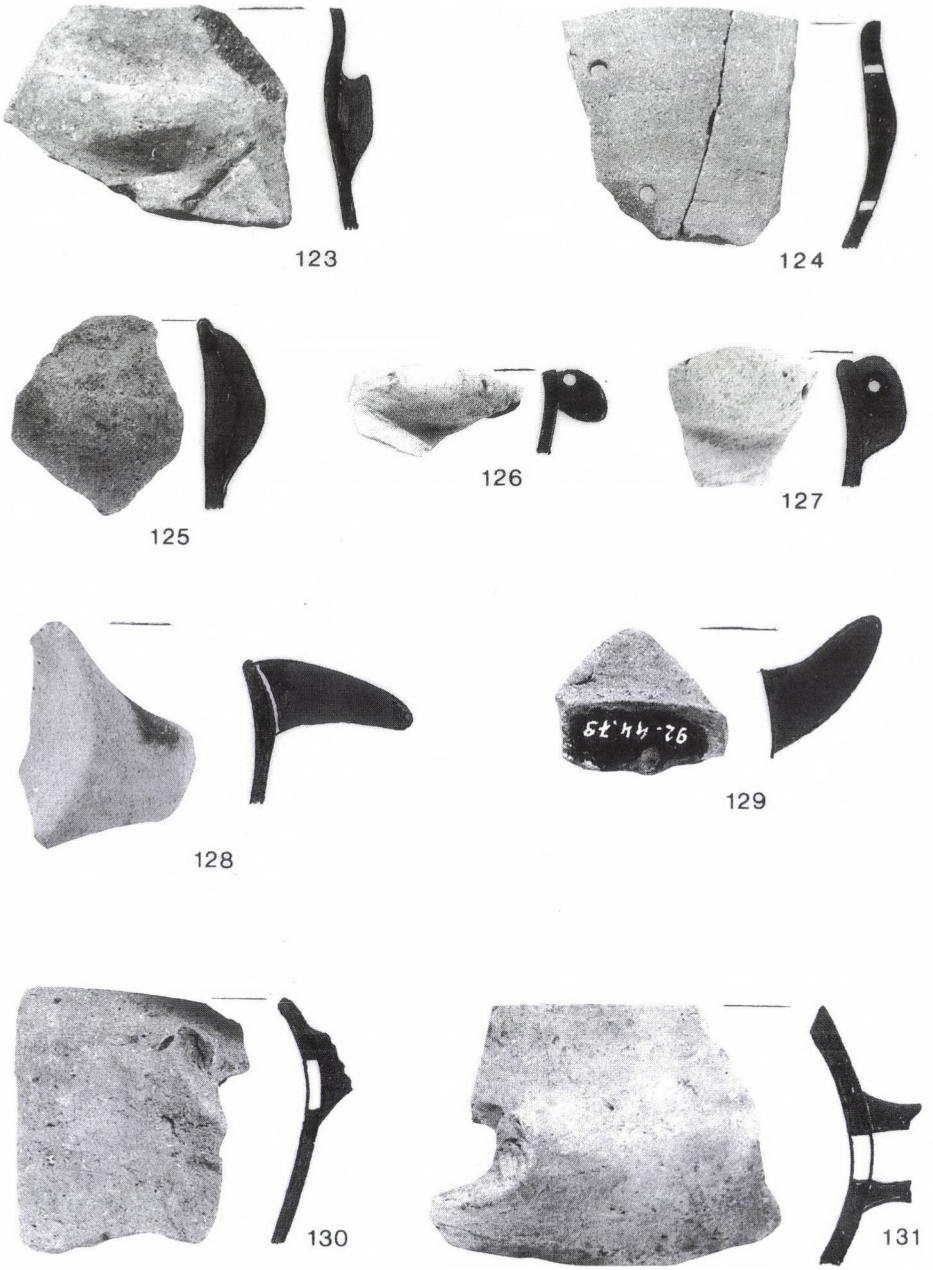
Pl. 89. Zalaszentbalázs-Szőlőhegyi mező. 92-99, 104: Pit 3; 100: Pit 5; 101: Pit 4; 102, 104: Pit 2.



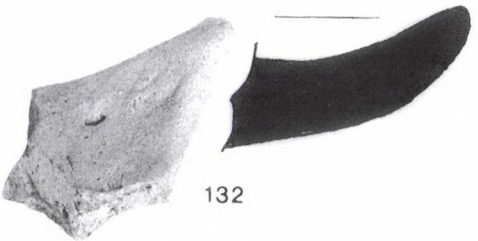
Pl. 90. Zalaszentbalázs-Szőlőhegyi mező. 105: Pit 4; 106, 107: Pit 5; 108-116: Pit 27.



Pl. 91. Zalaszentbalázs-Szőlőhegyi mező. 117, 118, 120: House 1; 119: House 2; 121: Pit 2; 122: Pit 1.



Pl. 92. Zalaszentbalázs-Szőlőhegyi mező. 123, 126, 129: House 2; 124: House 1; 130: Pit 1; 125, 127: Pit 2; 128, 131: Pit 4.



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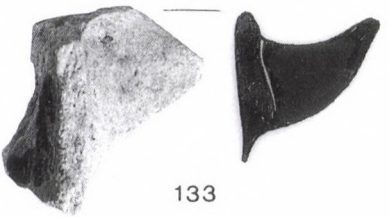

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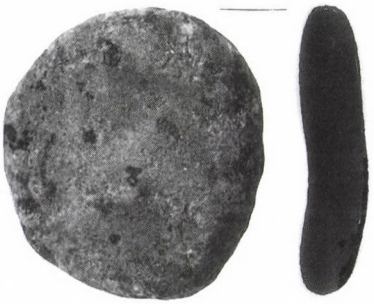

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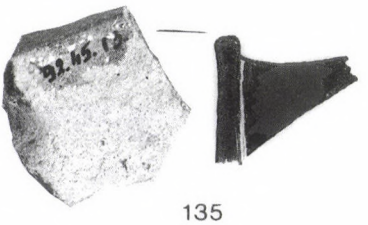

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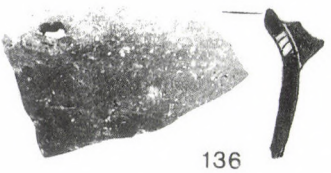

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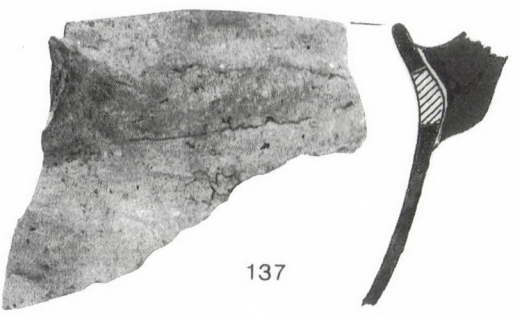

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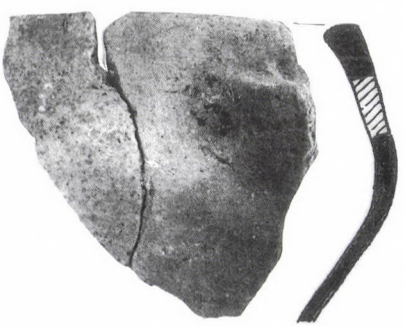

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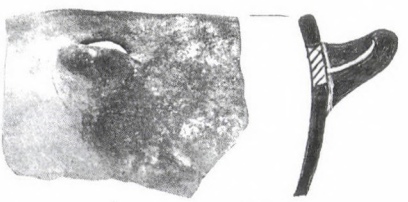

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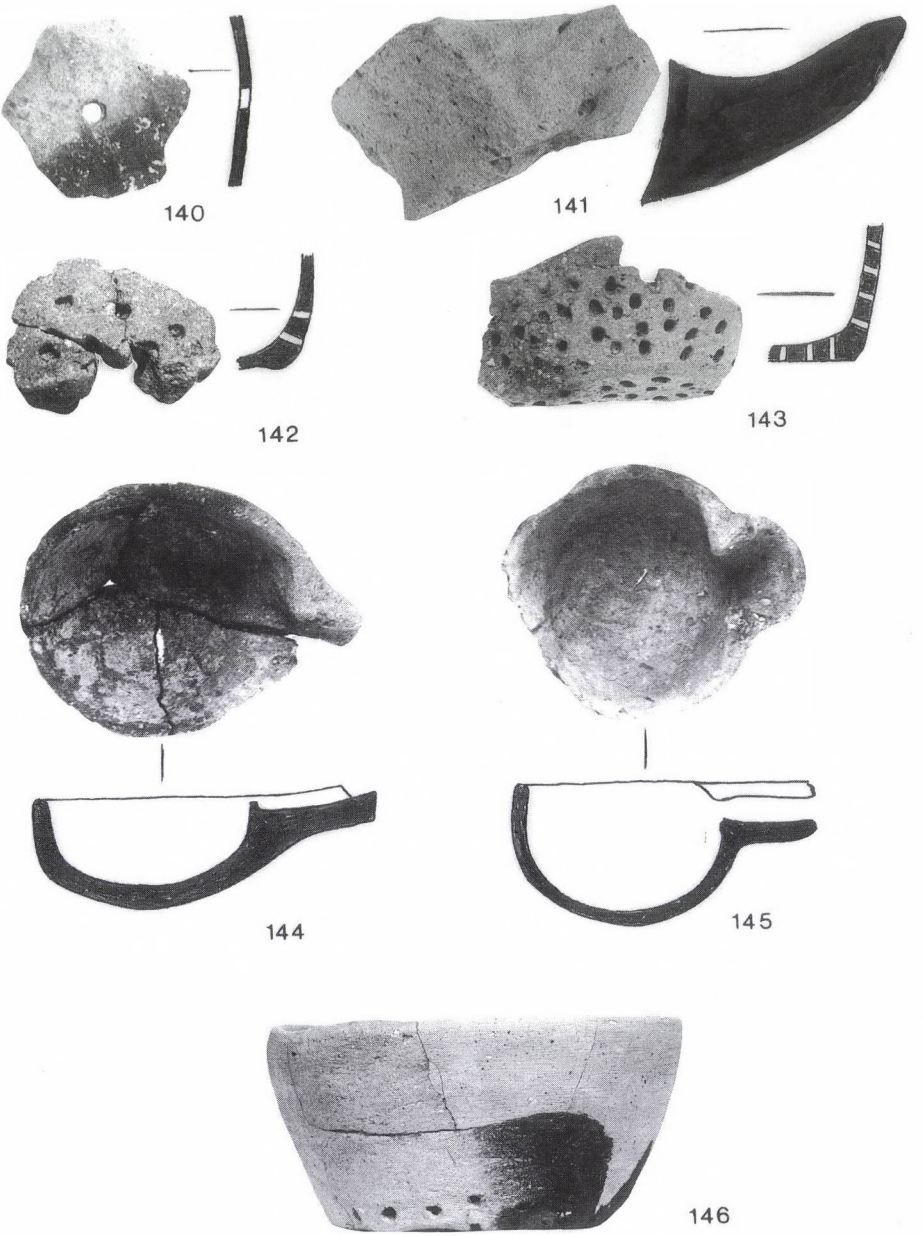
Pl. 93. Zalaszentbalázs-Szőlőhegyi mező. 132, 134, 136, 138, 139: Pit 5; 133: House 1; 135: House 3.



Pl. 94. Zalaszentbalázs-Szőlőhegyi mező. 140, 144, 145: Pit 2; 141: Pit 3; 143: Pit 4; 146: House 3.



147



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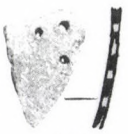
149



150



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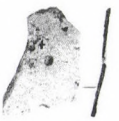

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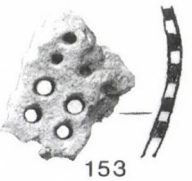

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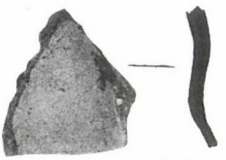

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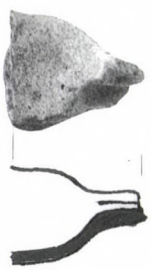

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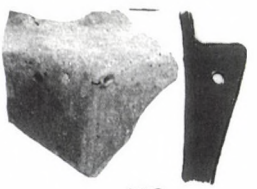
158



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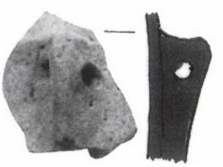
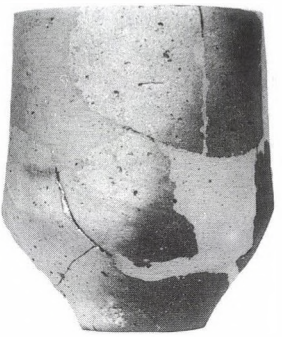


160

Pl. 95. Zalaszentbalázs-Szőlőhegyi mező. 147-149, 154-155, 160: Pit 2; 150-152: House 2; 153, 158: House 3; 156, 157: Pit 3; 159: Pit 5.



161



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164

Pl. 96. Zalaszentbalázs-Szőlőhegyi mező. 161, 164: Pit 2; 162: House 2; 163: Pit 4.



165

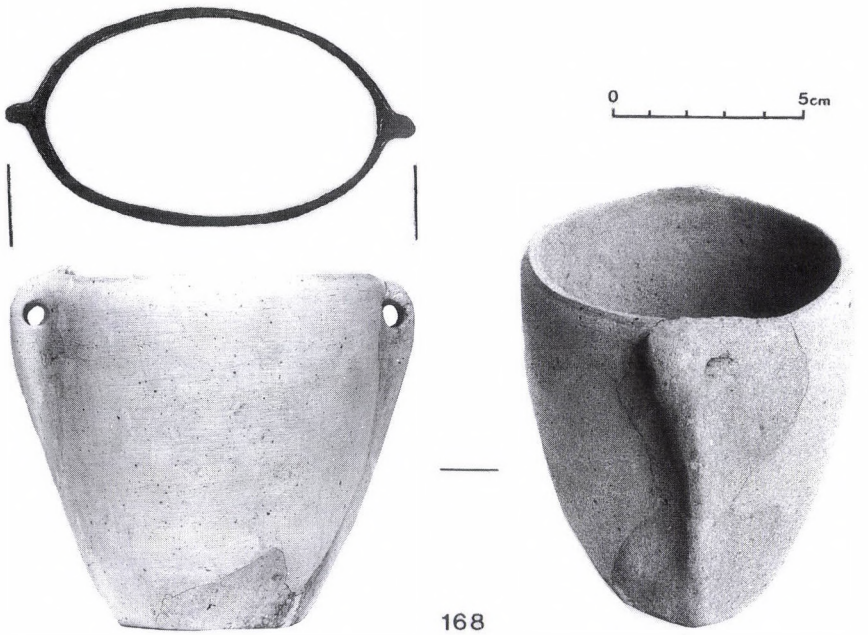


166

Pl. 97. Zalaszentbalázs-Szőlőhegyi mező. 165: Pit 4; 166: Pit 3.

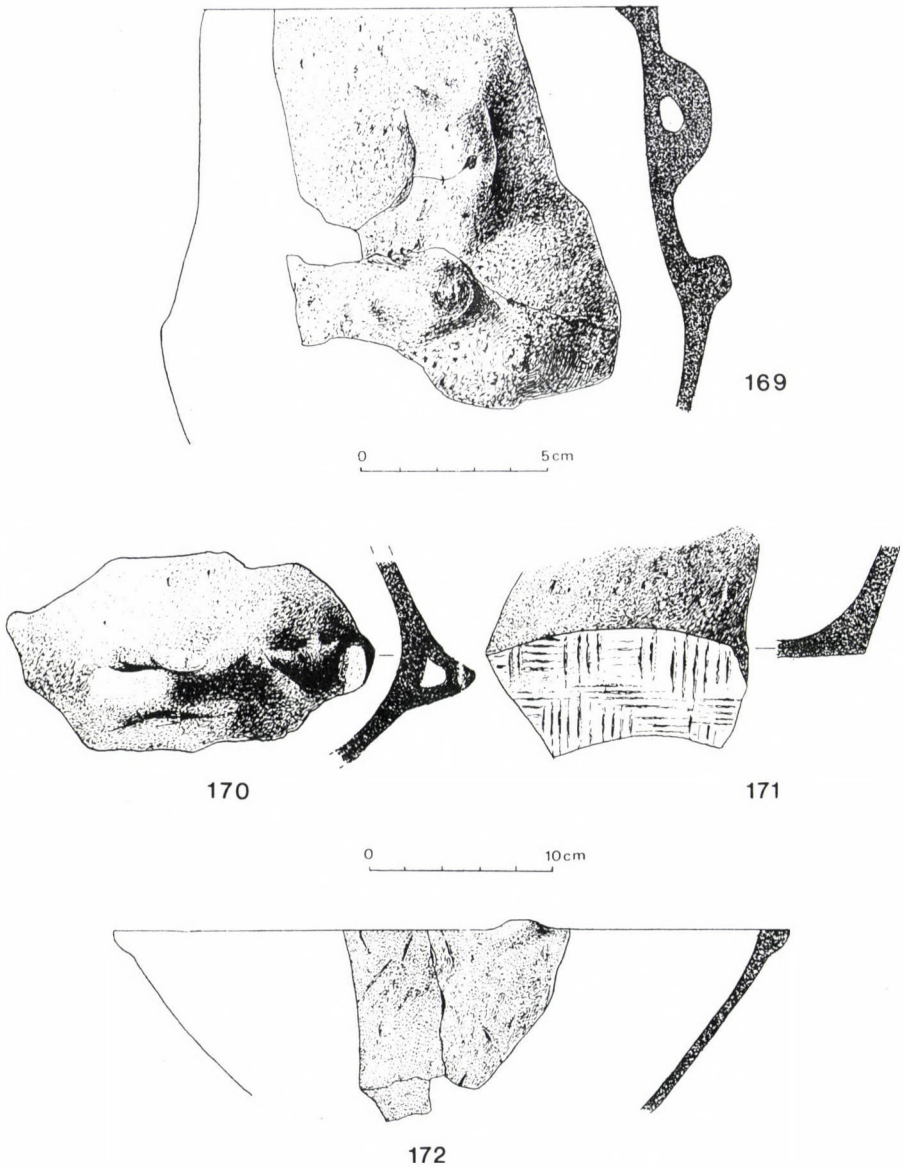


167

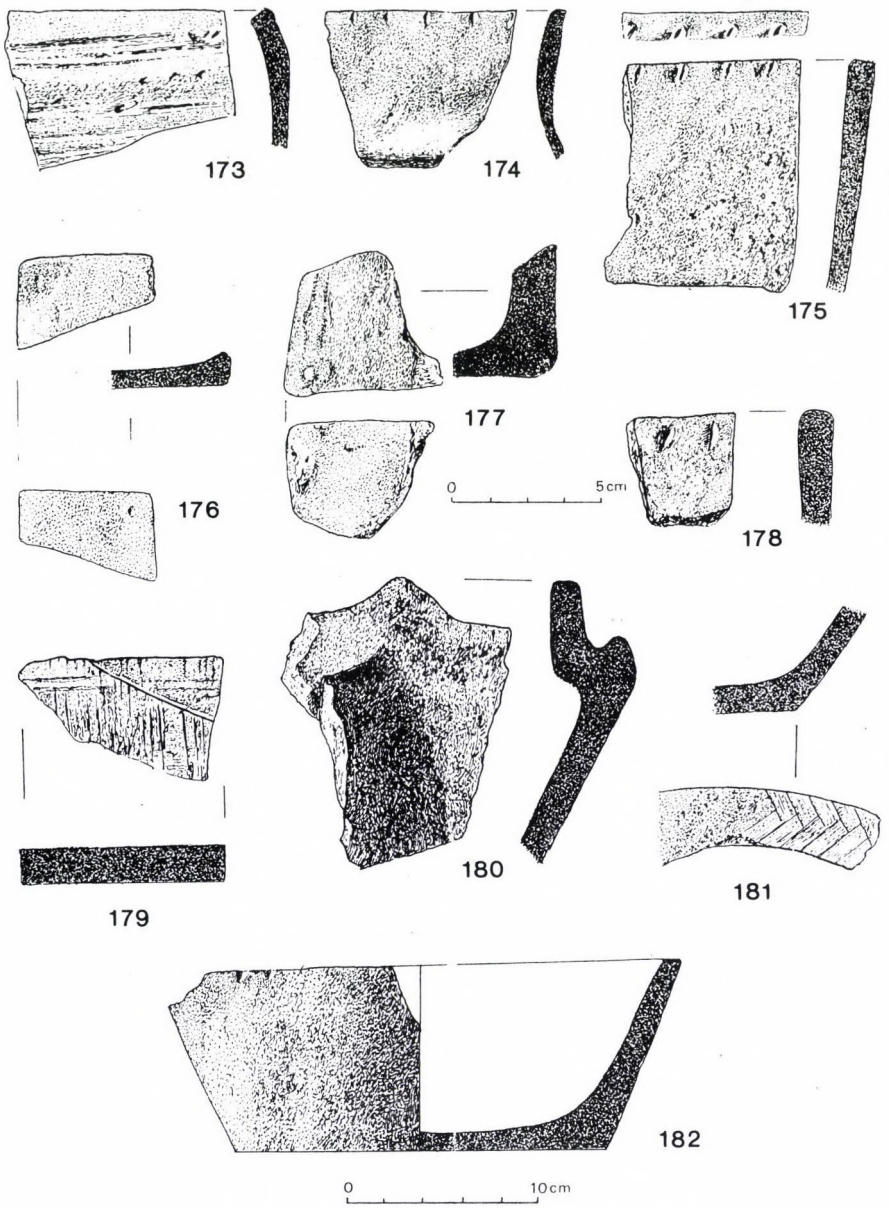


168

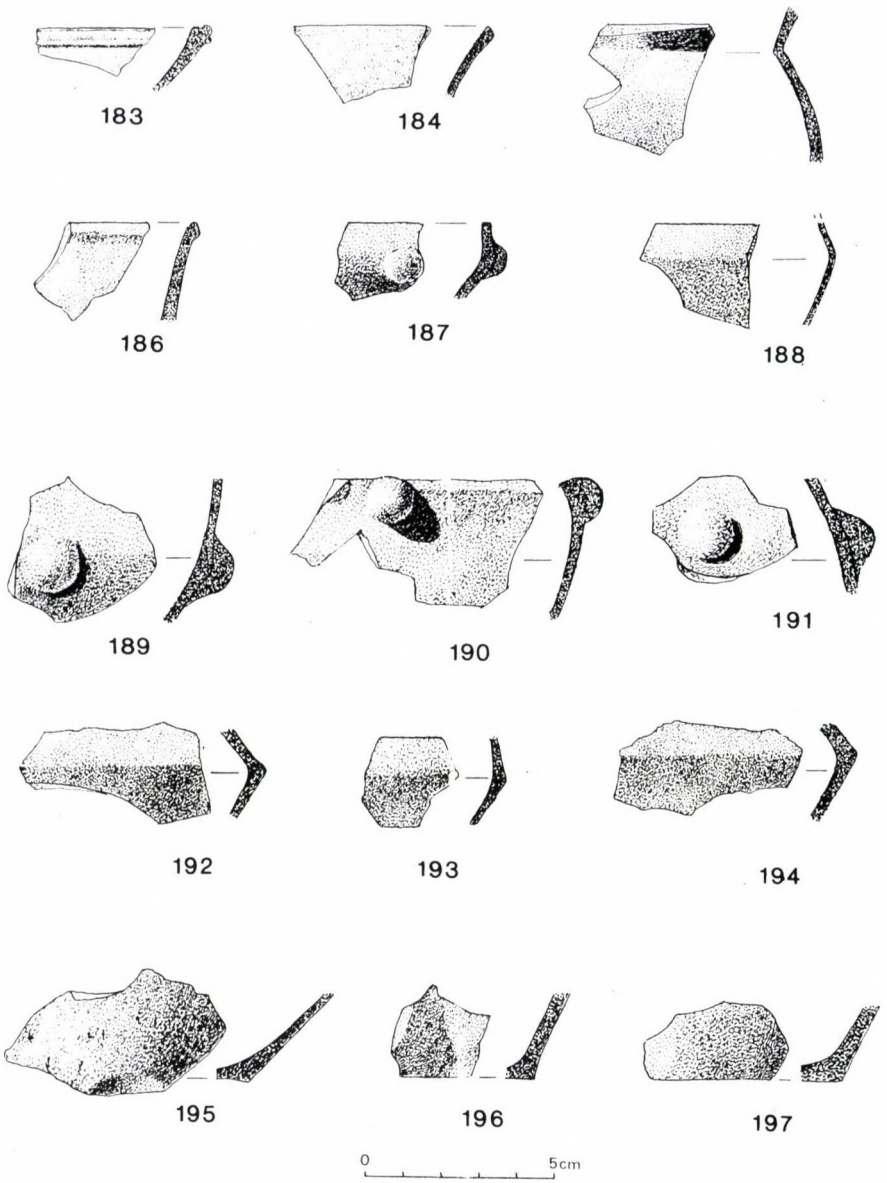
Pl. 98. Zalaszentbalázs-Szőlőhegyi mező. 167: different features; 168: House 3.



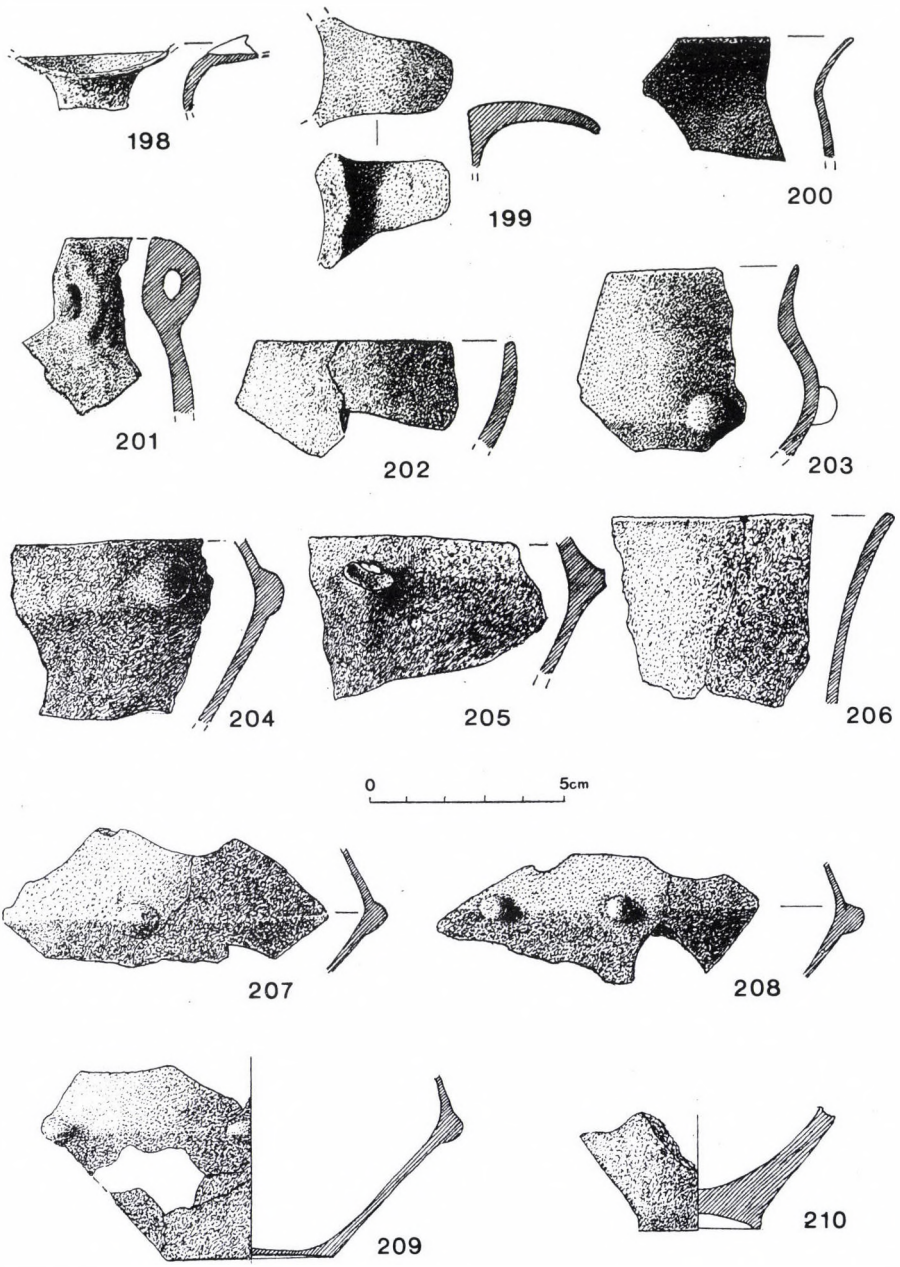
Pl. 99. Zalaszentbalázs-Szőlőhegyi mező. 169, 172: House 2; 170, 171: House 1.



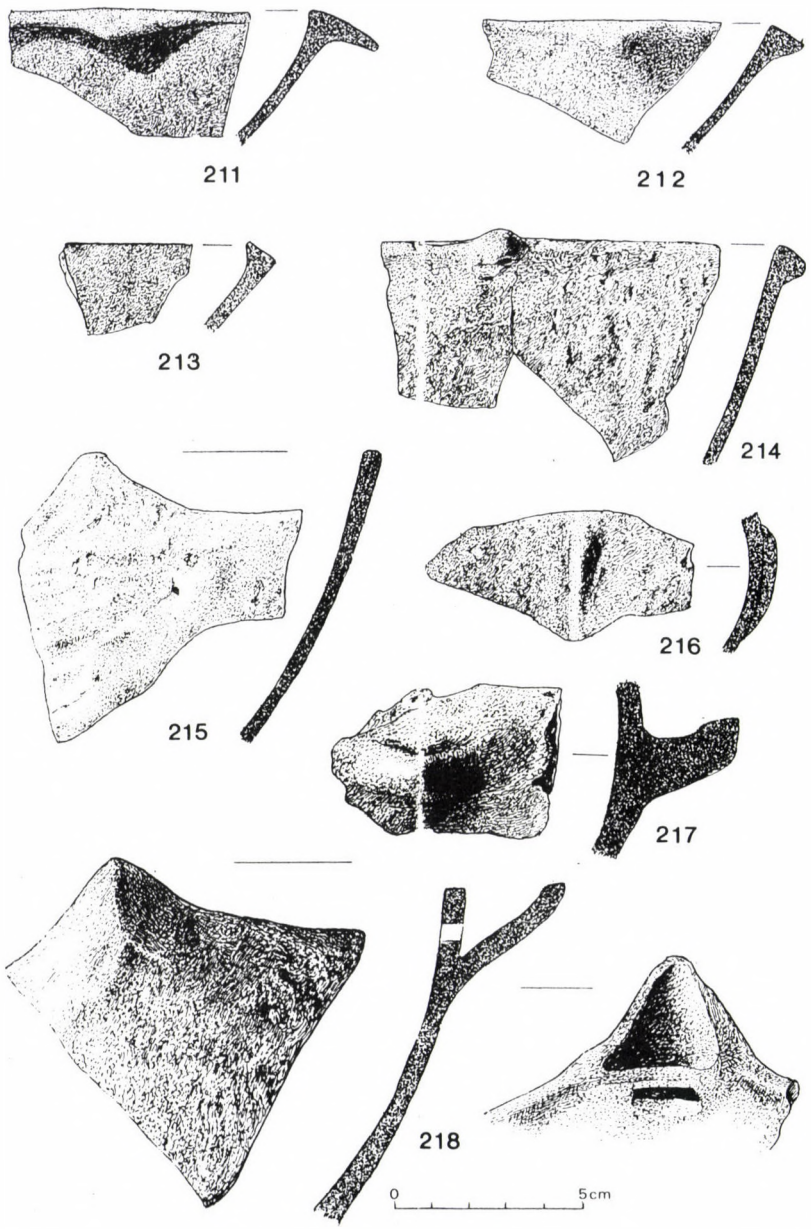
Pl. 100. Zalaszentbalázs-Szőlőhegyi mező. 173-182: House 2.



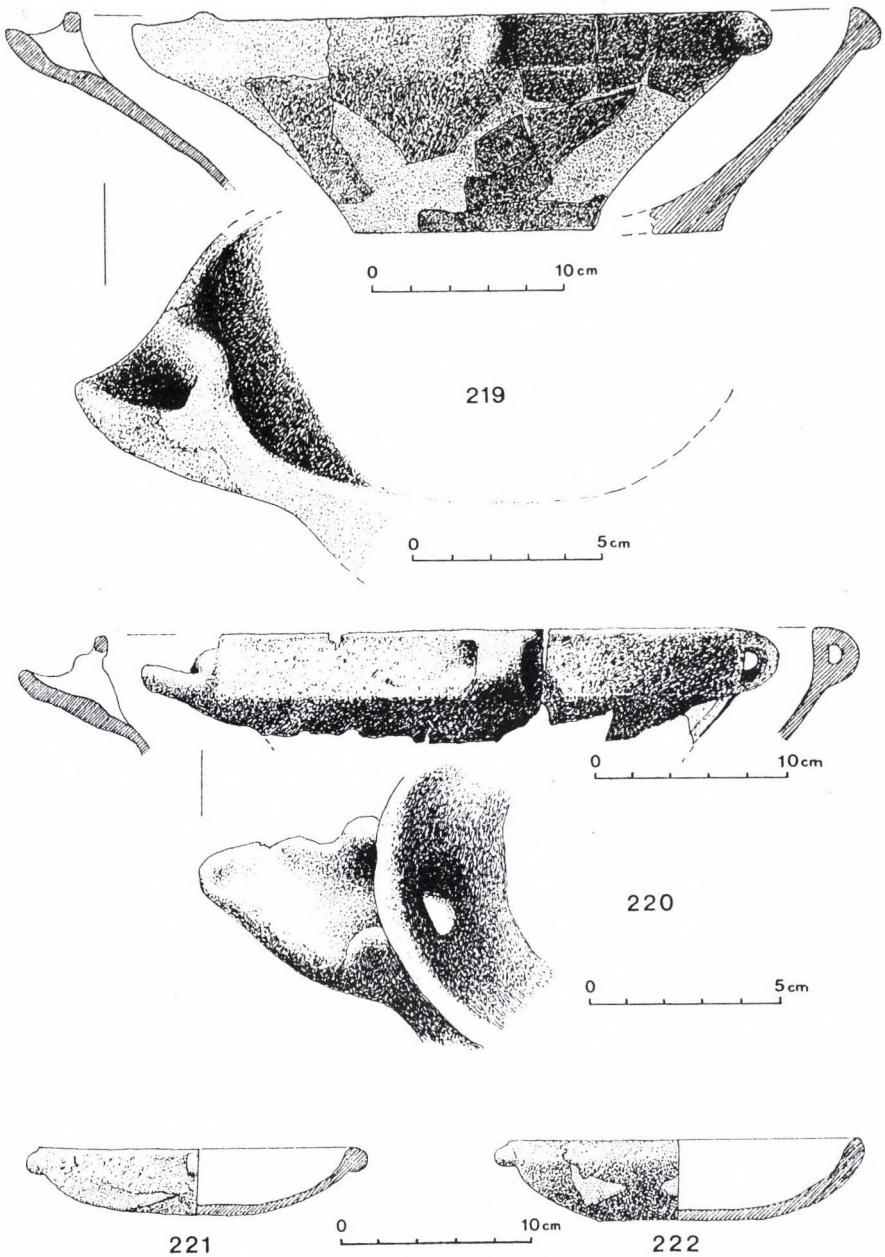
Pl. 101. Zalaszentbalázs-Szőlőhegyi mező. 183, 185, 187-194: House 2; 184, 186, 195-197: House 1.



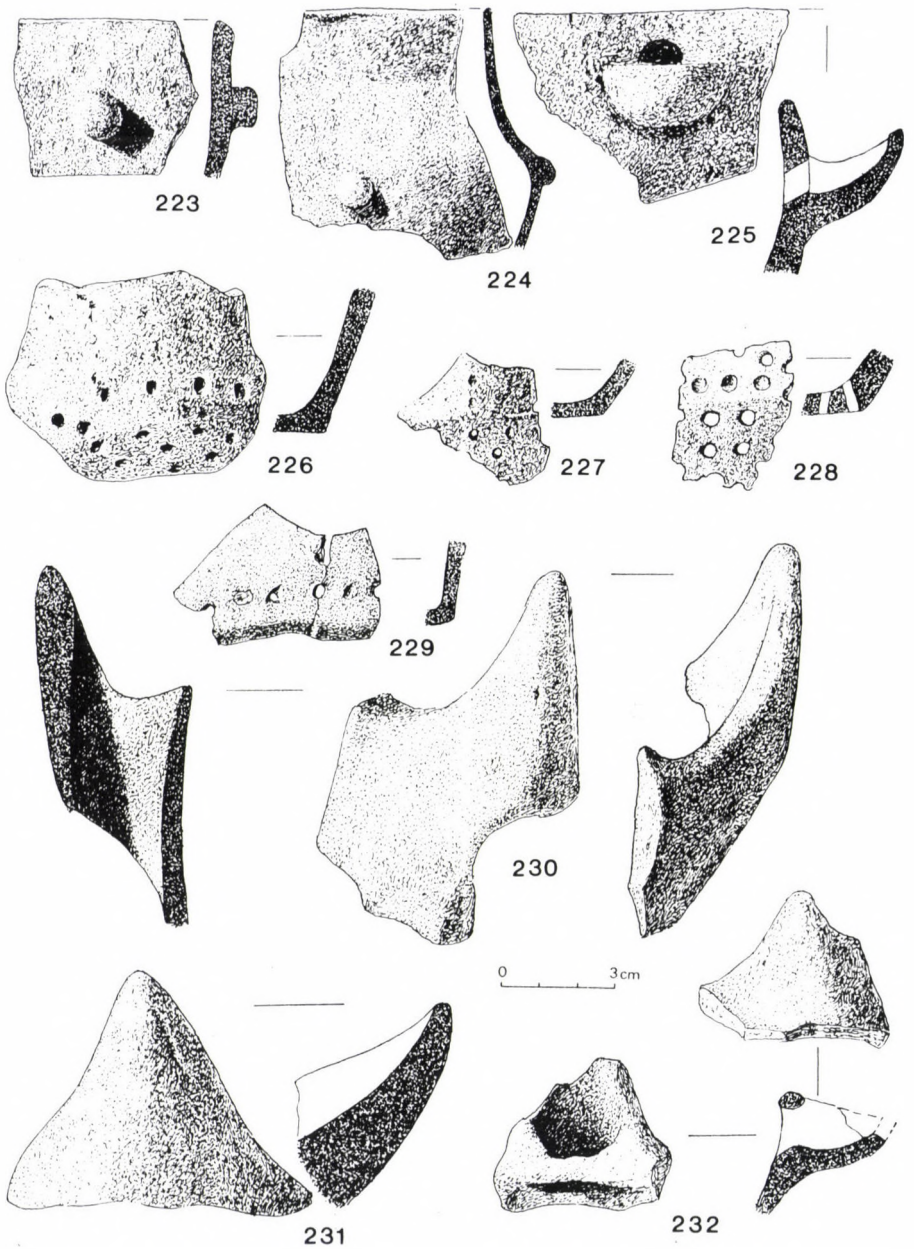
Pl. 102. Zalaszentbalázs-Szőlőhegyi mező. 198, 199, 203-204, 209-210: Pit 2; 200, 206: Pit 4; 201: Pit 1; 202, 205, 207, 208: Pit 3.



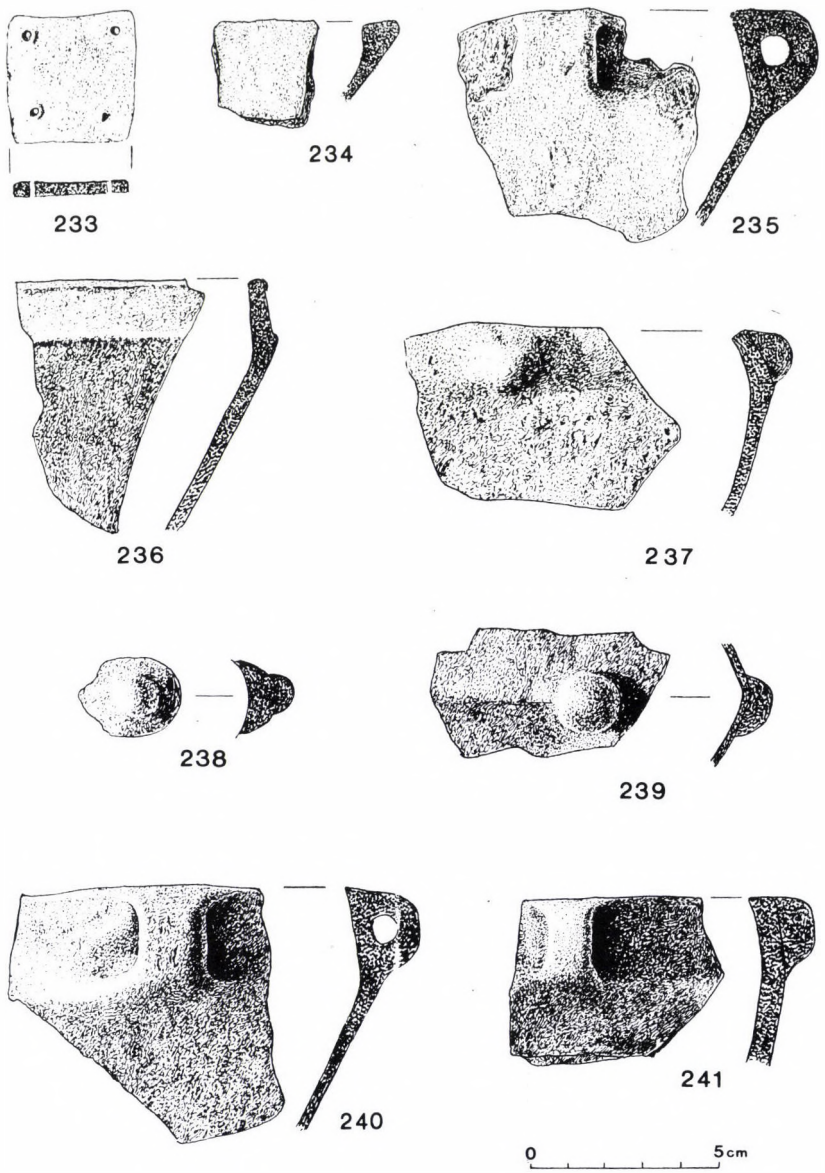
Pl. 103. Zalaszentbalázs-Szőlőhegyi mező. 211, 212, 214-217: House 2; 213, 218: House 1.



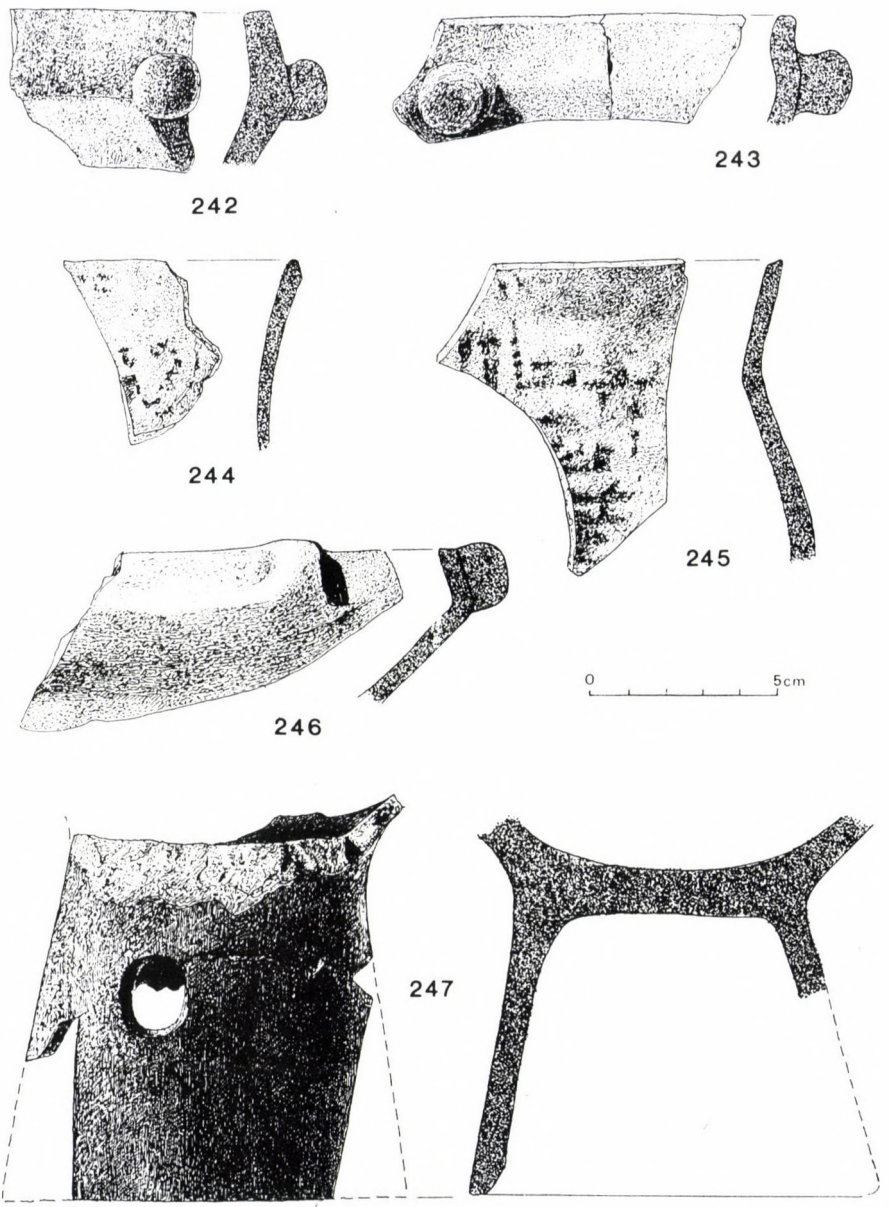
Pl. 104. Zalaszentbalázs-Szőlőhegyi mező. 219: Pit 3; 220: House 2; 221: Pit 4.



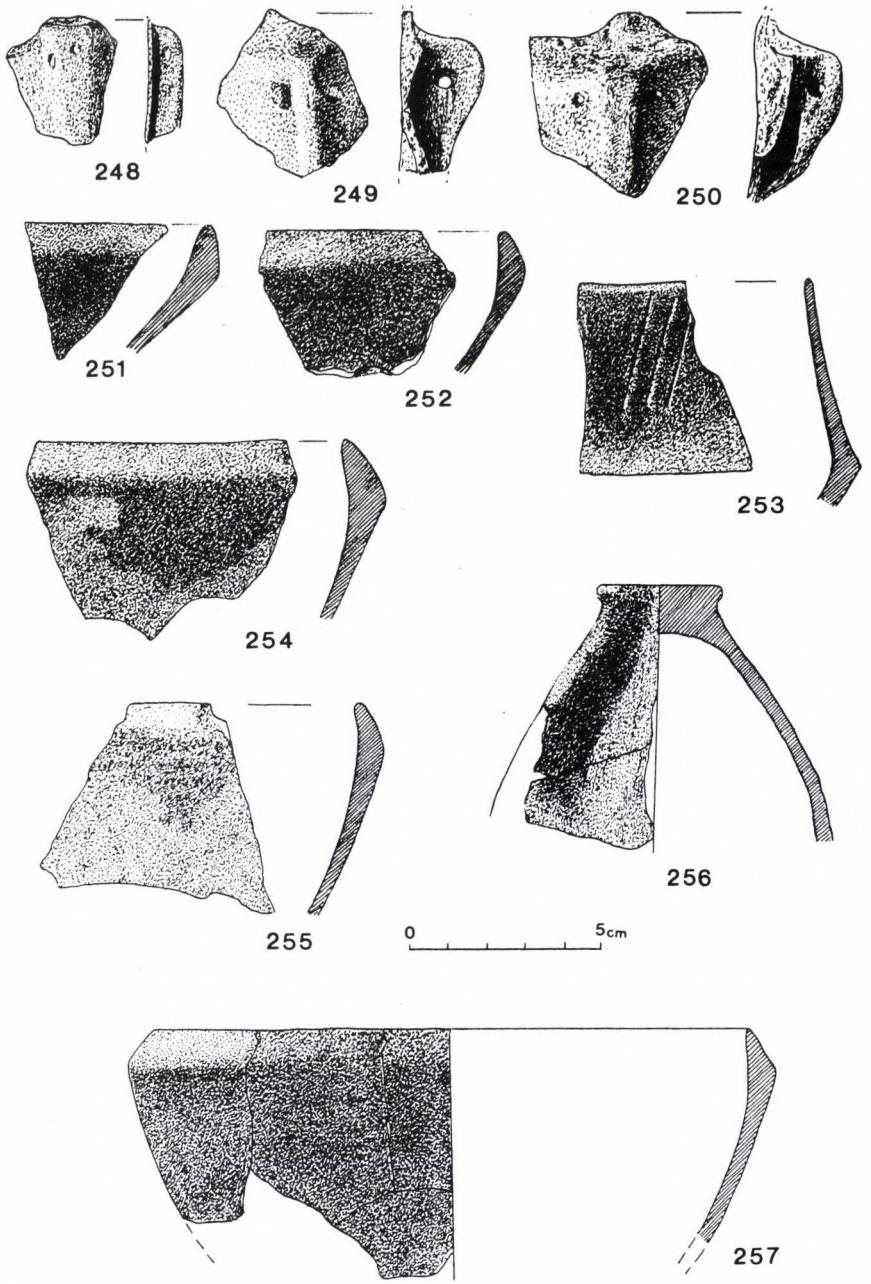
Pl. 105. Zalaszentbalázs-Szőlőhegyi mező. 223, 225-230, 232: House 2; 224, 231: House 1.



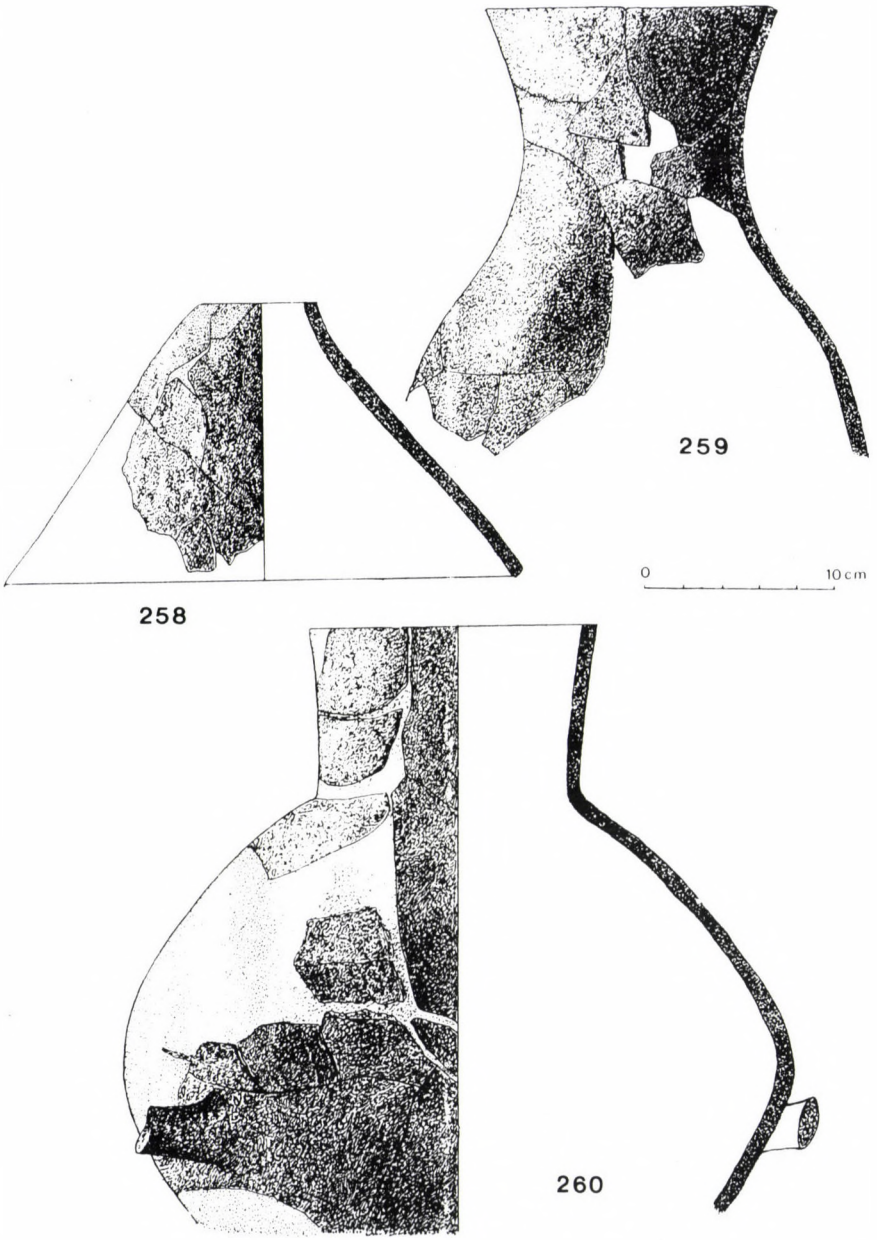
Pl. 106. Zalaszentbalázs-Szőlőhegyi mező. 233-235, 237-241: House 2; 236: House 1.



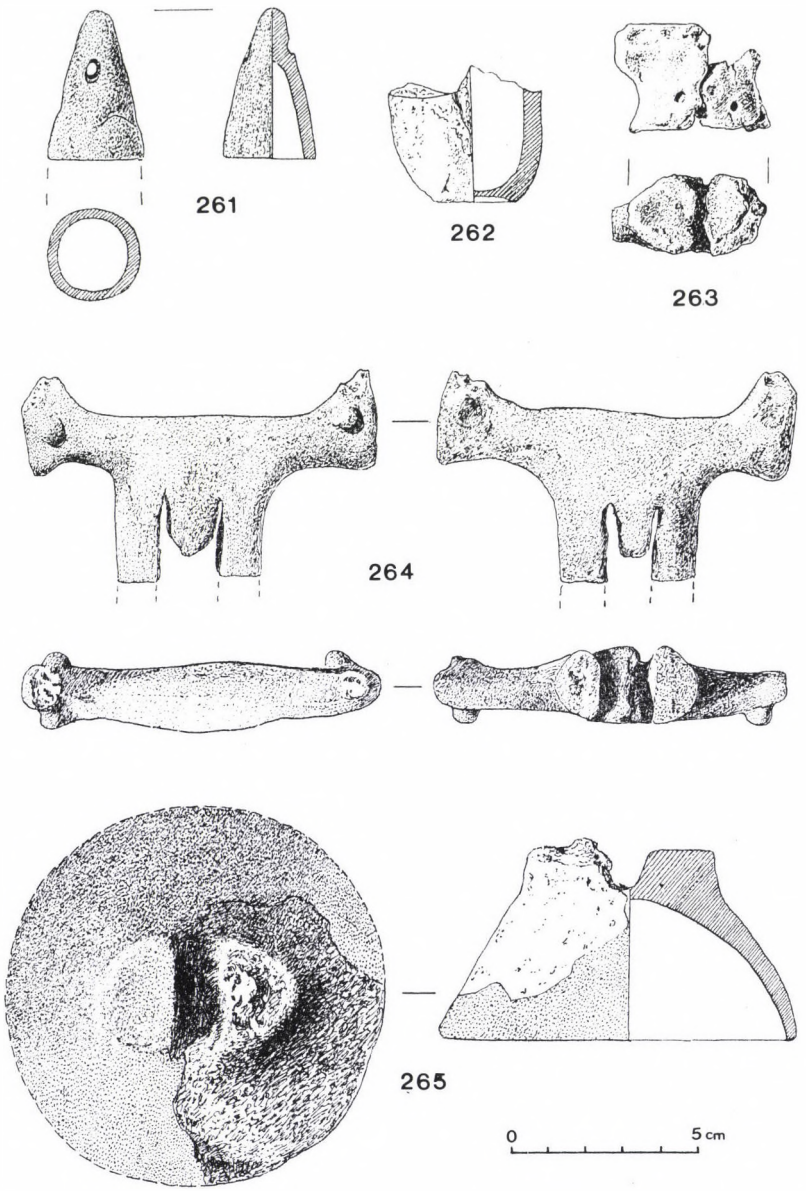
Pl. 107. Zalaszentbalázs-Szőlőhegyi mező. 242-243, 245-247: House 1; 244: House 2.



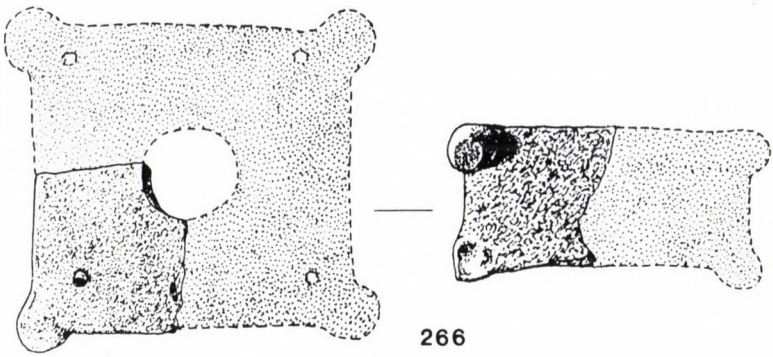
Pl. 108. Zalaszentbalázs-Szőlőhegyi mező. 248, 249: House 2; 250: Pit 4; 251-257: Pit 5.



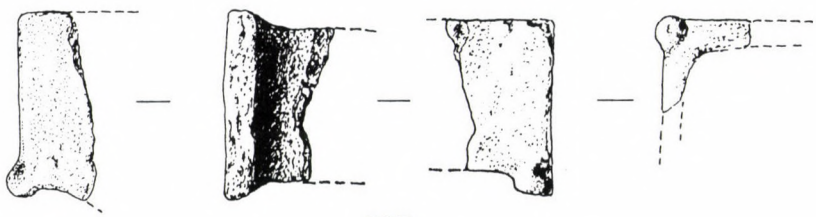
Pl. 109. Zalaszentbalázs-Szőlőhegyi mező. 258: House 2; 259,260: House 3.



Pl. 110. Zalaszentbalázs-Szőlőhegyi mező. 261-263: House 3; 264: Pit 5; 265:Pit 4.



266



267

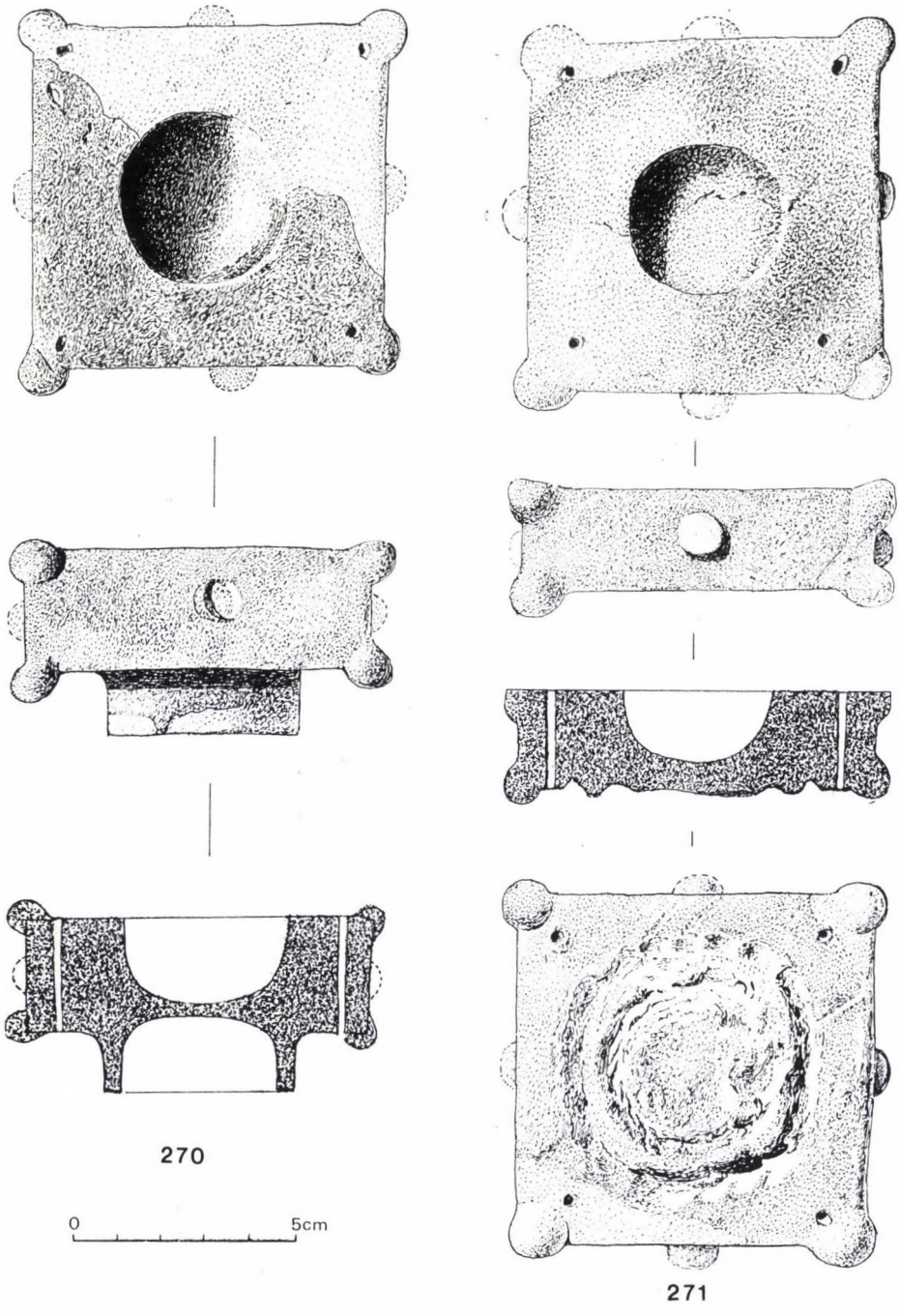


268

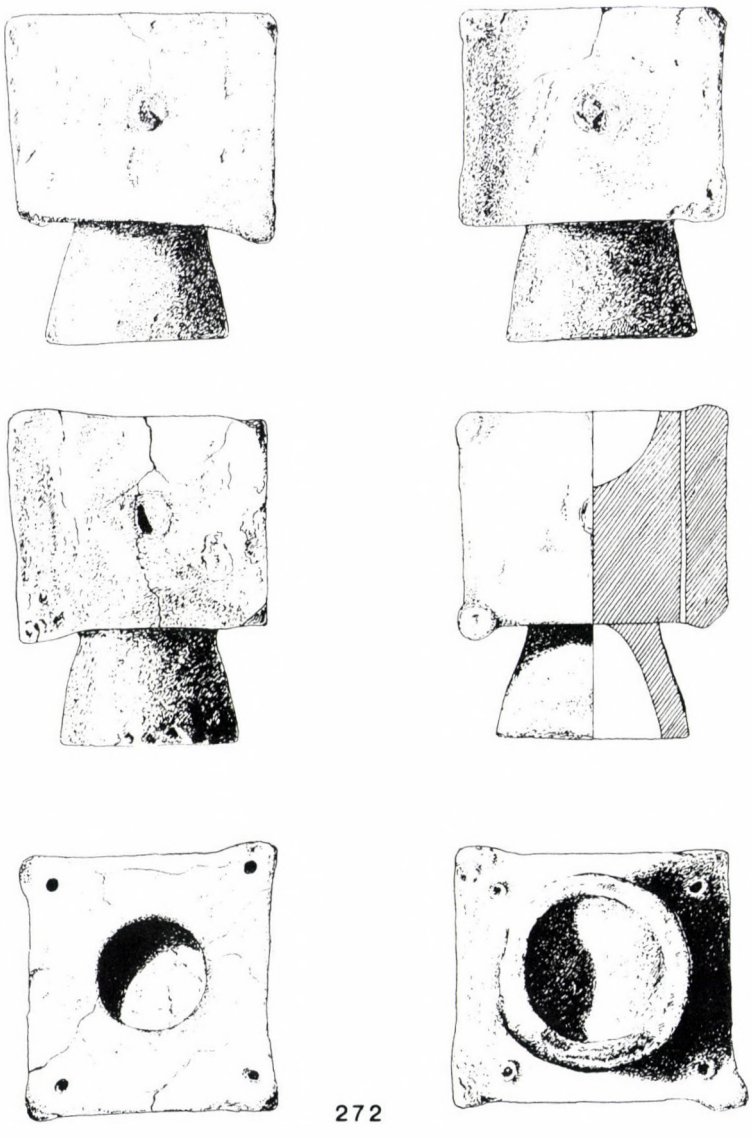
269

0 5cm

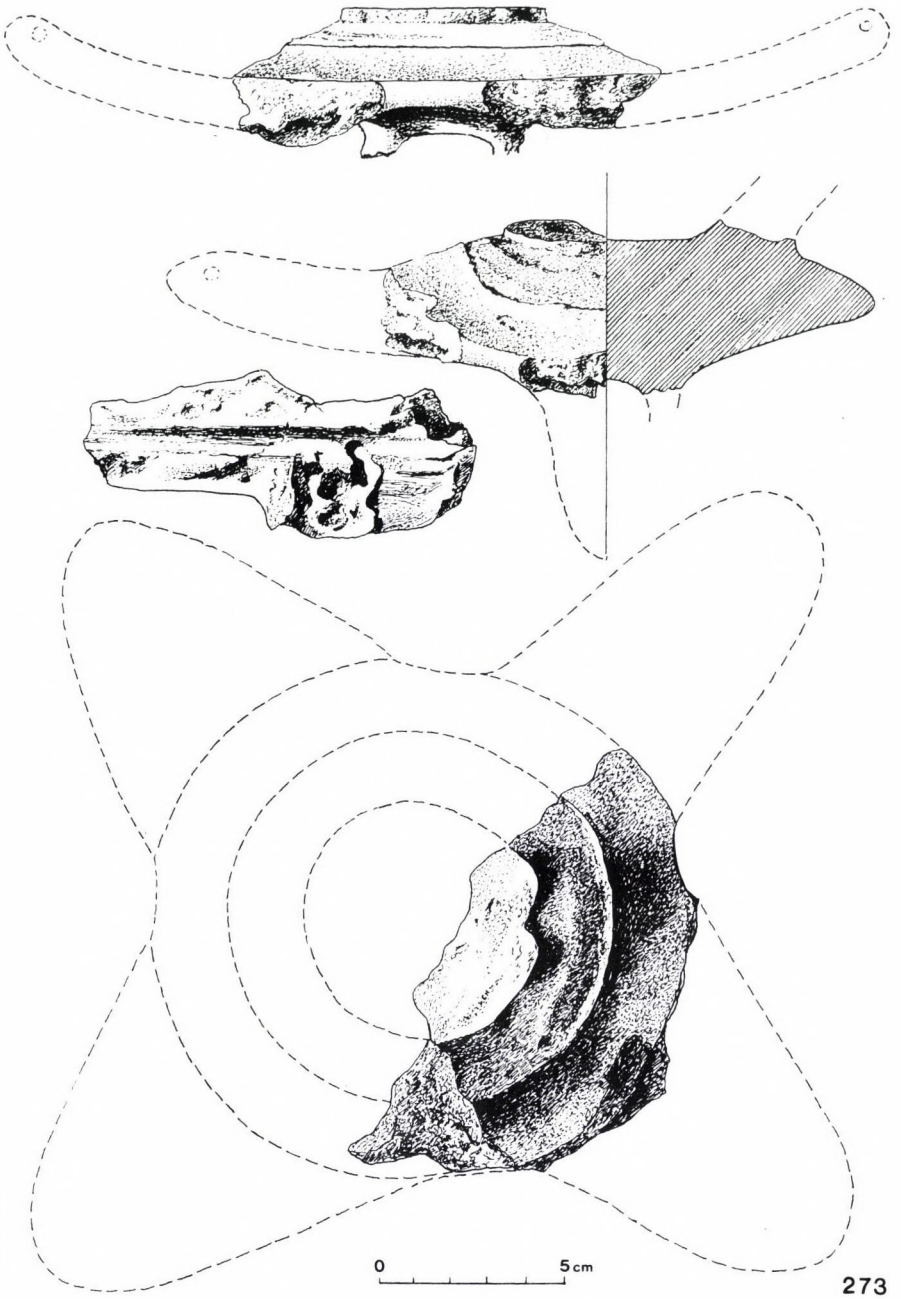
Pl. 111. Zalaszentbalázs-Szőlőhegyi mező. 266: Pit 4; 267: House 3; 268, 269: Pit 5.



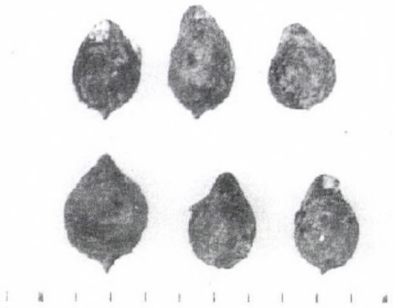
Pl. 112. Zalaszentbalázs-Szőlőhegyi mező. 270, 271: House 2.



Pl. 113. Zalaszentbalázs-Szőlőhegyi mező. 272: Pit 2.



Pl. 114. Zalaszentbalázs-Szőlőhegyi mező. 273: Pit 4.



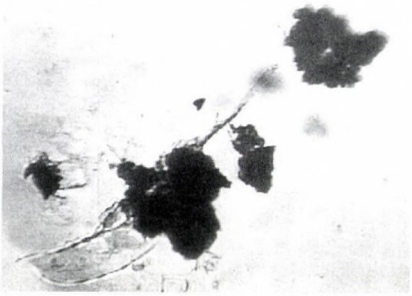
1



2



3



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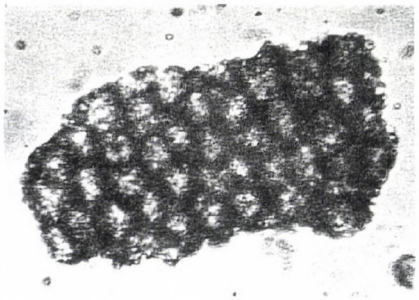

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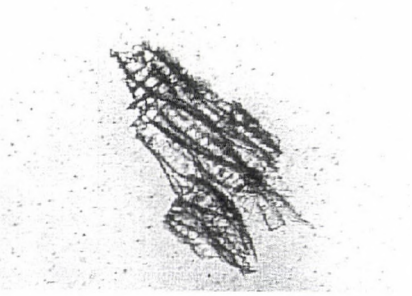
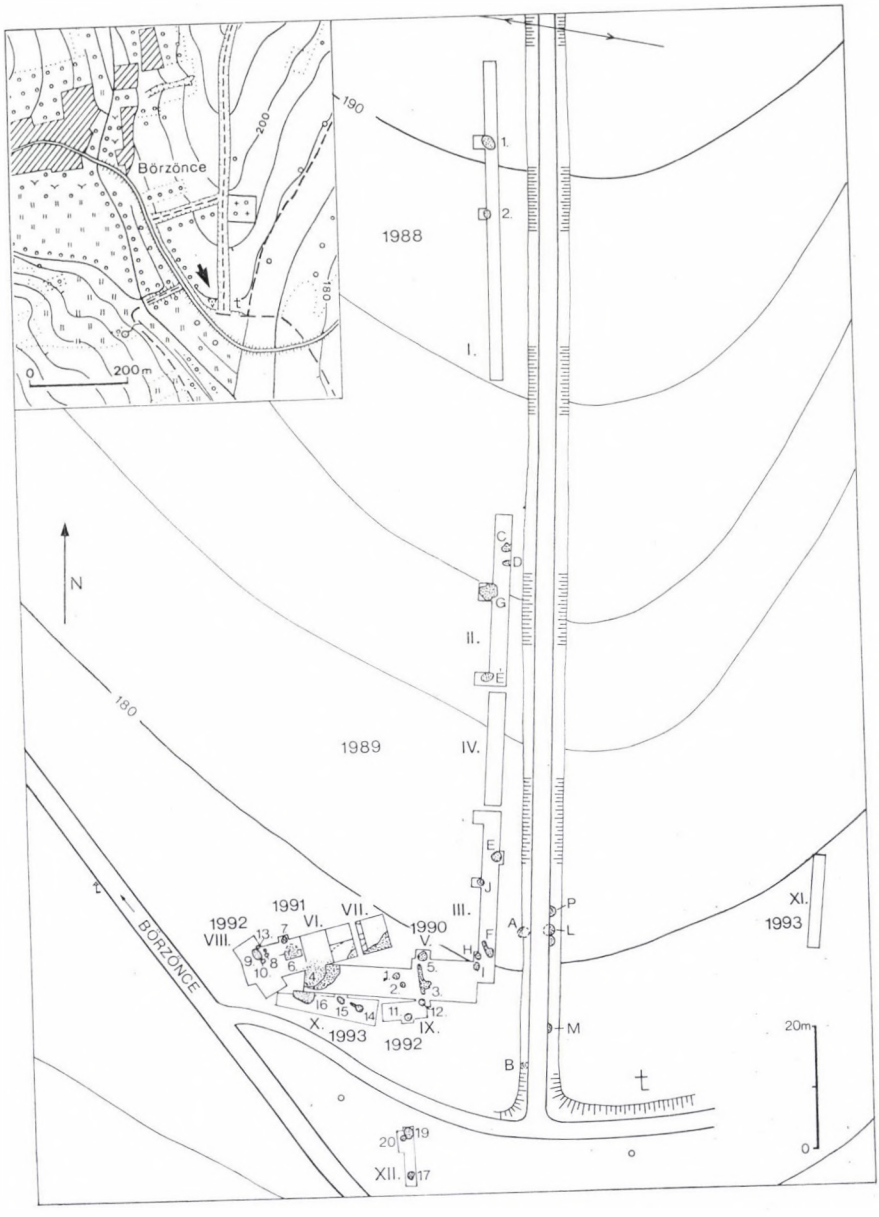


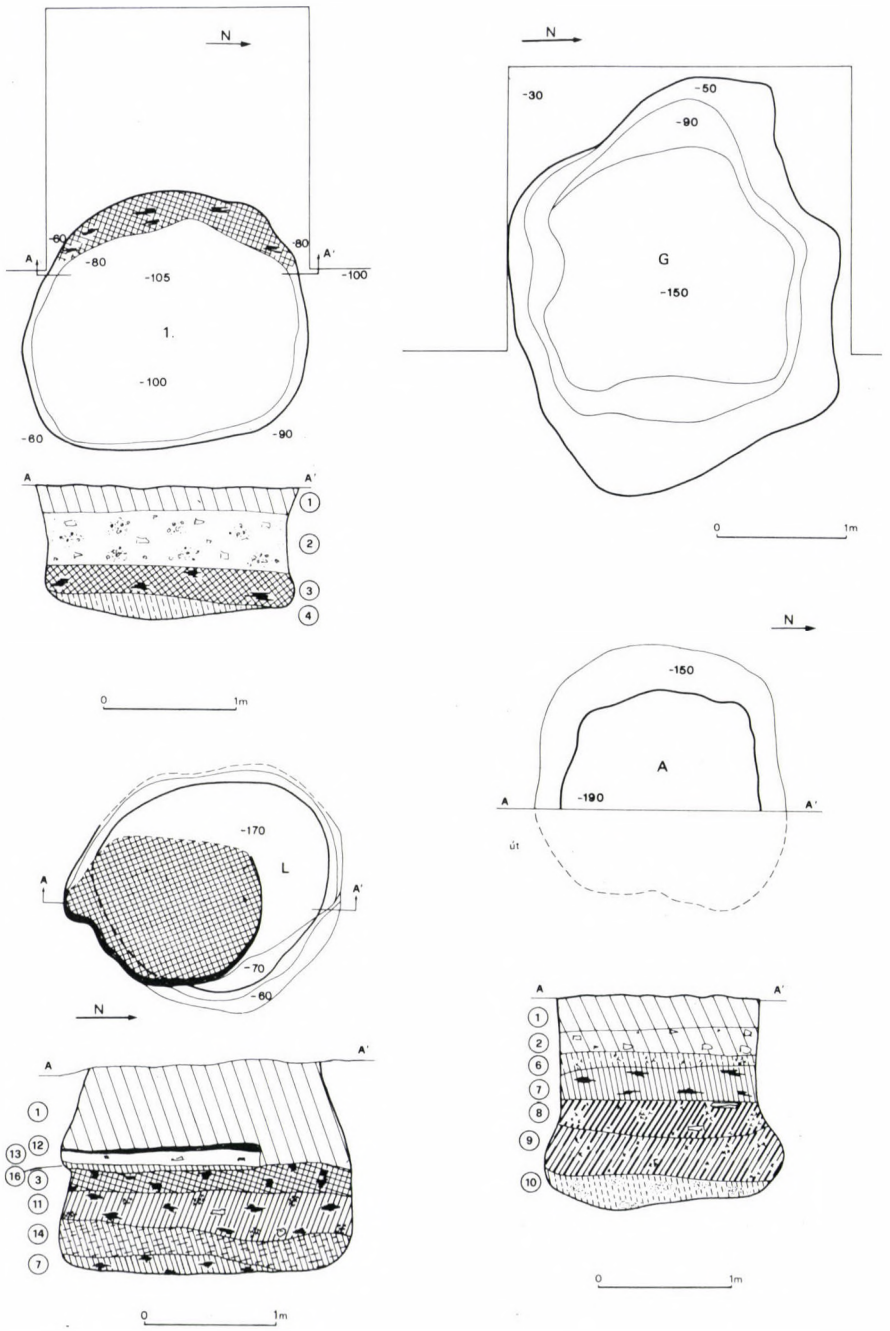
6

Pl. 115. Archaeobotanical remains from Zalaszabar- Szőlőhegyi mező.

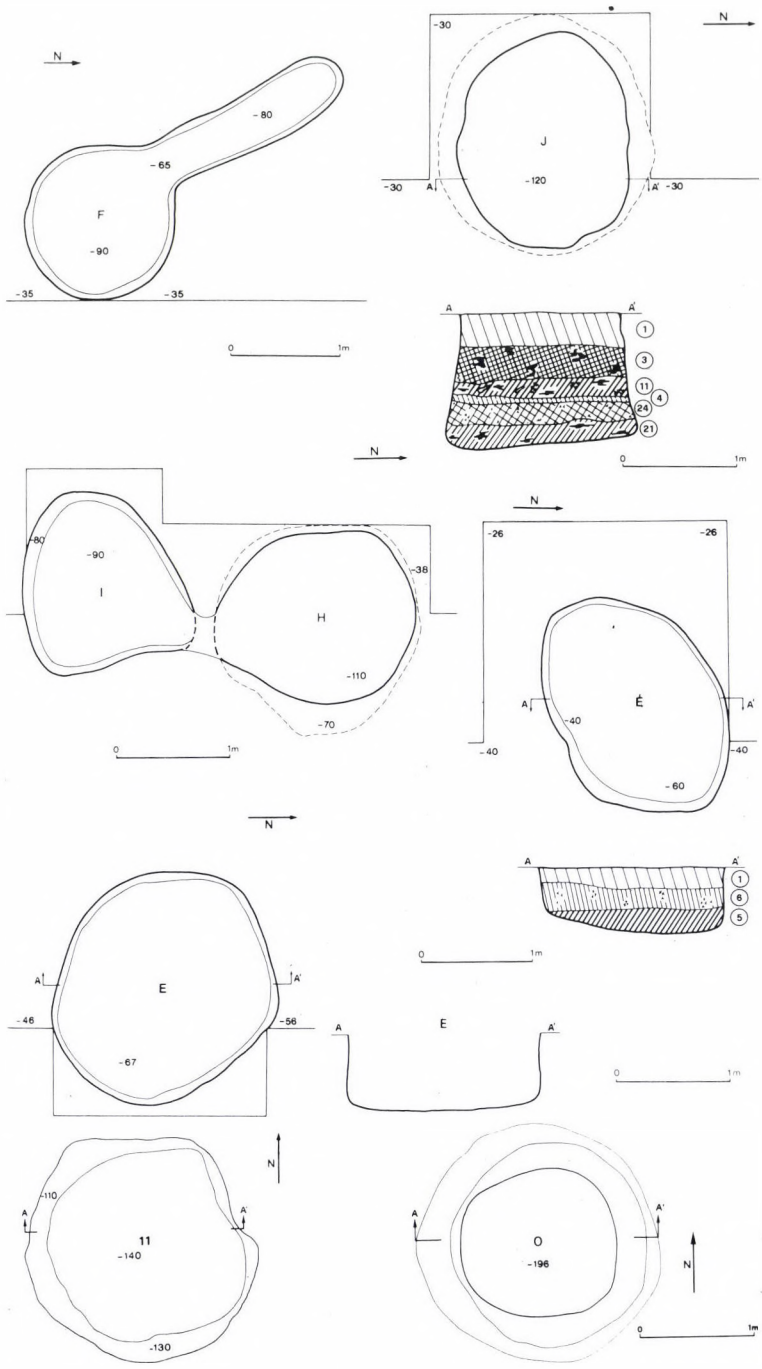
1. *Schoenoplectrus lacustris* (L.) Palla (common bulrush) achenes.
2. Food remains on sherd 6.
3. Food remains on sherd 11.
4. Lumps of cereal grist (x 200).
5. Fragment of the pericarp of a *Triticum* (wheat) grain (x 200).
6. The aleuron cell layer of a *Triticum* (wheat) grain (x 200).



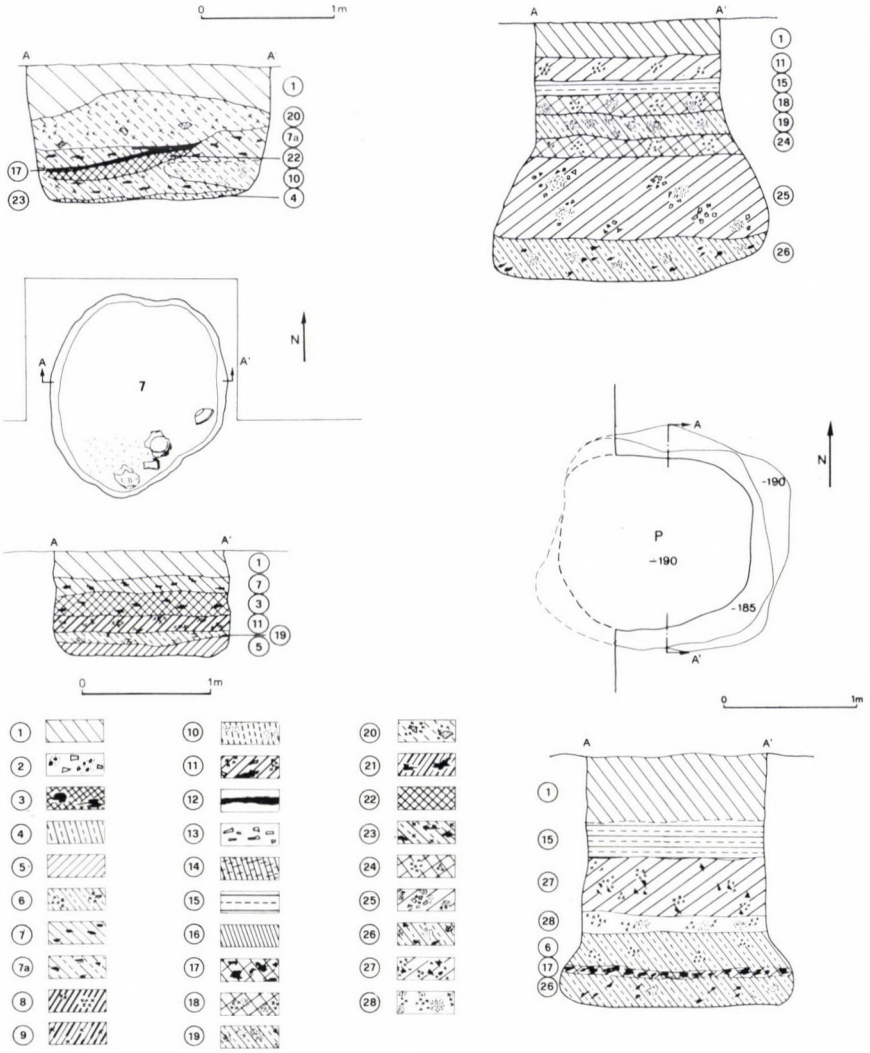
Pl. 116. Börzönce-Temetői dűlő. Map of the excavation.



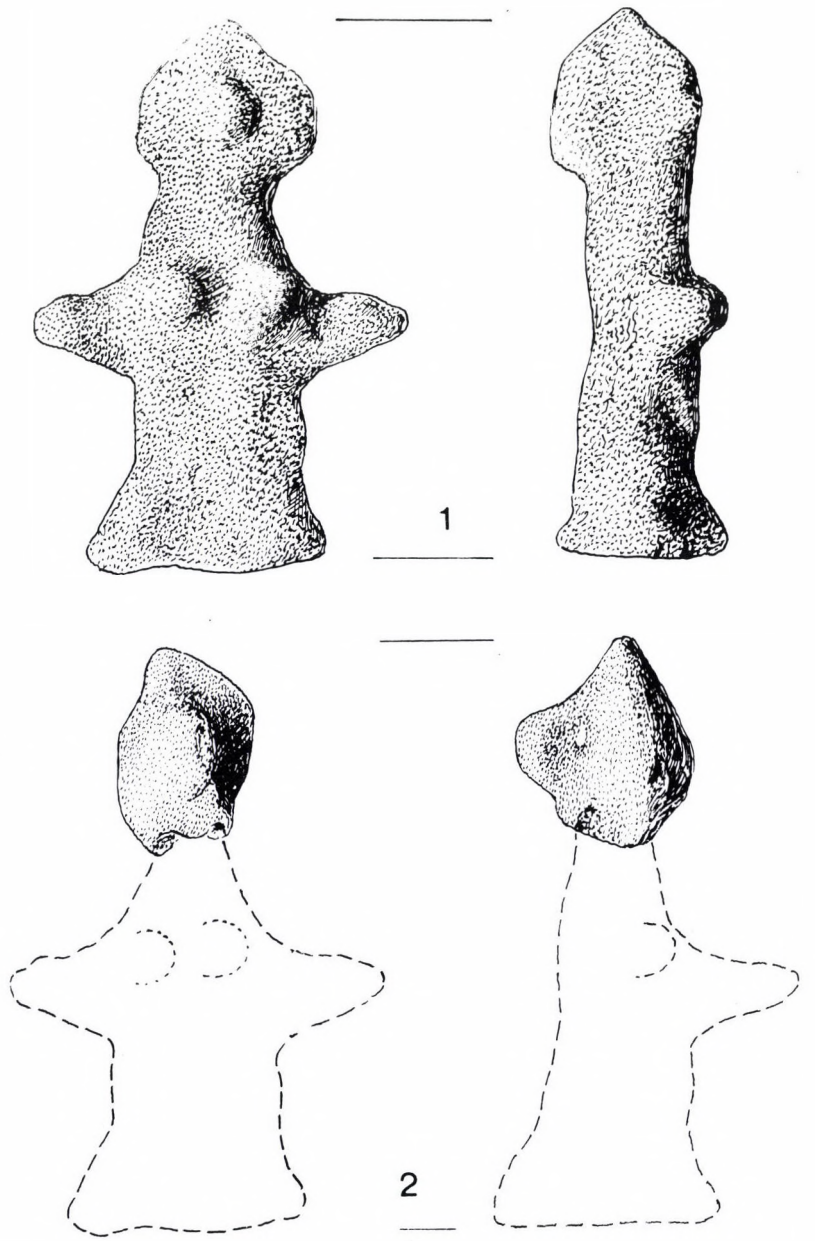
Pl. 117. Börzönce-Temetői dűlő. Feature 1 and features A, G, L.



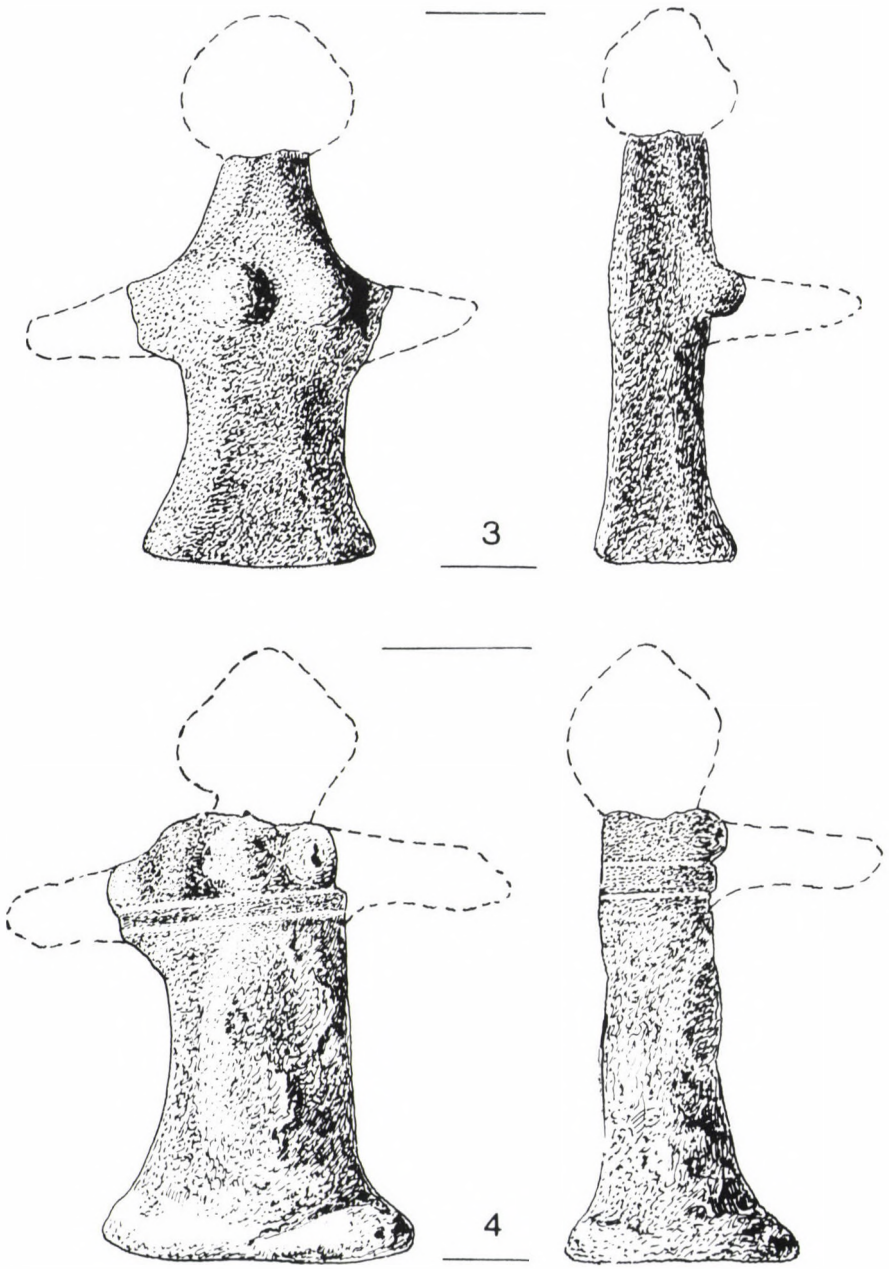
Pl. 118. Börzönce-Temetői dűlő. Features 11, O, E, É, F, H, I, J.



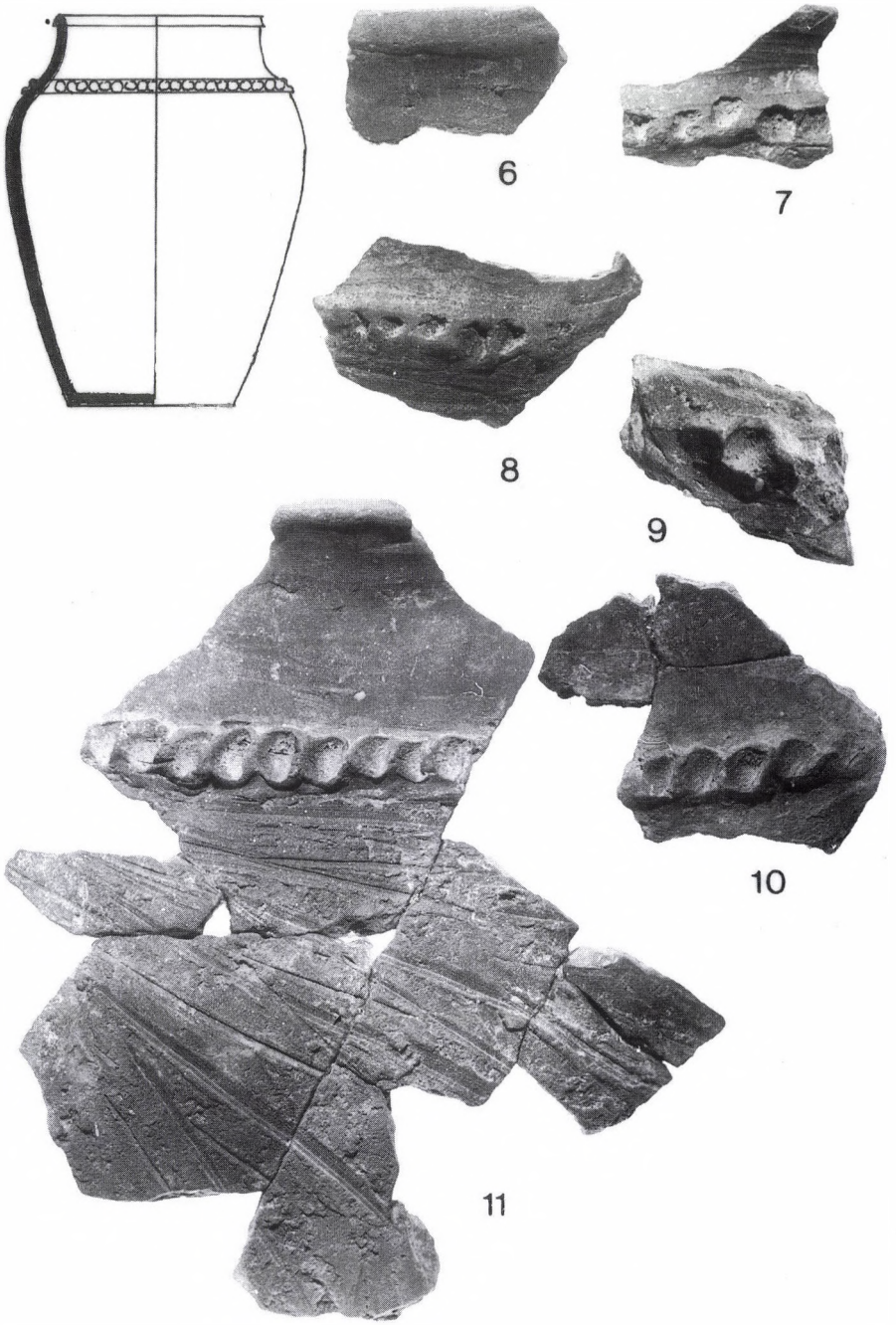
Pl. 119. Börzönce-Temetői dűlő. Features 7, P.
Signs: 1. modern humus; 2. brocken bricks and mortar; 3. reddish-brown fill mixed with charcoal; 4. dirty yellow clay; 5. subsoil; 6. dirty yellowish with burnt daub fragments; 7. yellowish with charcoal; 7a. yellowish fill mixed with charcoal; 8. black with burnt daub fragments; 9. yellowish-black with burnt daub fragments; 10. greyish mixed with ash; 11. black of rich texture with ash and burnt daub fragments; 12. fire plate; 13. plaster; 14. reddish-yellow clay; 15. yellowish clayey; 16. yellow clay; 17. burnt with charcoal; 18. reddish, of wet texture with ash and burnt daub fragments; 19. yellowish with ash; 20. greyish with burnt daub fragments; 21. yellowish with burnt charcoal; 22. red clay; 23. yellowish fill mixed with charcoal and burnt daub fragments; 24. reddish with burnt daub fragments; 25. blackish, with ash and numerous sherds; 26. yellowish with ash and burnt daub fragments; 27. black of rich texture with ash and burnt daub fragments; 28. blackish, ashy layer with burnt daub fragments.



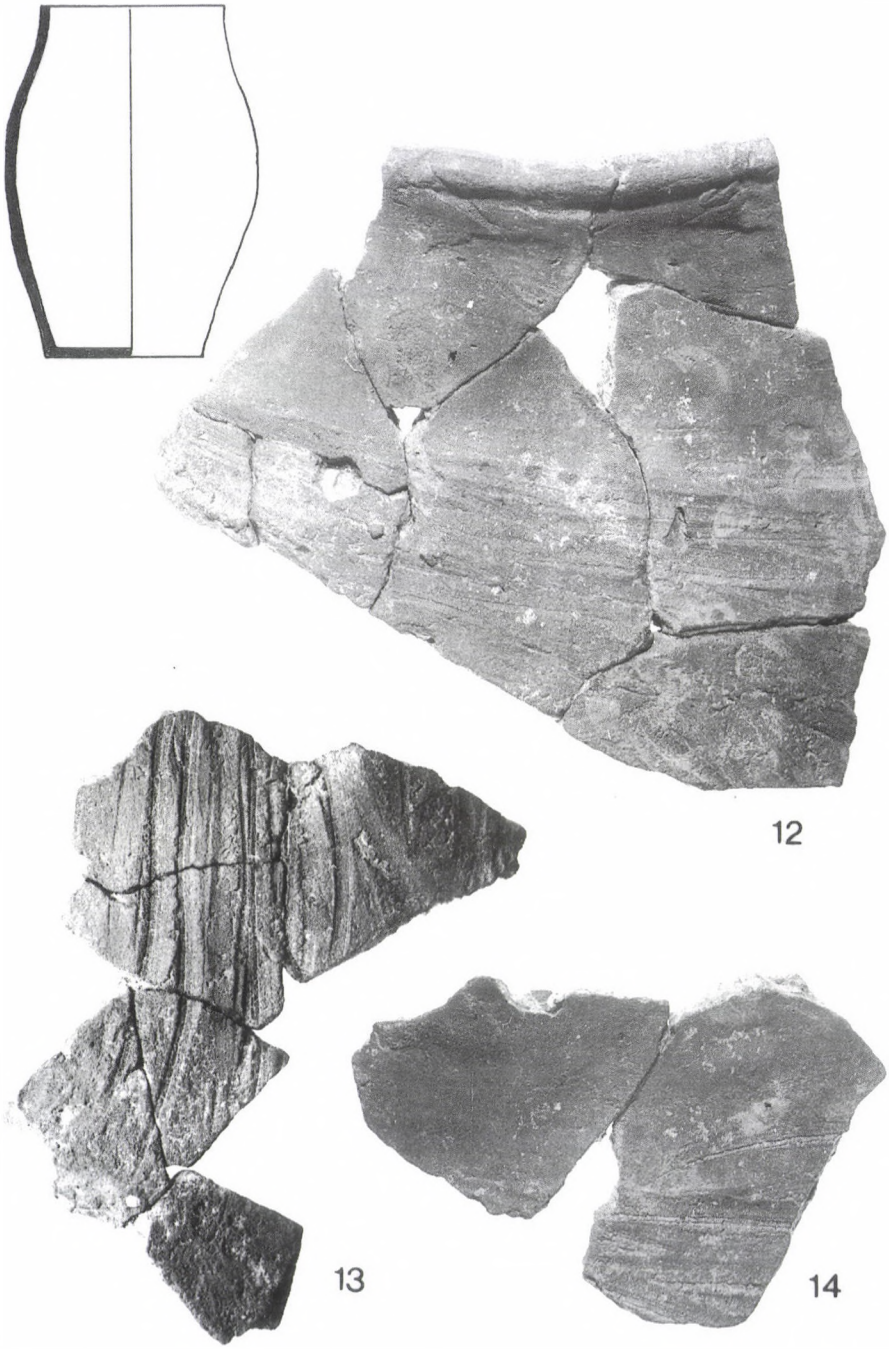
Pl. 120. Idols. 1. Börzönce-Temetői dűlő, feature 7; 2. Börzönce-Temetői dűlő, feature 11. 1:1.



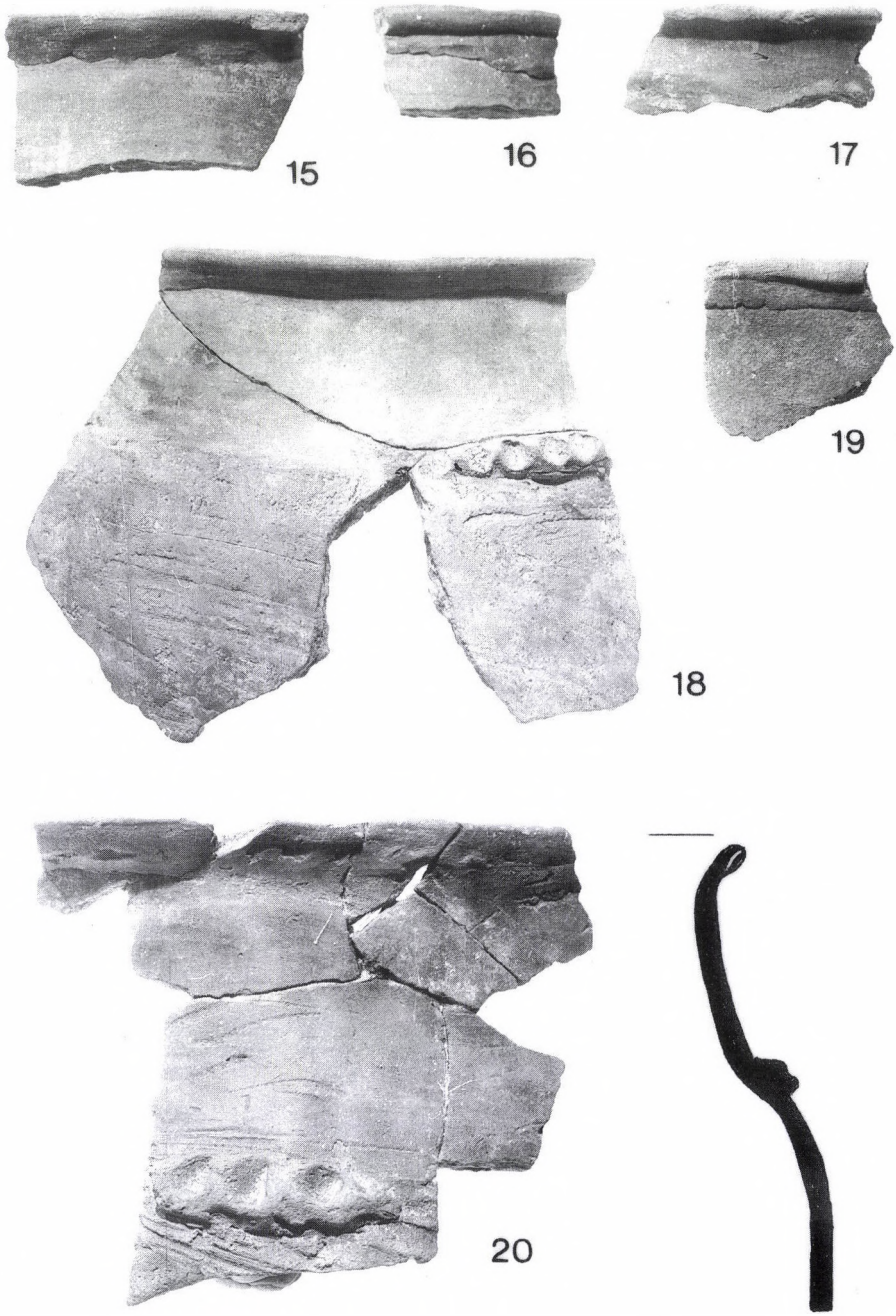
Pl. 121. Idols. 3. Dörgicse (after *MRT 2*); 4. Nagygörbő-Várhegy (after *Novák 1965*).



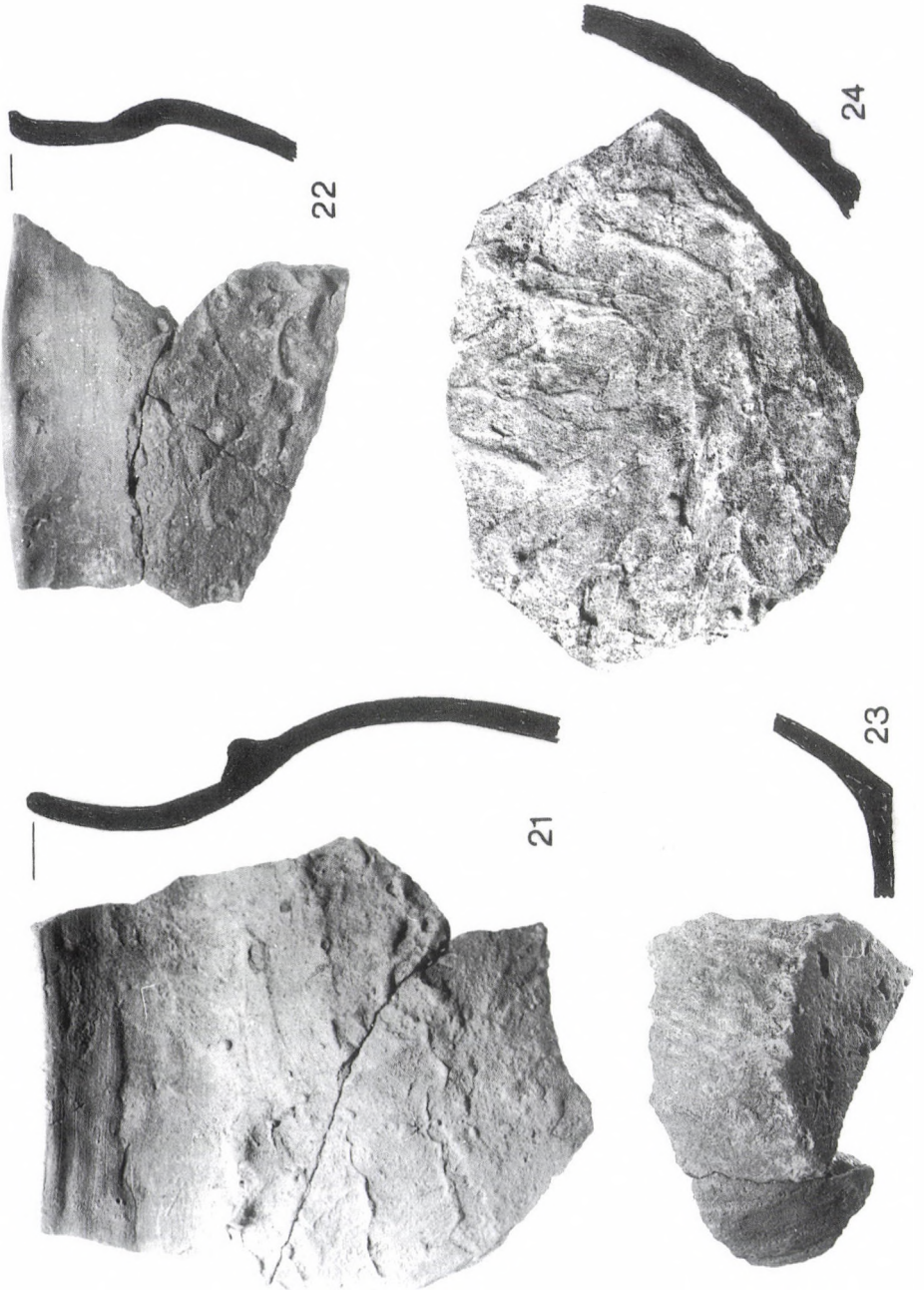
Pl. 122. Börzönce-Temetői dűlő. Feature A. 1:2.



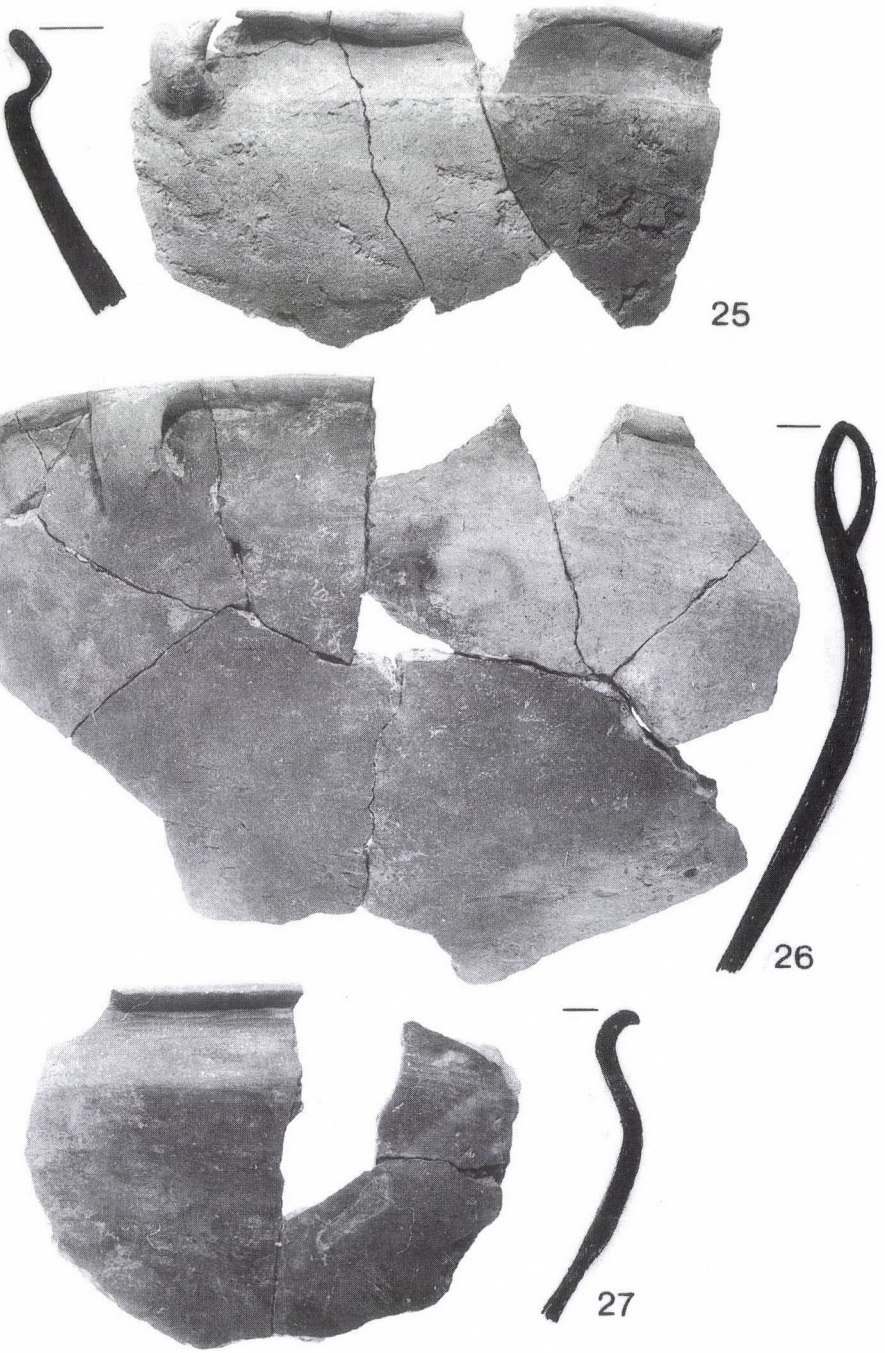
Pl. 123. Börzönce-Temetői dűlő. Feature A. 1:2.



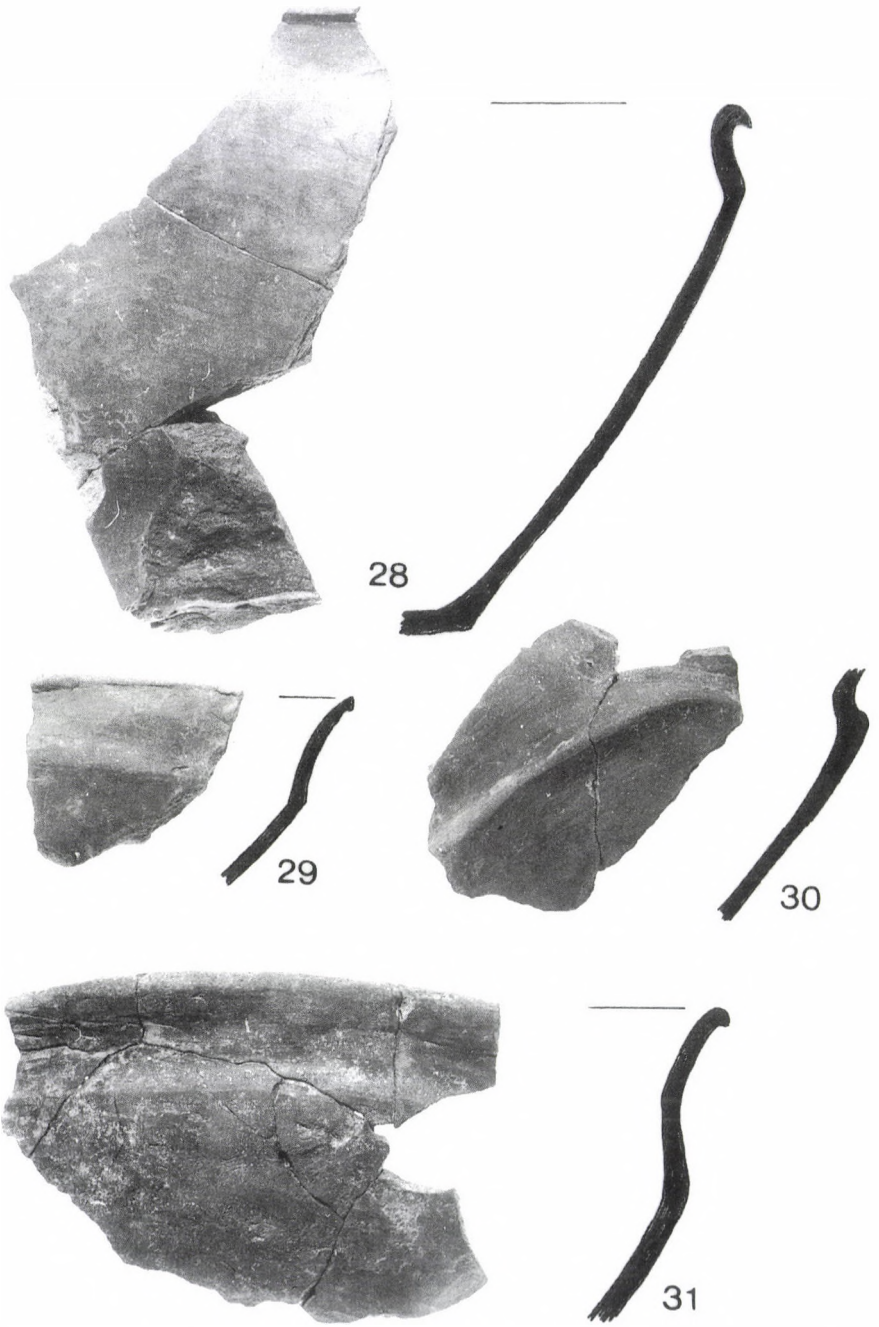
Pl. 124. Börzönce-Temetői dűlő. Feature A. 1:2.



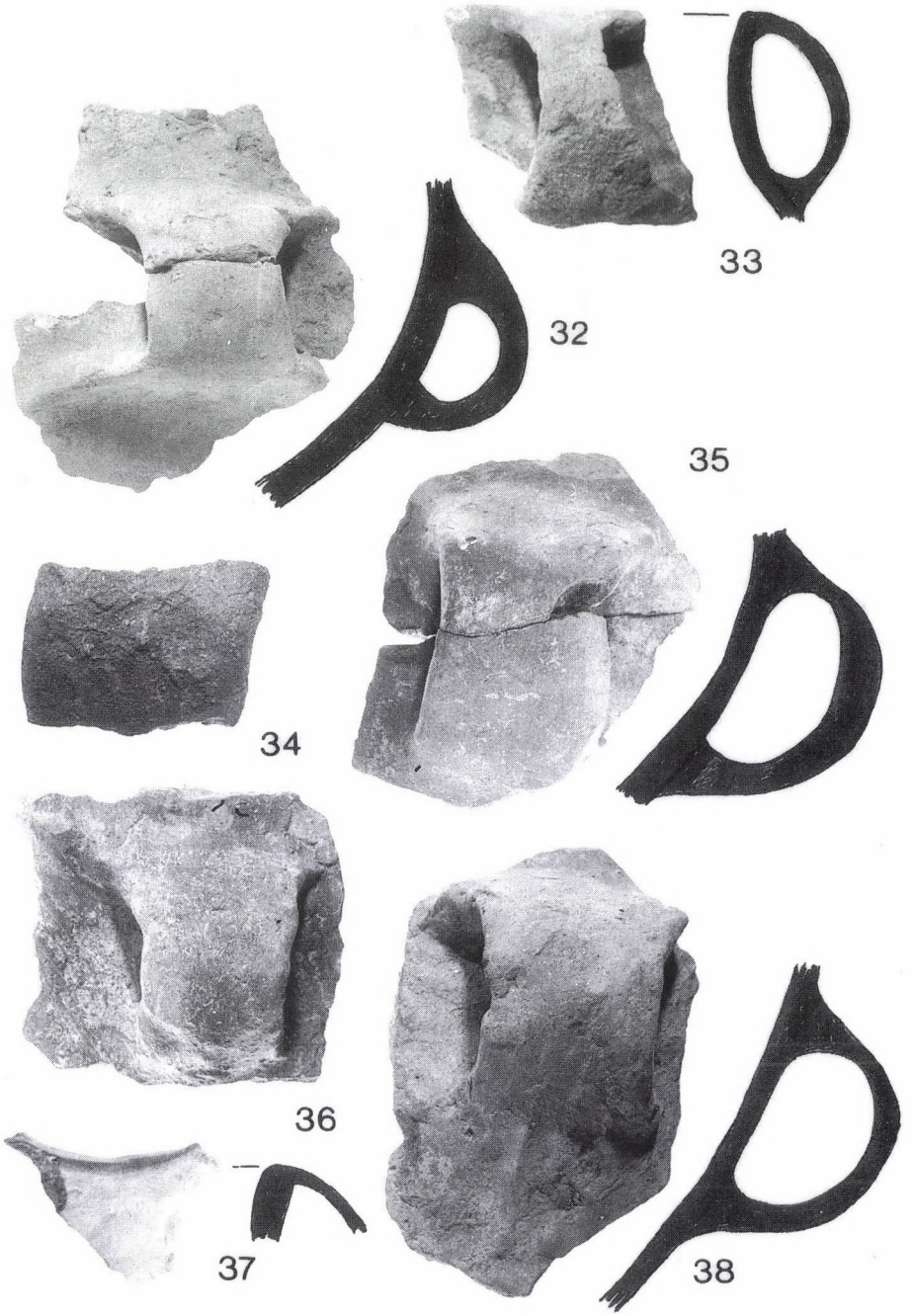
Pl. 125. Börzönce-Temetői dűlő. Feature A. 1:2.



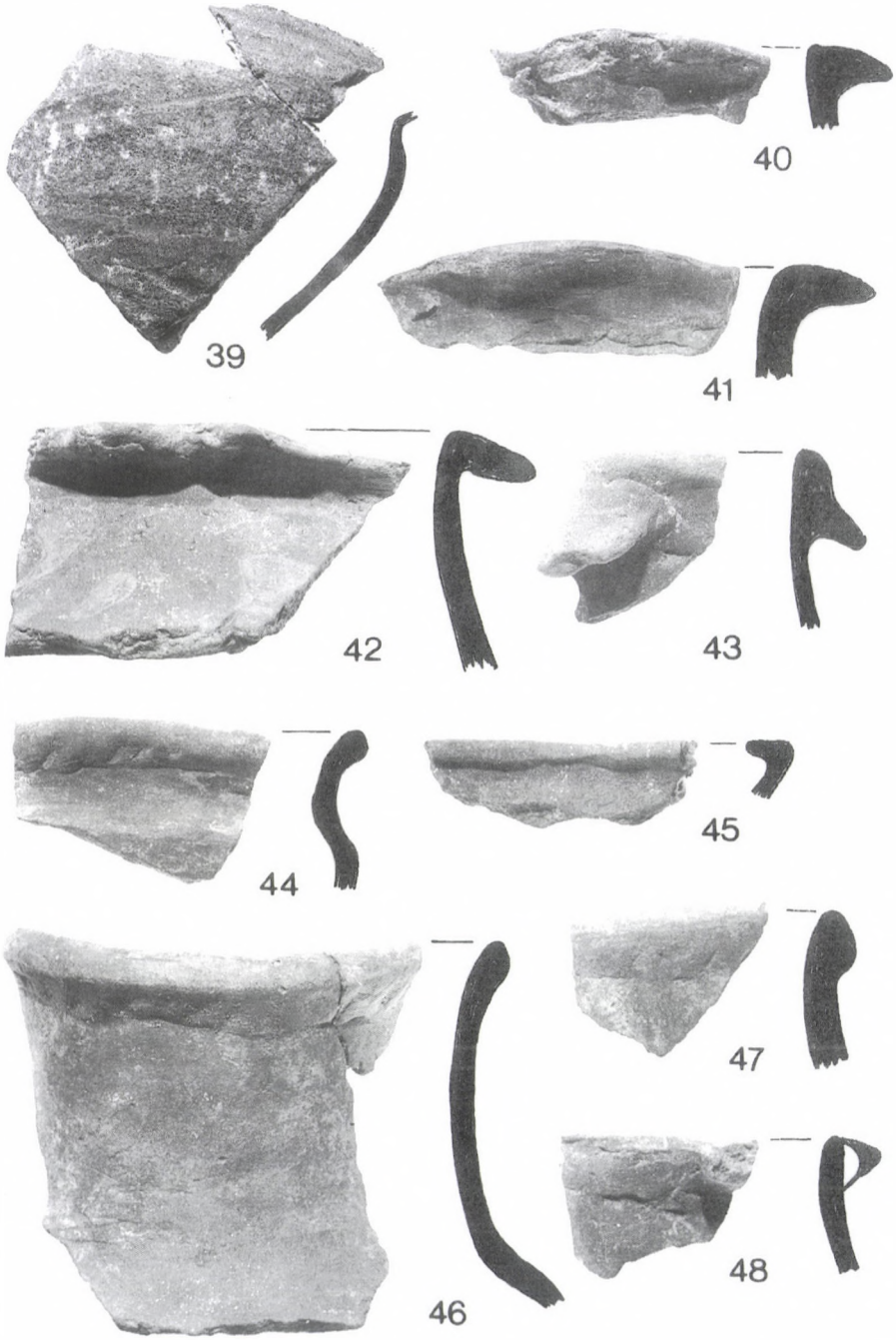
Pl. 126. Börzönce-Temetői dűlő. Feature A. 1:2.



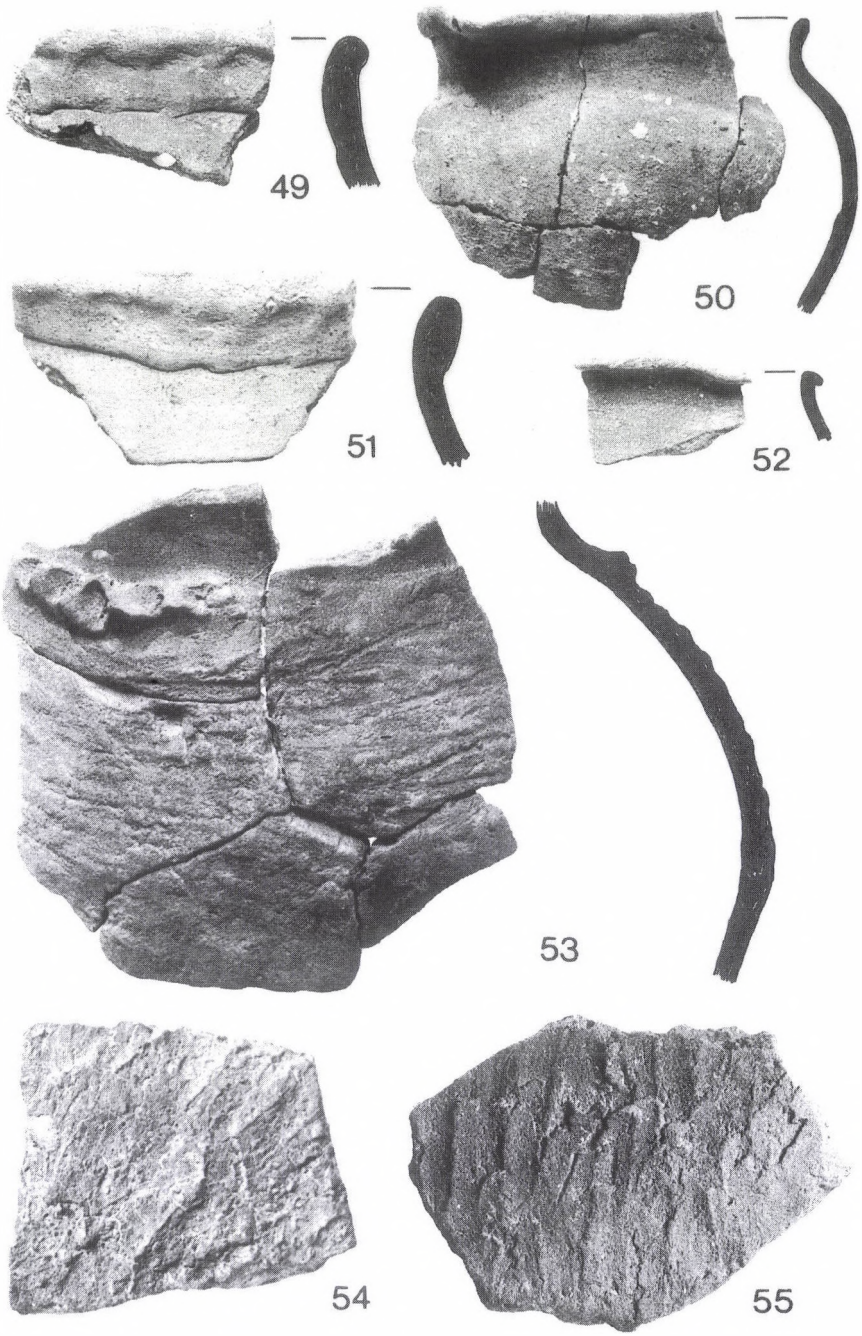
Pl. 127. Börzönce-Temetői dűlő. Feature A. 1:2.



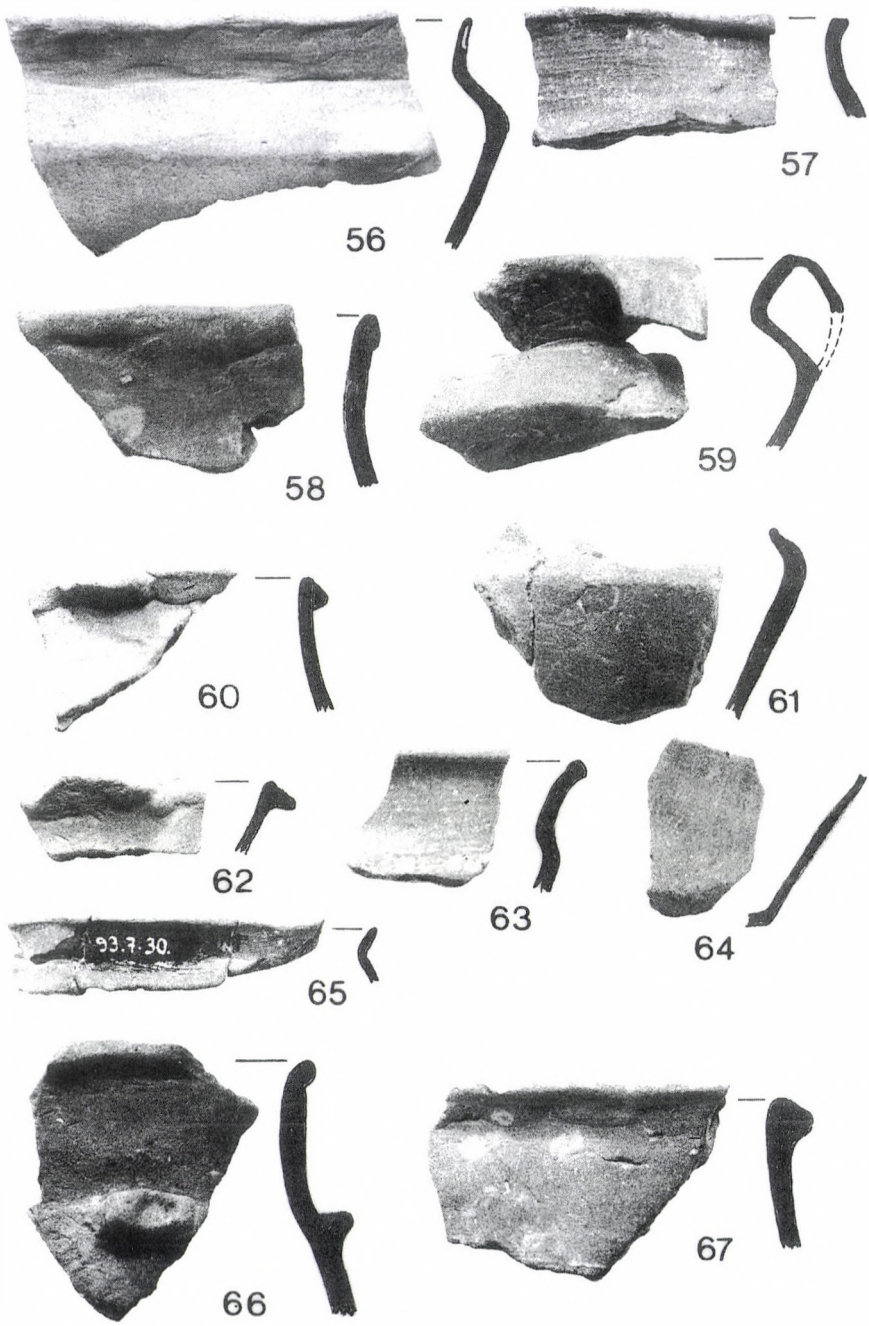
Pl. 128. Börzönce-Temetői dűlő. Feature A. 1:2.



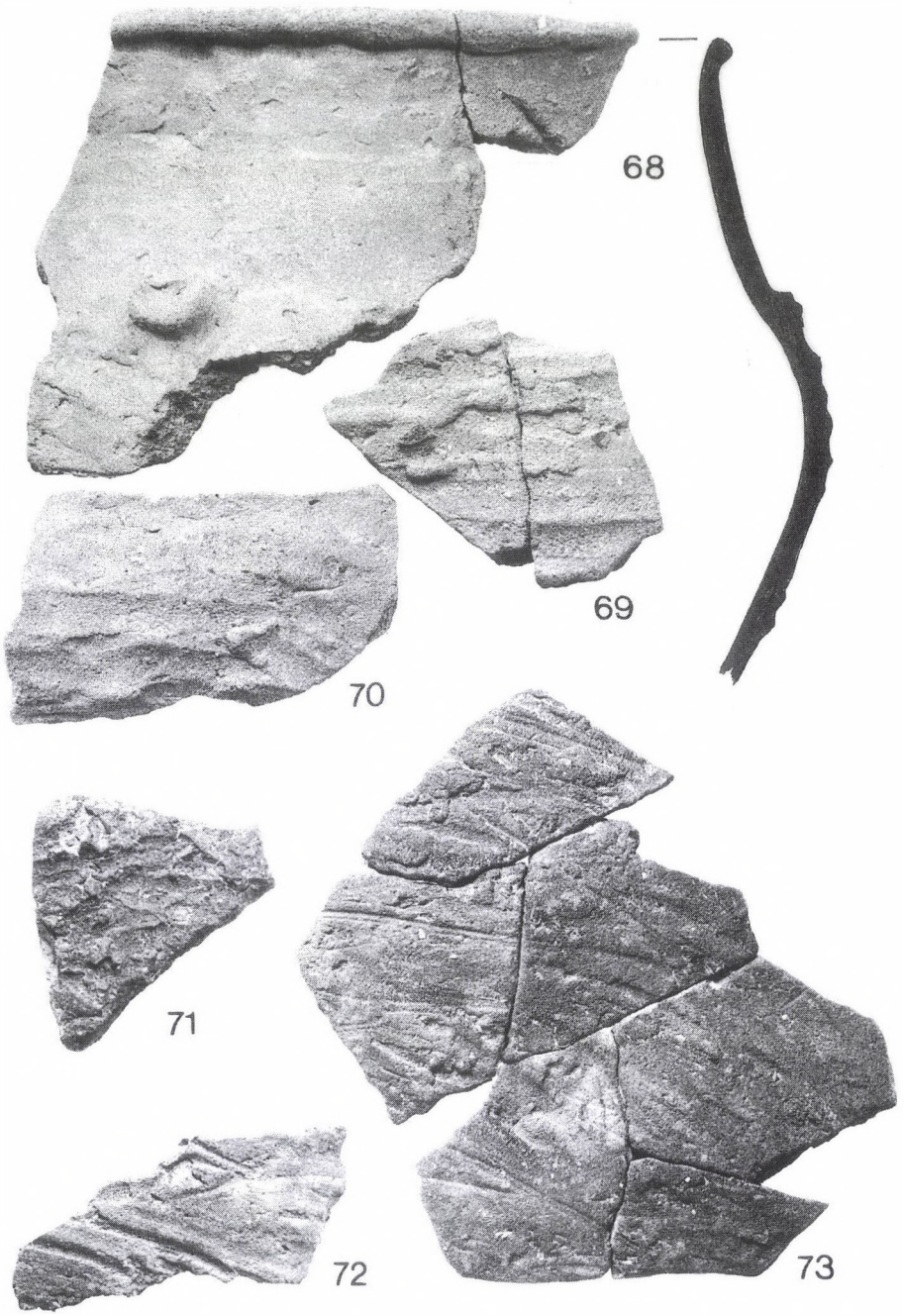
Pl. 129. Börzönce-Temetői dűlő. Feature A. 1:2.



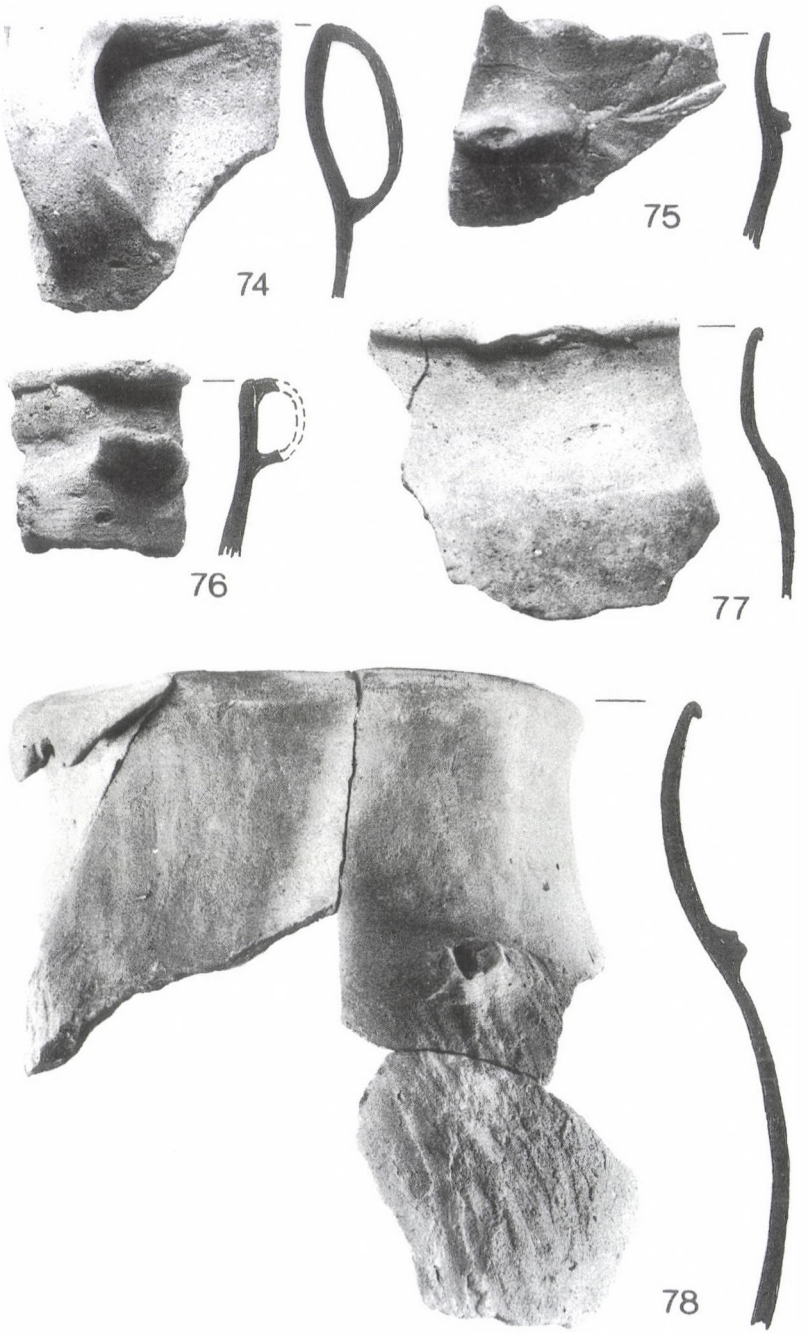
Pl. 130. Börzönce-Temetői dűlő. Feature B. 1:2.



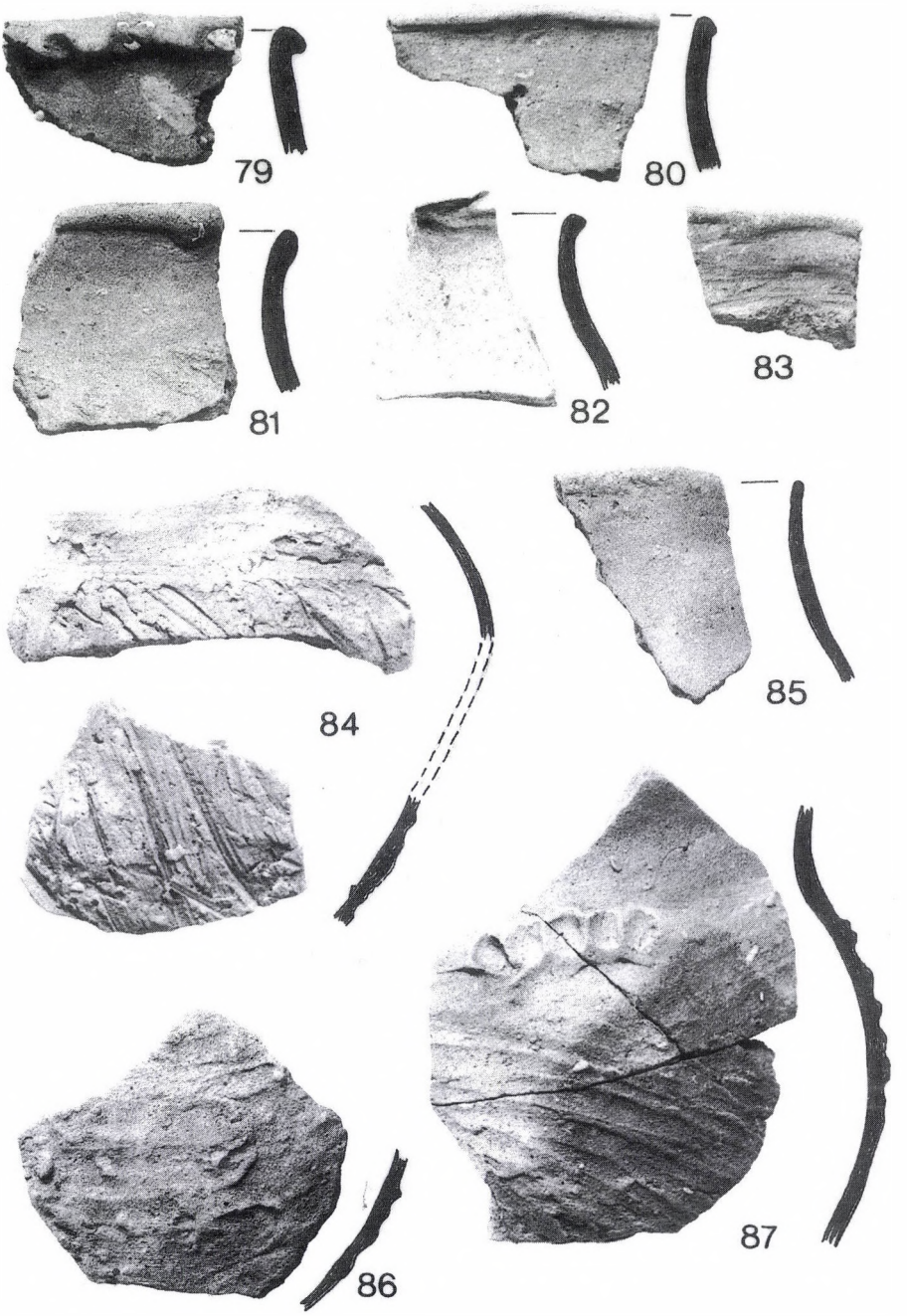
Pl. 131. Börzönce-Temetői dűlő. Feature B. 1:2.



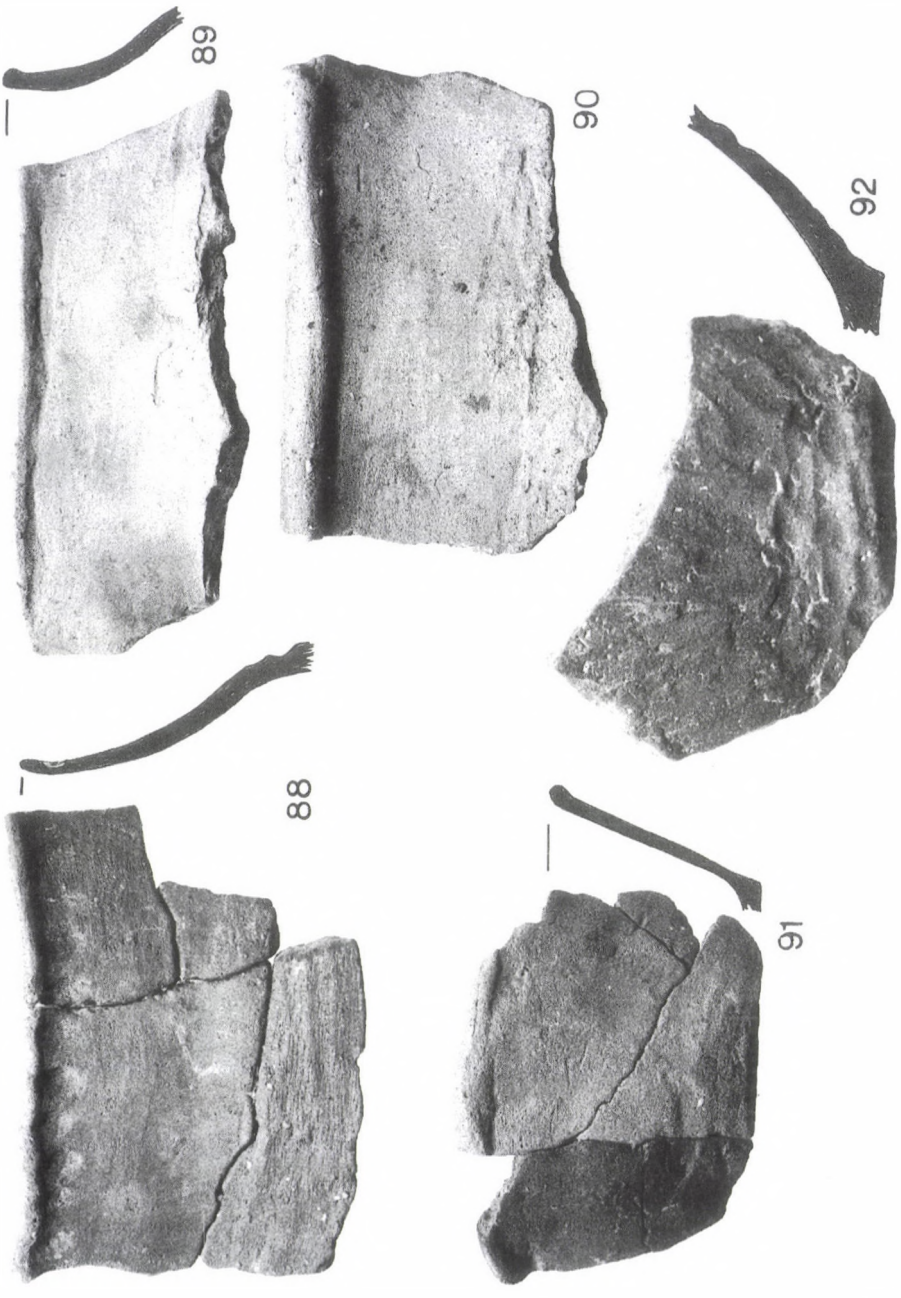
Pl. 132. Börzönce-Temetői dűlő. Feature B. 1:2.



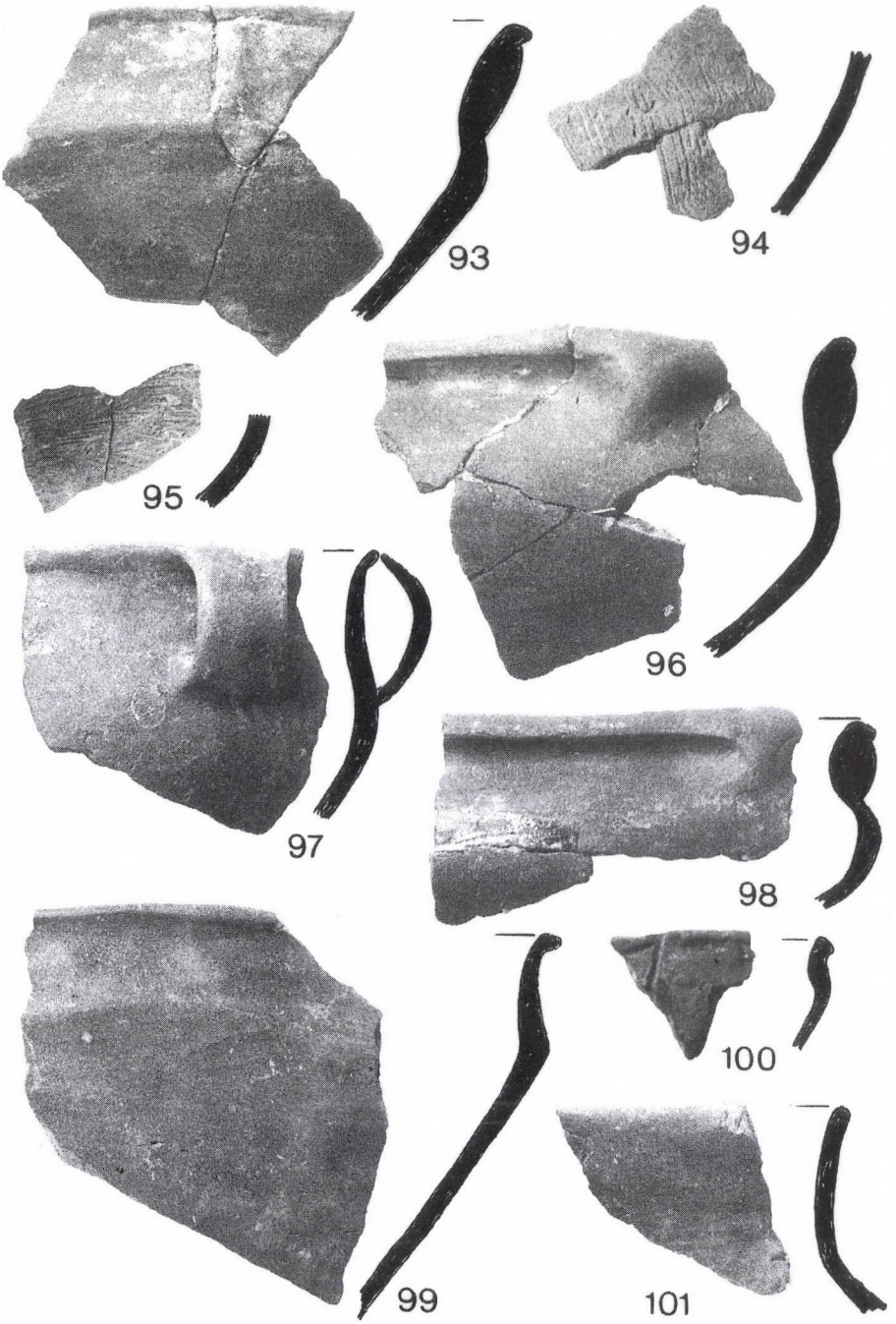
Pl. 133. Börzönce-Temetői dűlő. Feature 1. 1:2.



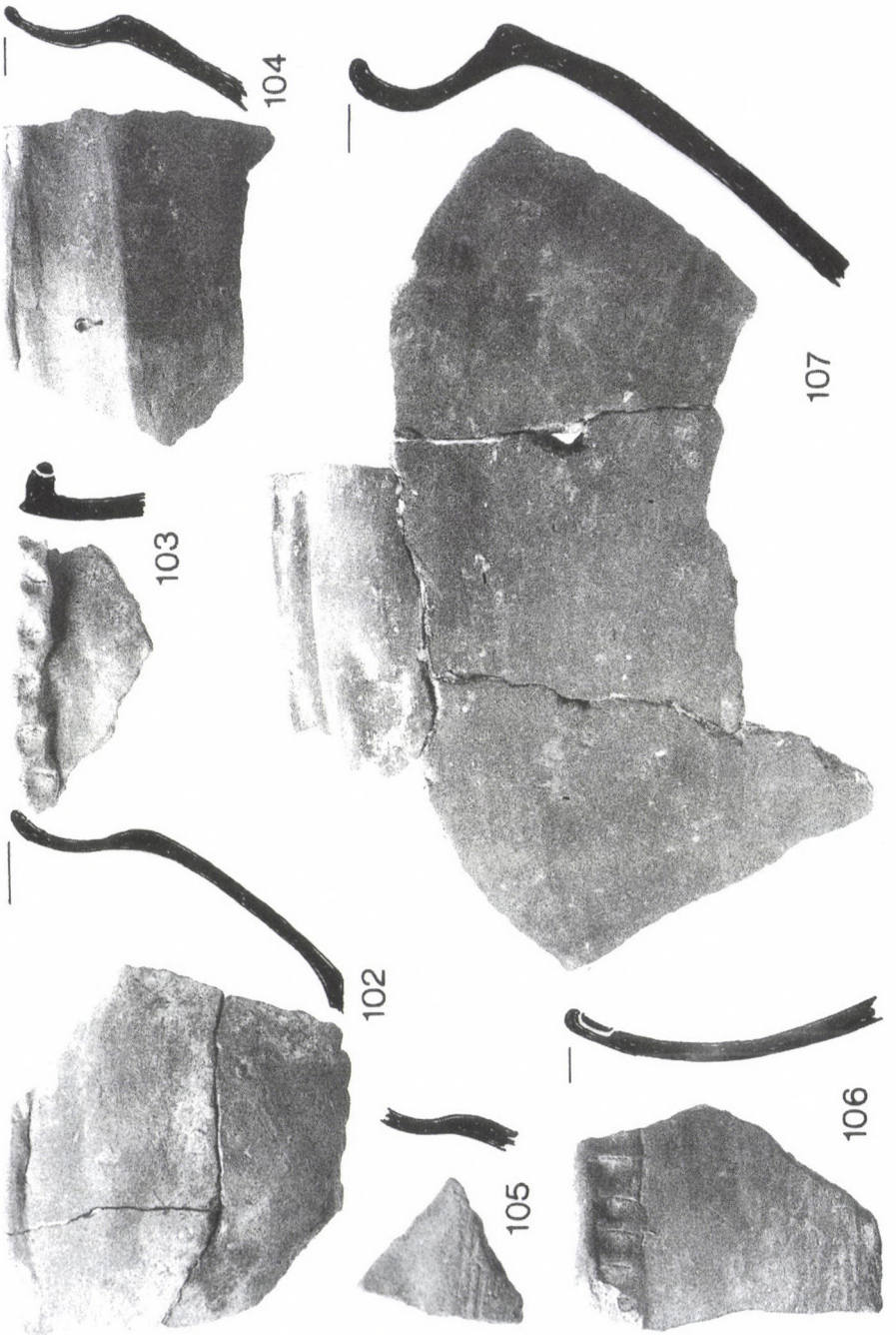
Pl. 134. Börzönce-Temetői dűlő. Feature 1. 1:2.



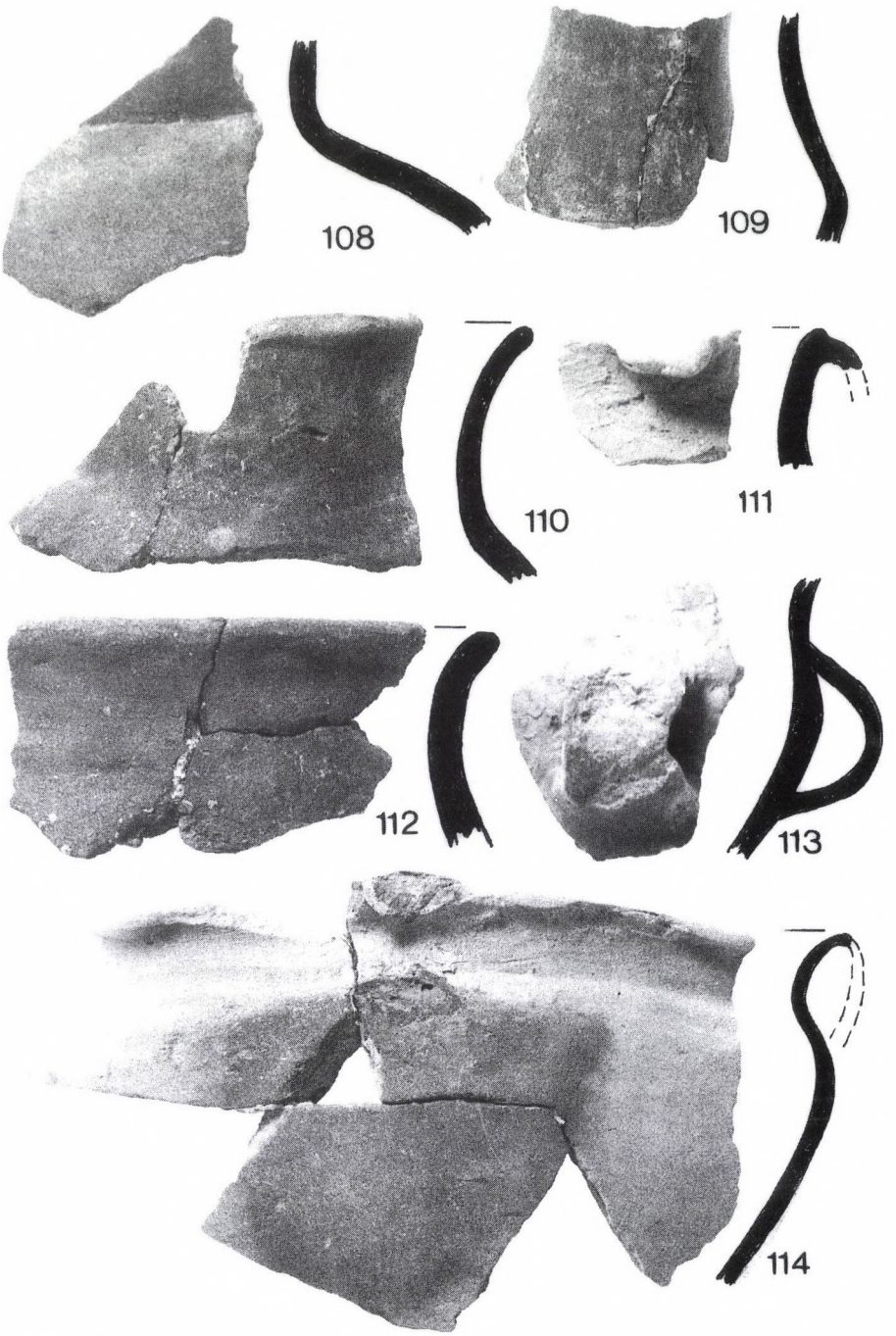
Pl. 135. Börzönce-Temetői dűlő. Feature 1. 1:2.



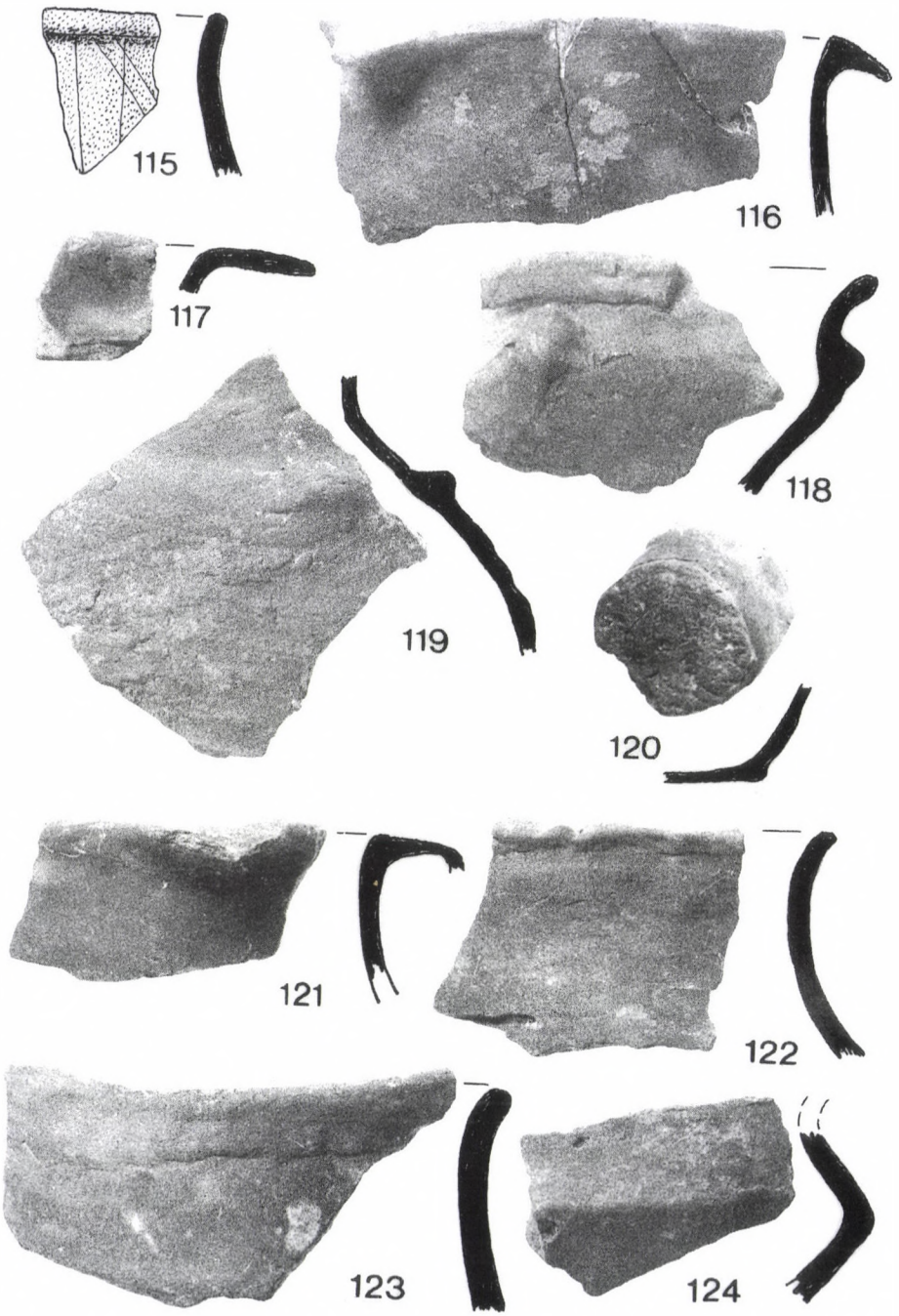
Pl. 136. Börzönce-Temetői dűlő. Feature E. 1:2.



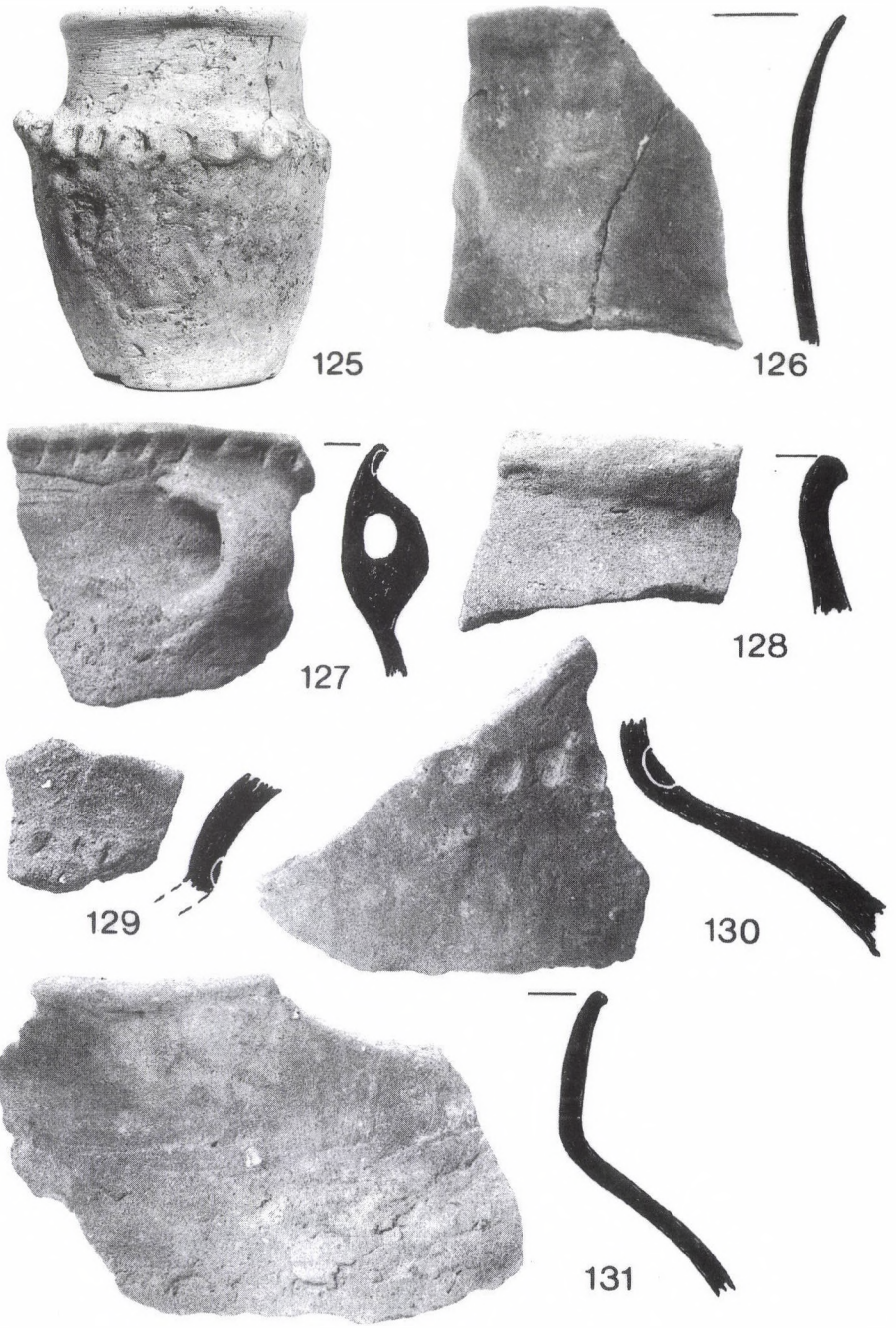
Pl. 137. Börzönce-Temetői dűlő. Feature E. 1:2.



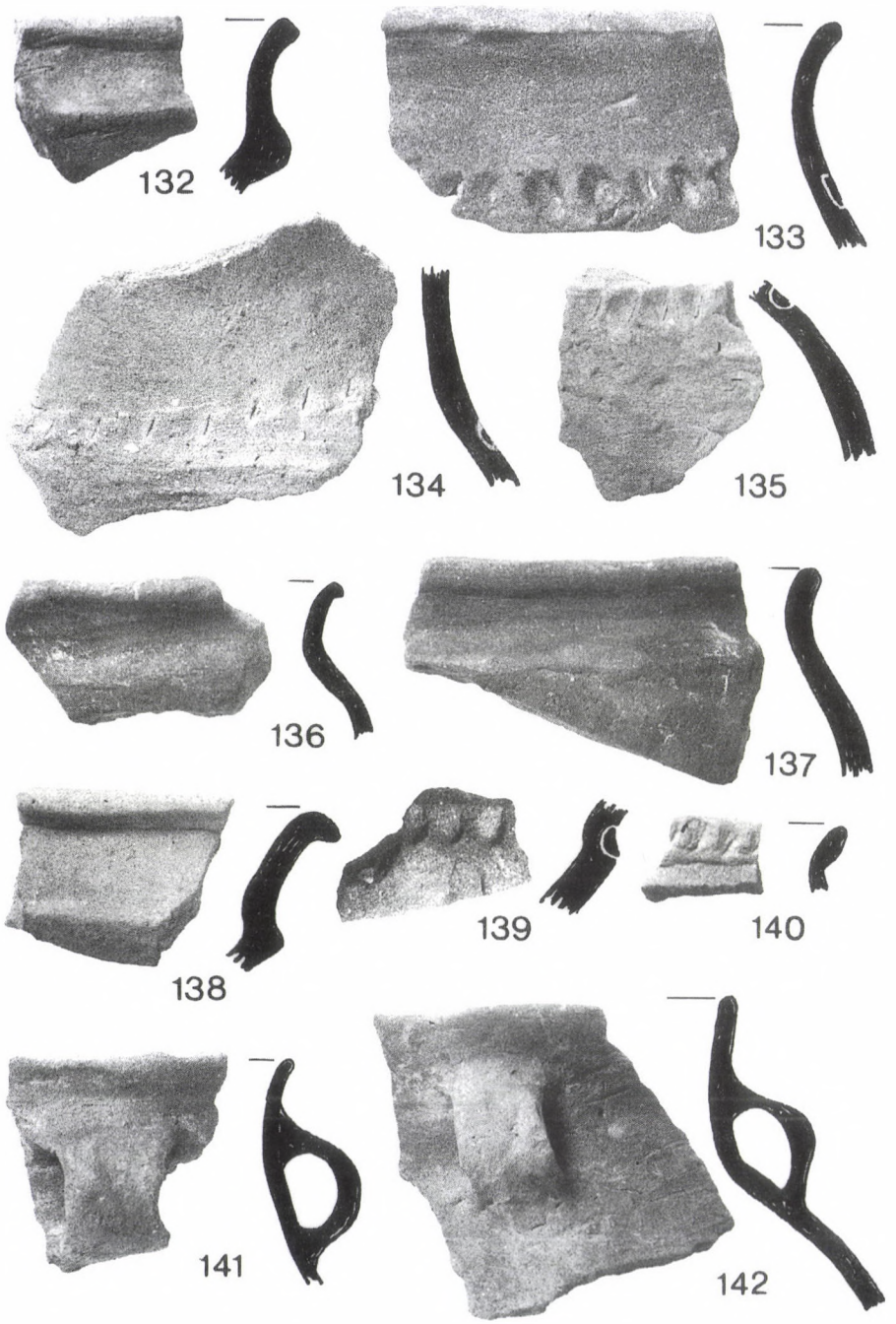
Pl. 138. Börzönce-Temetői dűlő. Feature E. 1:2.



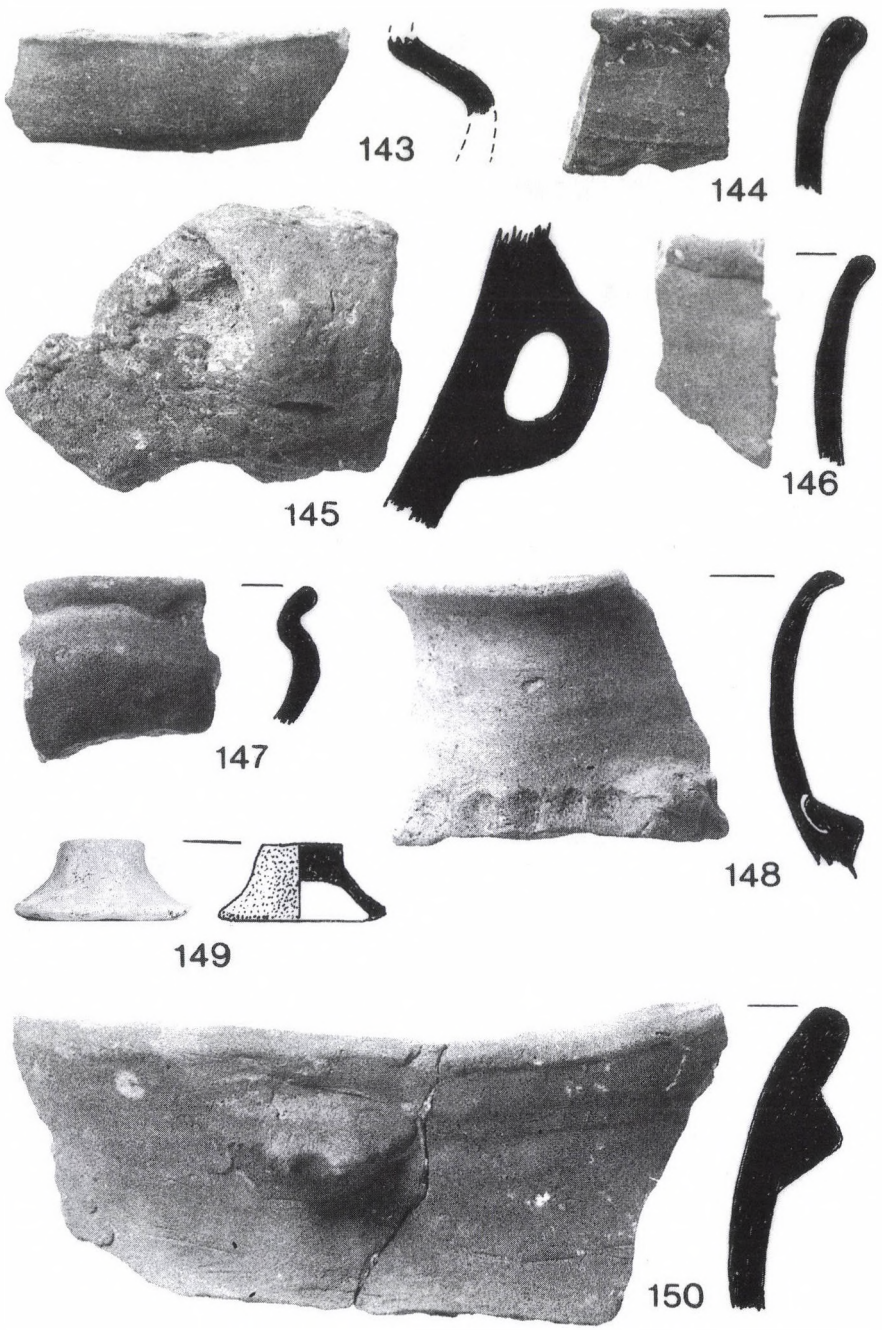
Pl. 139. Börzönce-Temetői dűlő. Feature É. 1:2.



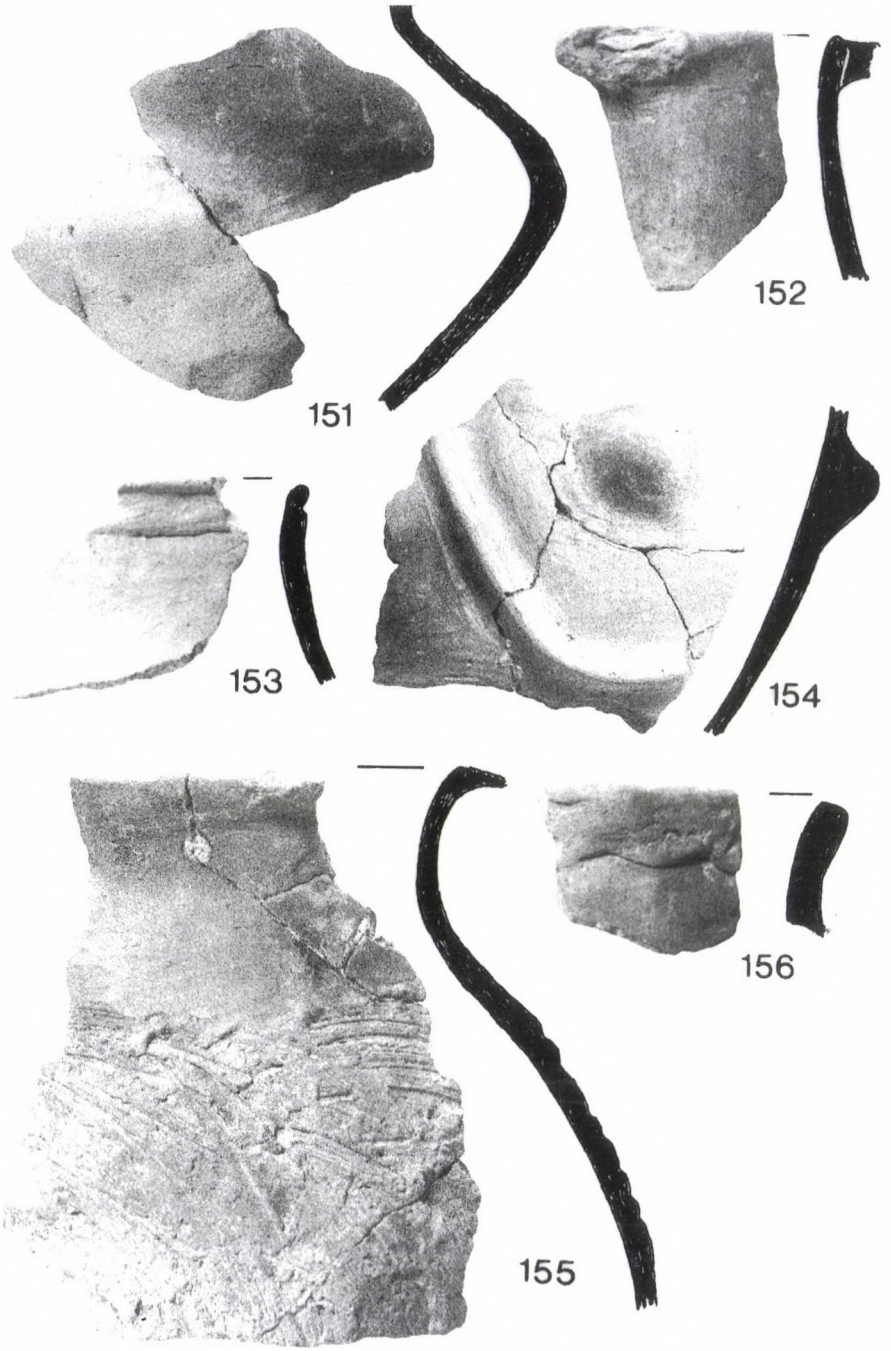
Pl. 140. Börzönce-Temetői dűlő. Feature F. 1:2.



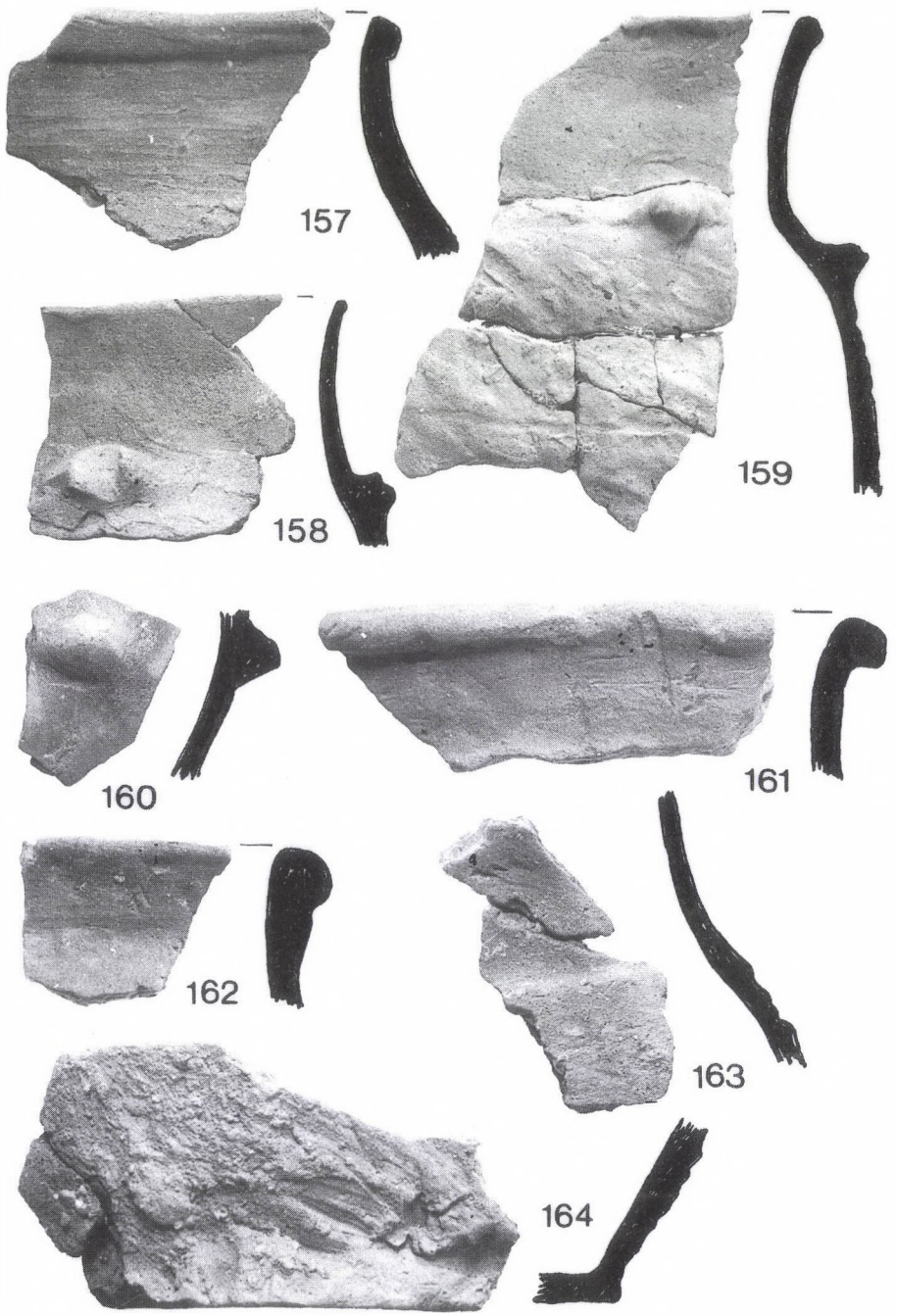
Pl. 141. Börzönce-Temetői dűlő. Feature F. 1:2.



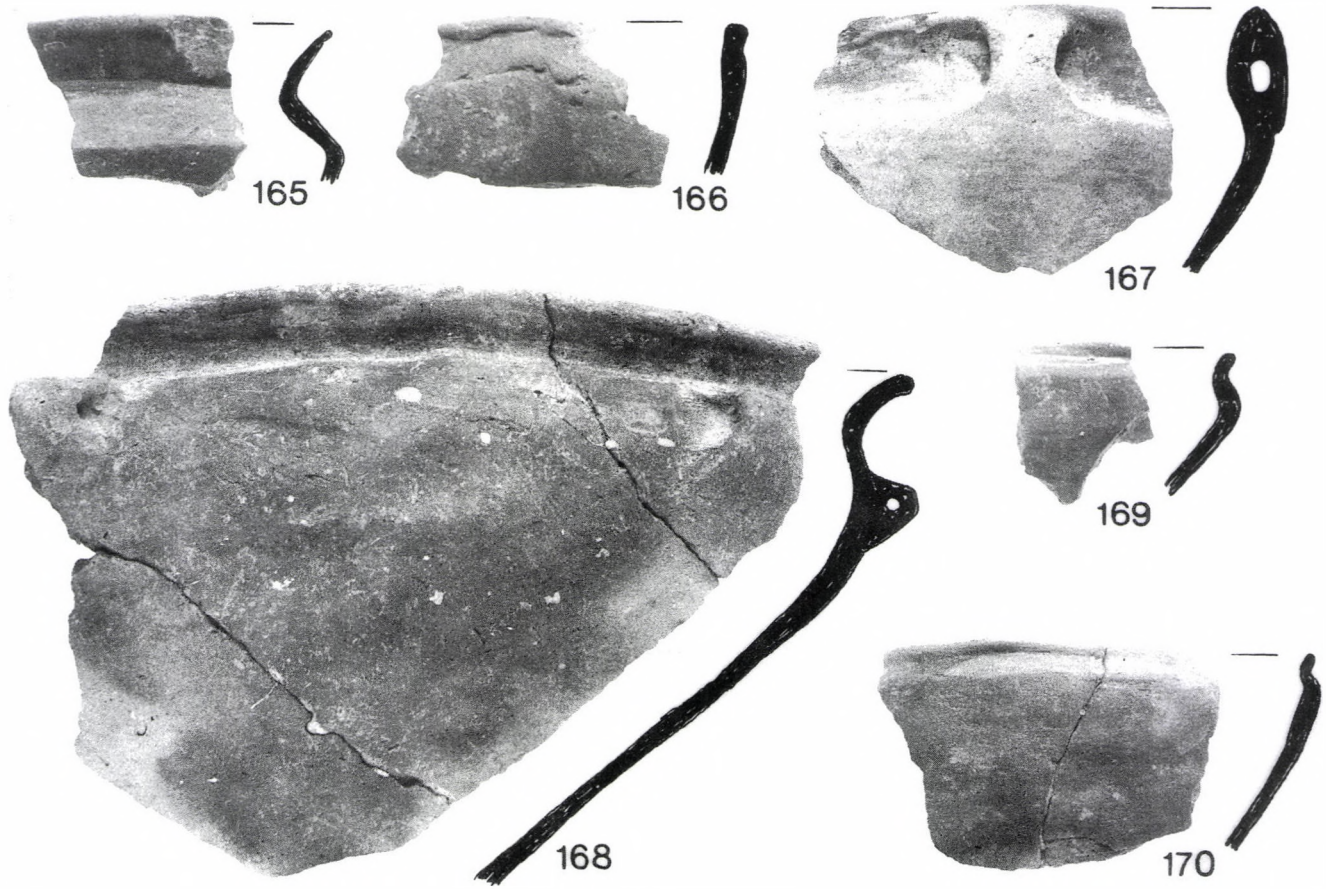
Pl. 142. Börzönce-Temetői dűlő. Features G (143-146) and H. (147-150) 1:2.



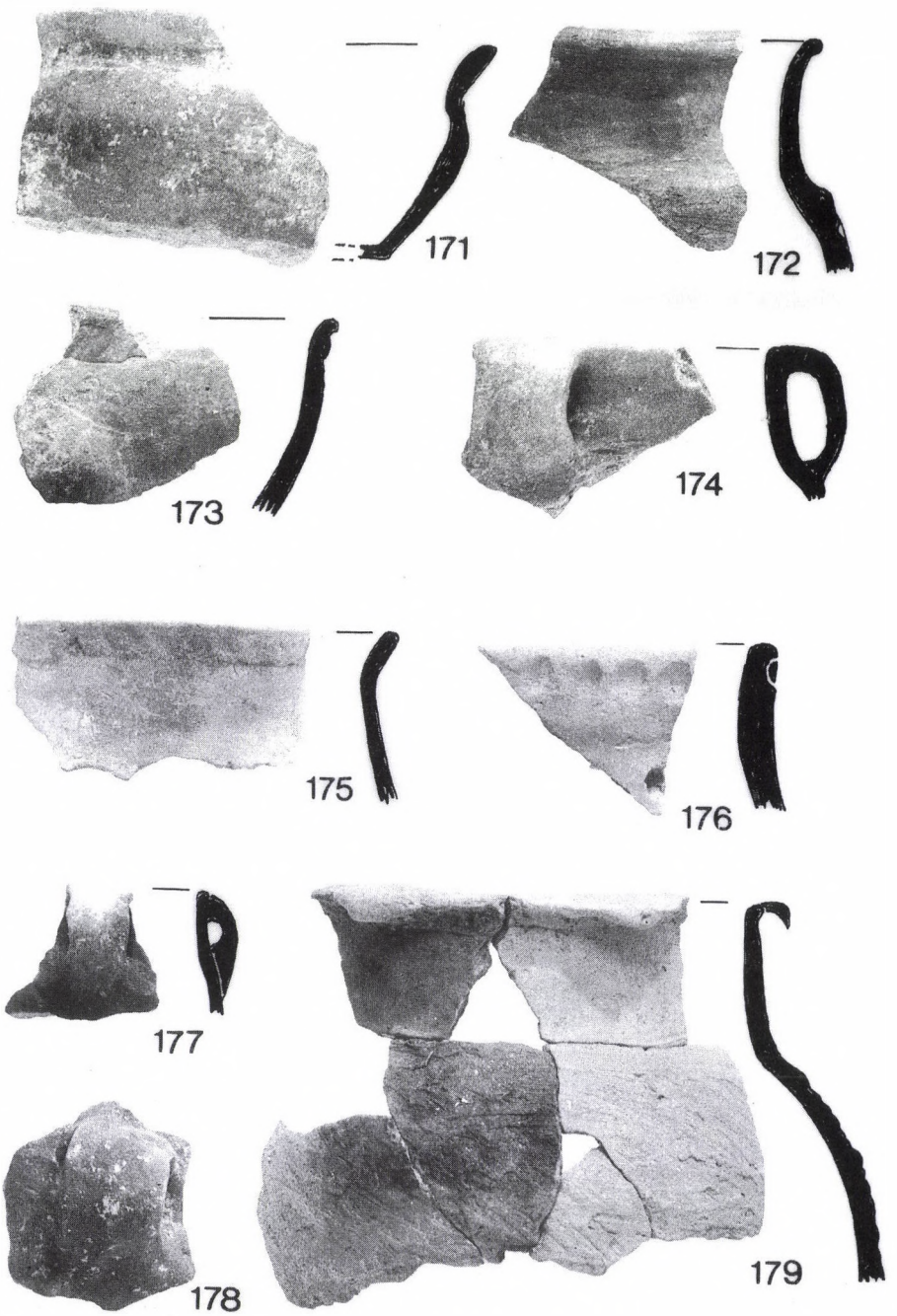
Pl. 143. Börzönce-Temetői dűlő. Feature H. 1:2.



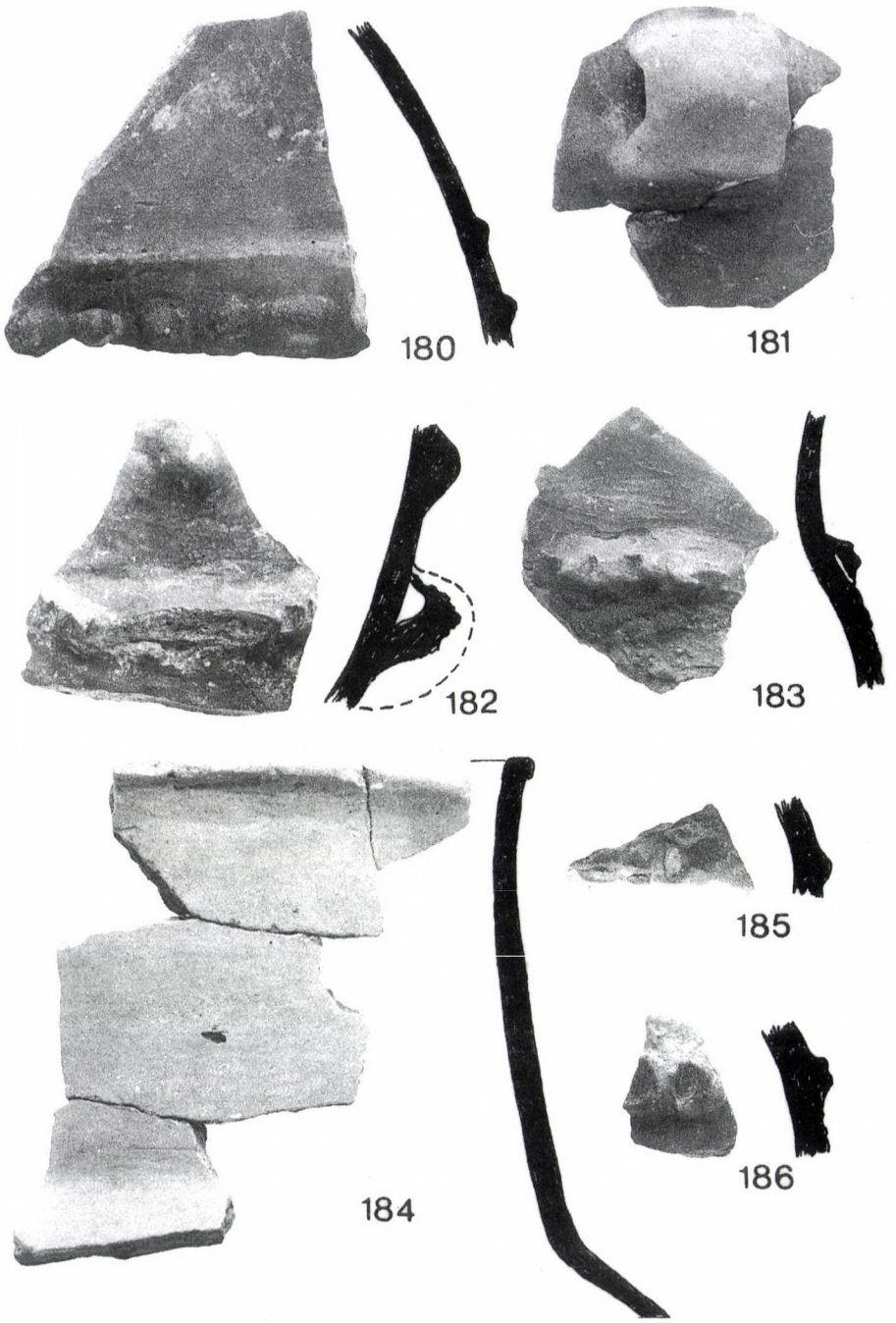
Pl. 144. Börzönce-Temetői dűlő. Feature I. 1:2.



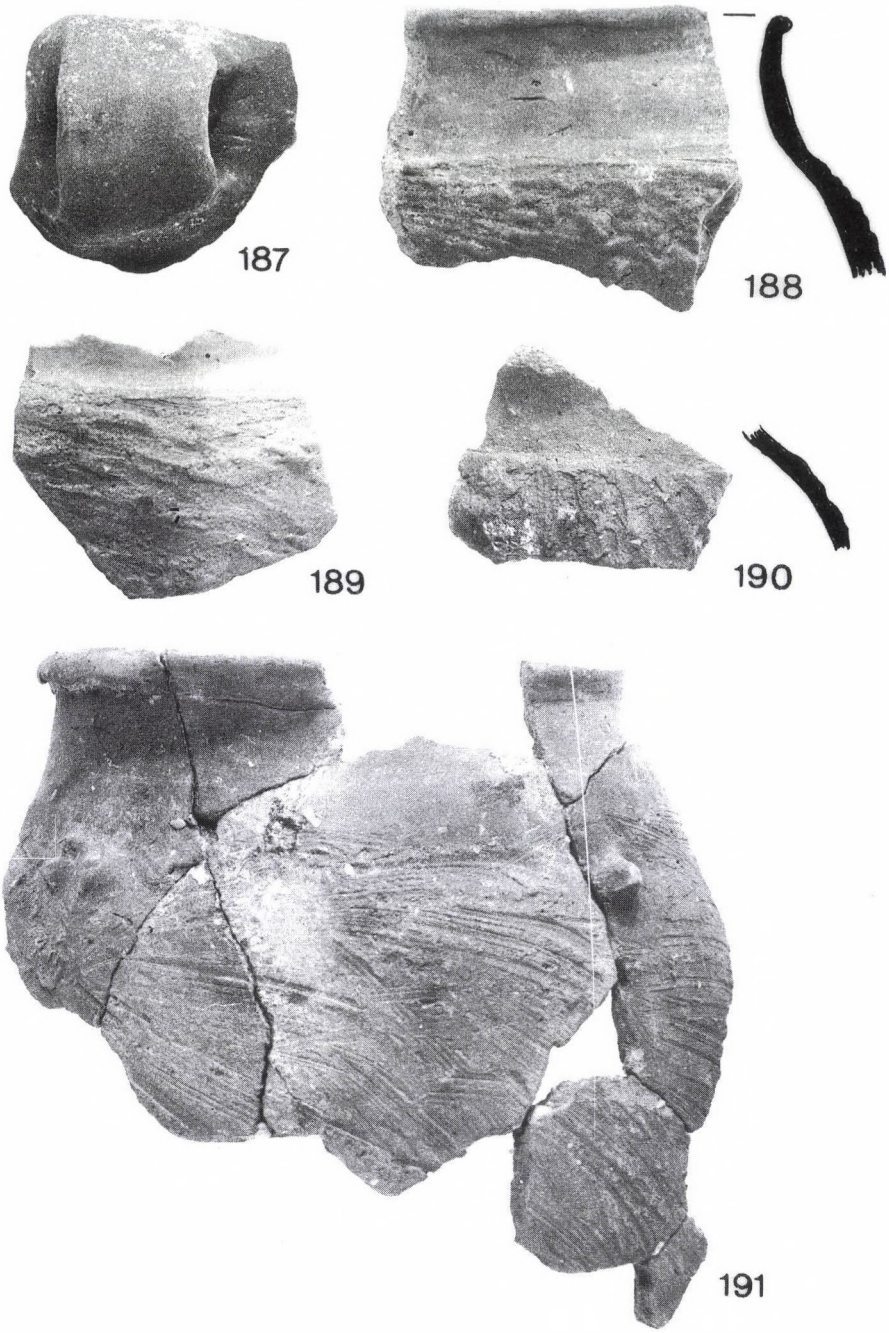
Pl. 145. Börzönce-Temetői dűlő. Feature J. 1:2.



Pl. 146. Börzönce-Temetői dűlő. Feature J. 1:2.



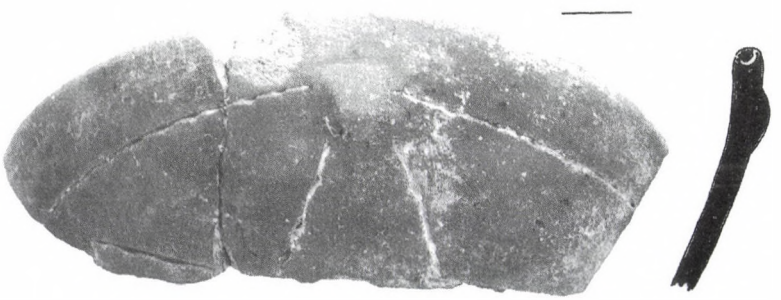
Pl. 147. Börzönce-Temetői dűlő. Feature J. 1:2.



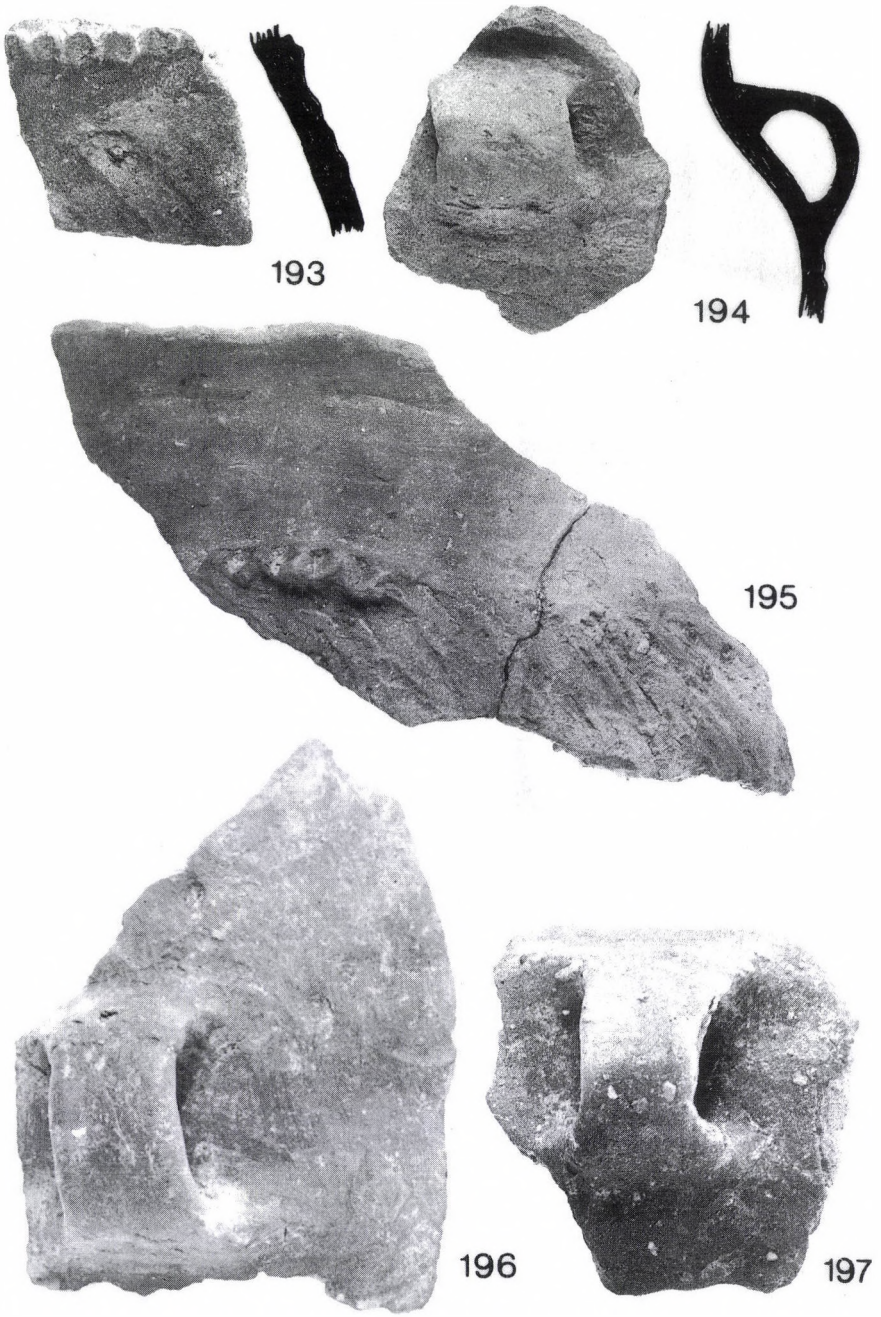
Pl. 148. Börzönce-Temetői dűlő. Feature J. 1:2.



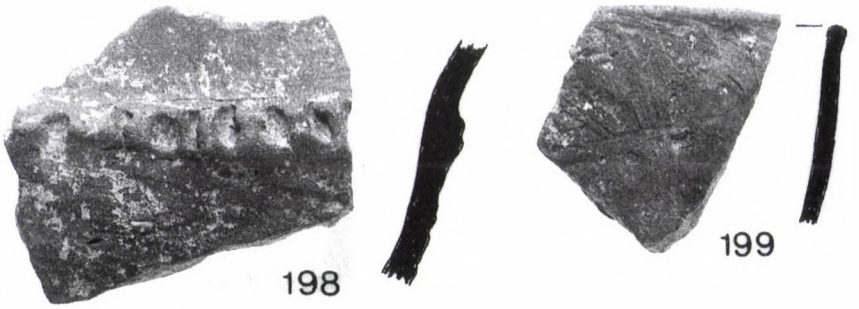
192



Pl. 149. Börzönce-Temetői dűlő. Feature J. 1:2.

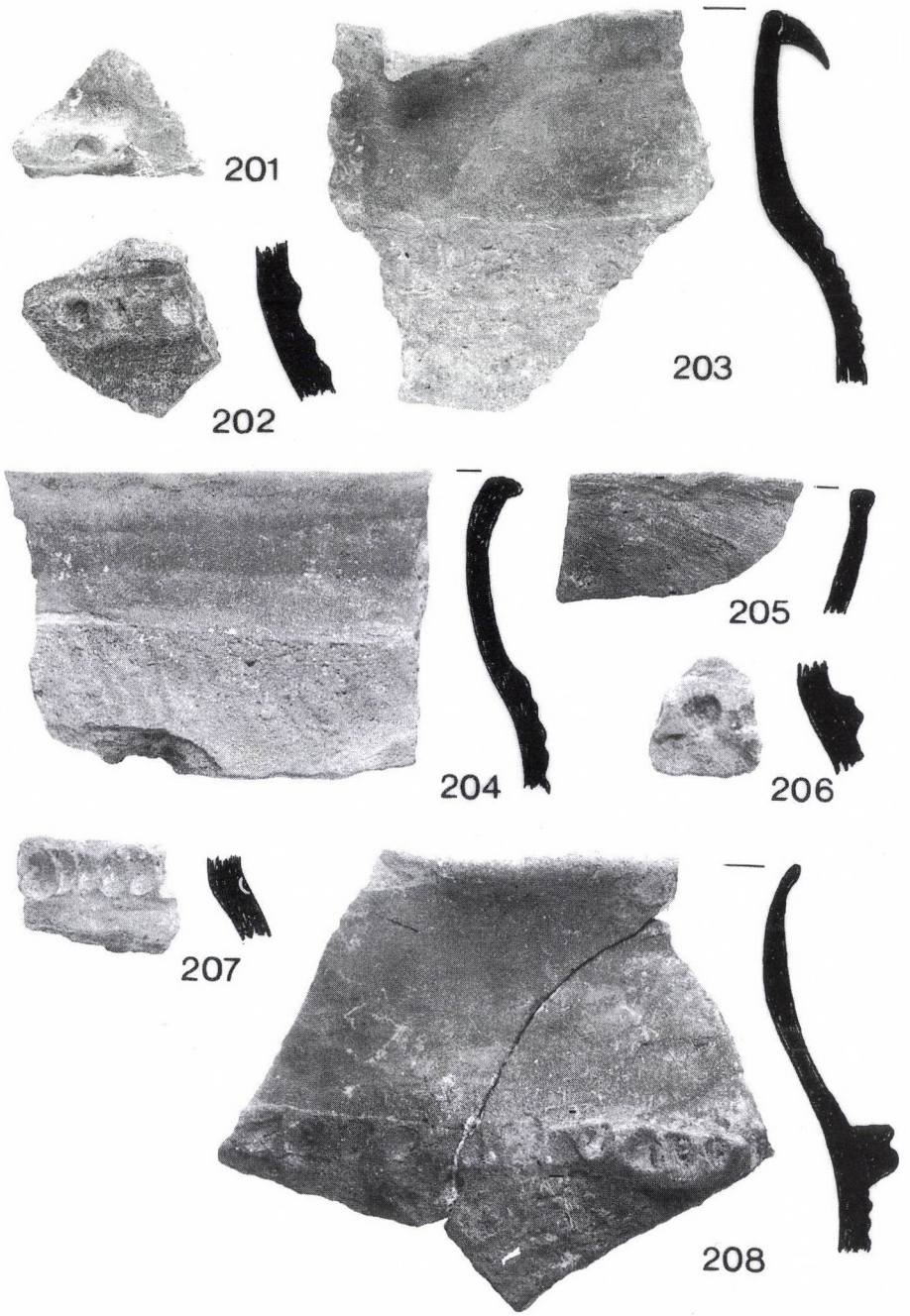


Pl. 150. Börzönce-Temetői dűlő. Feature J. 1:2.

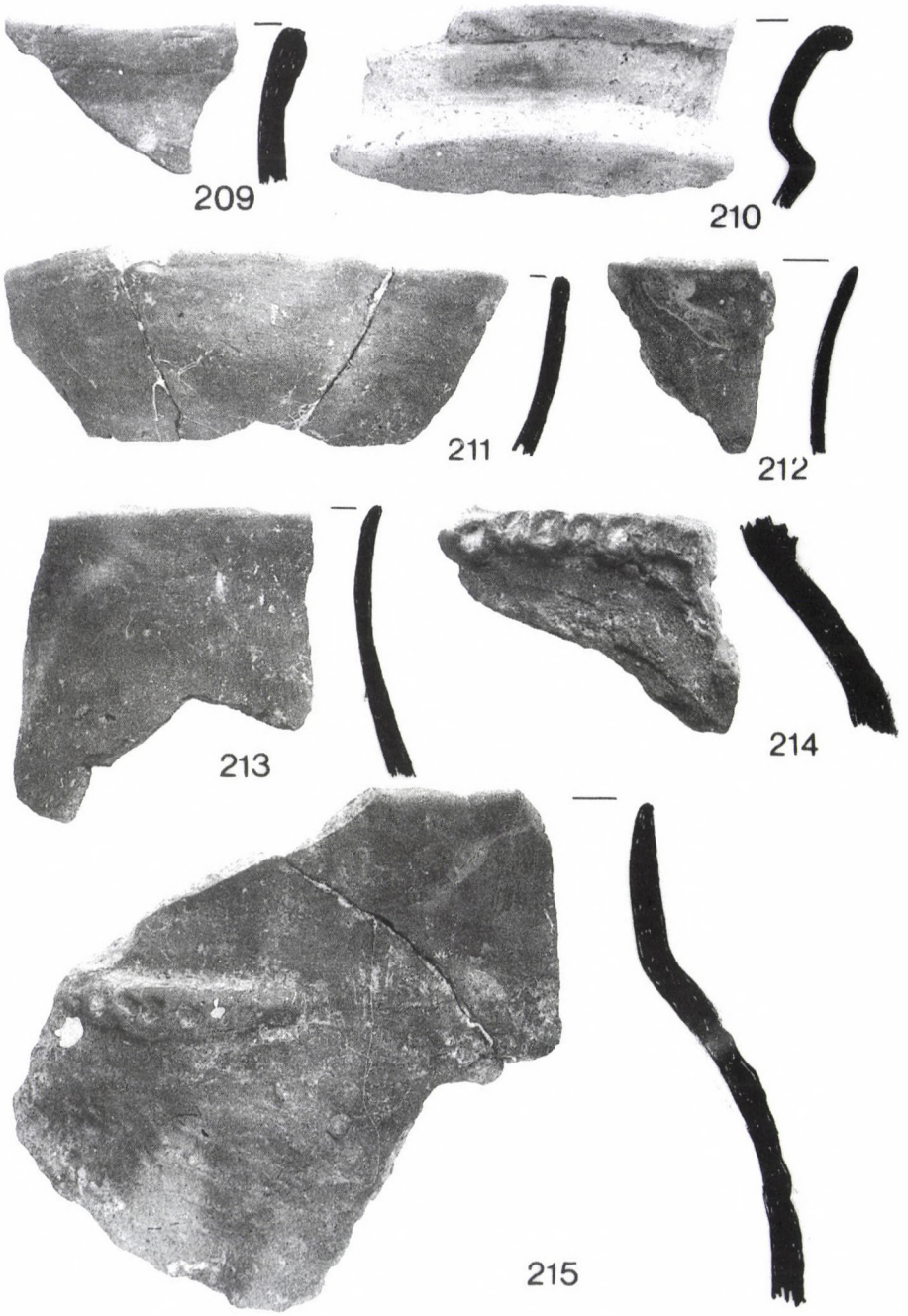




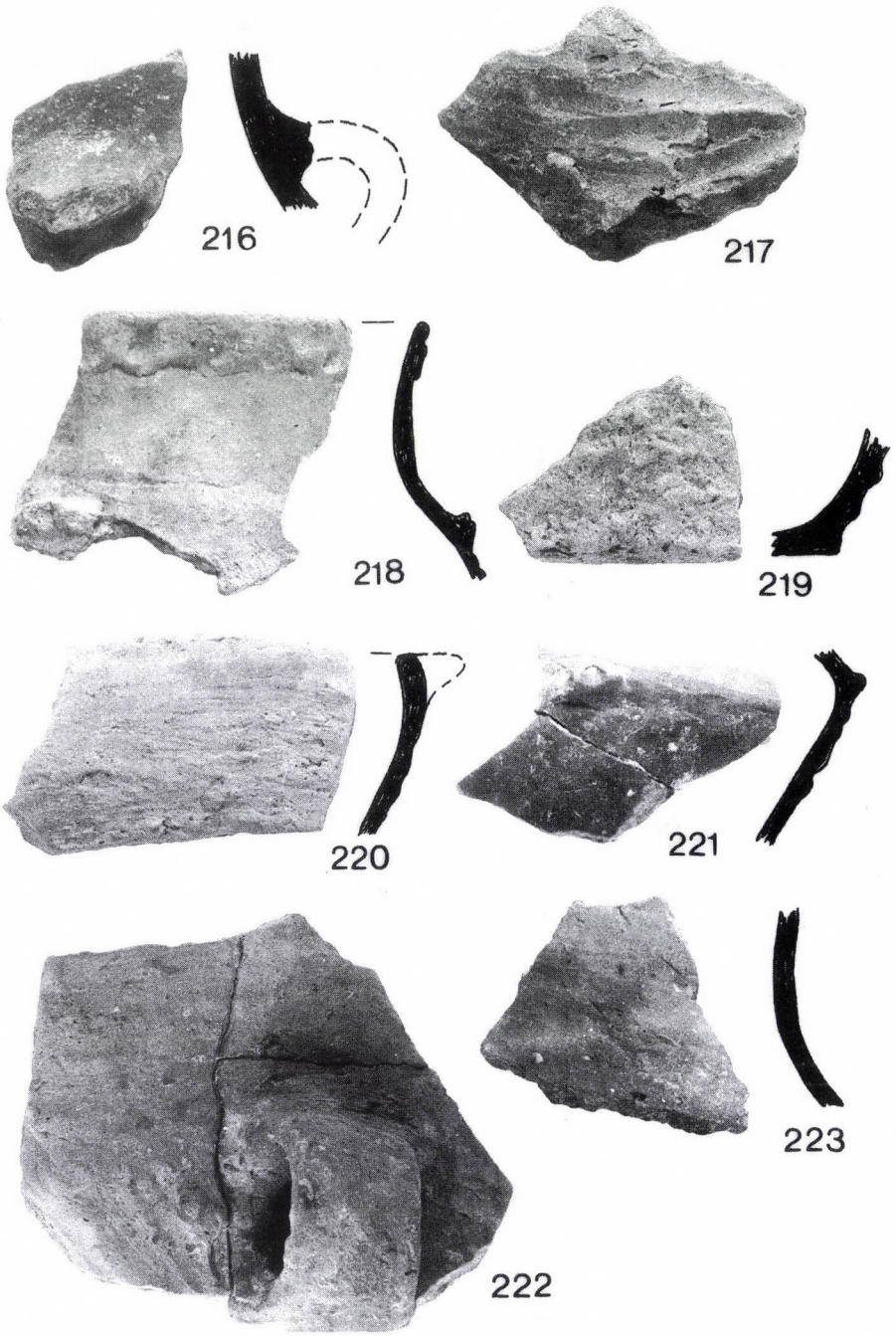
Pl. 151. Börzönce-Temetői dűlő. Feature L. 1:2.



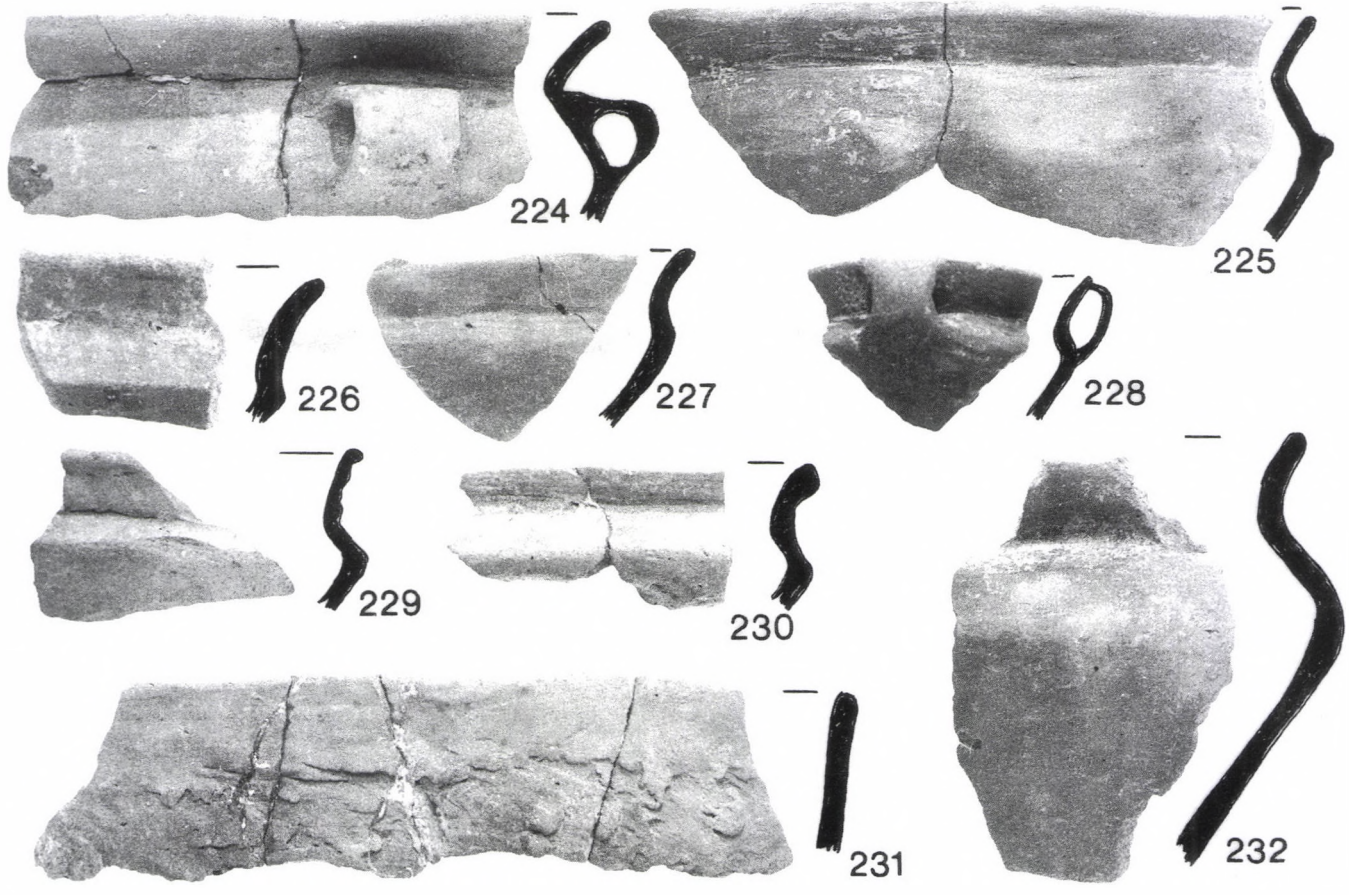
Pl. 152. Börzönce-Temetői dűlő. Feature L. 1:2.



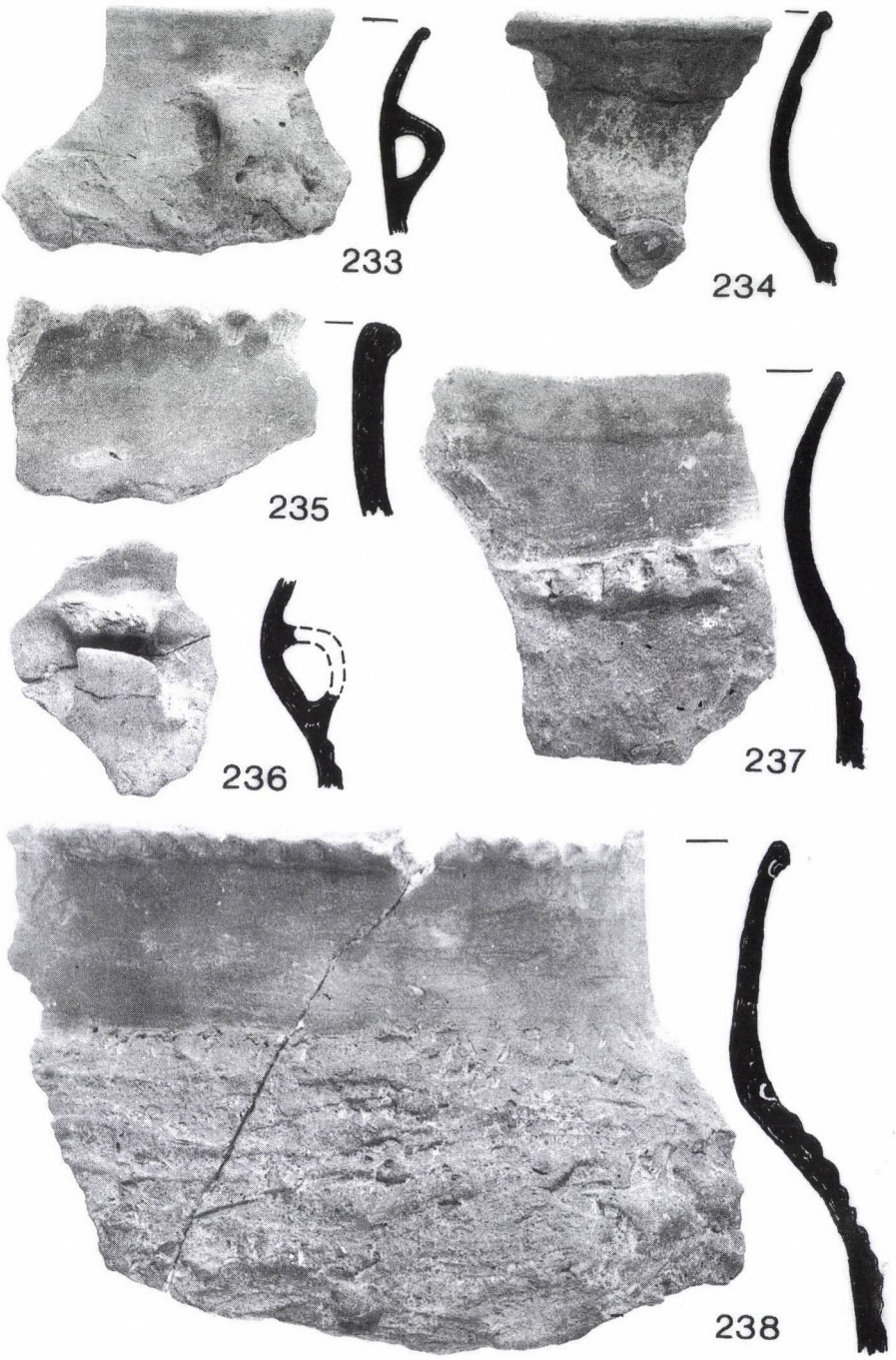
Pl. 153. Börzönce-Temetői dűlő. Feature L. 1:2.



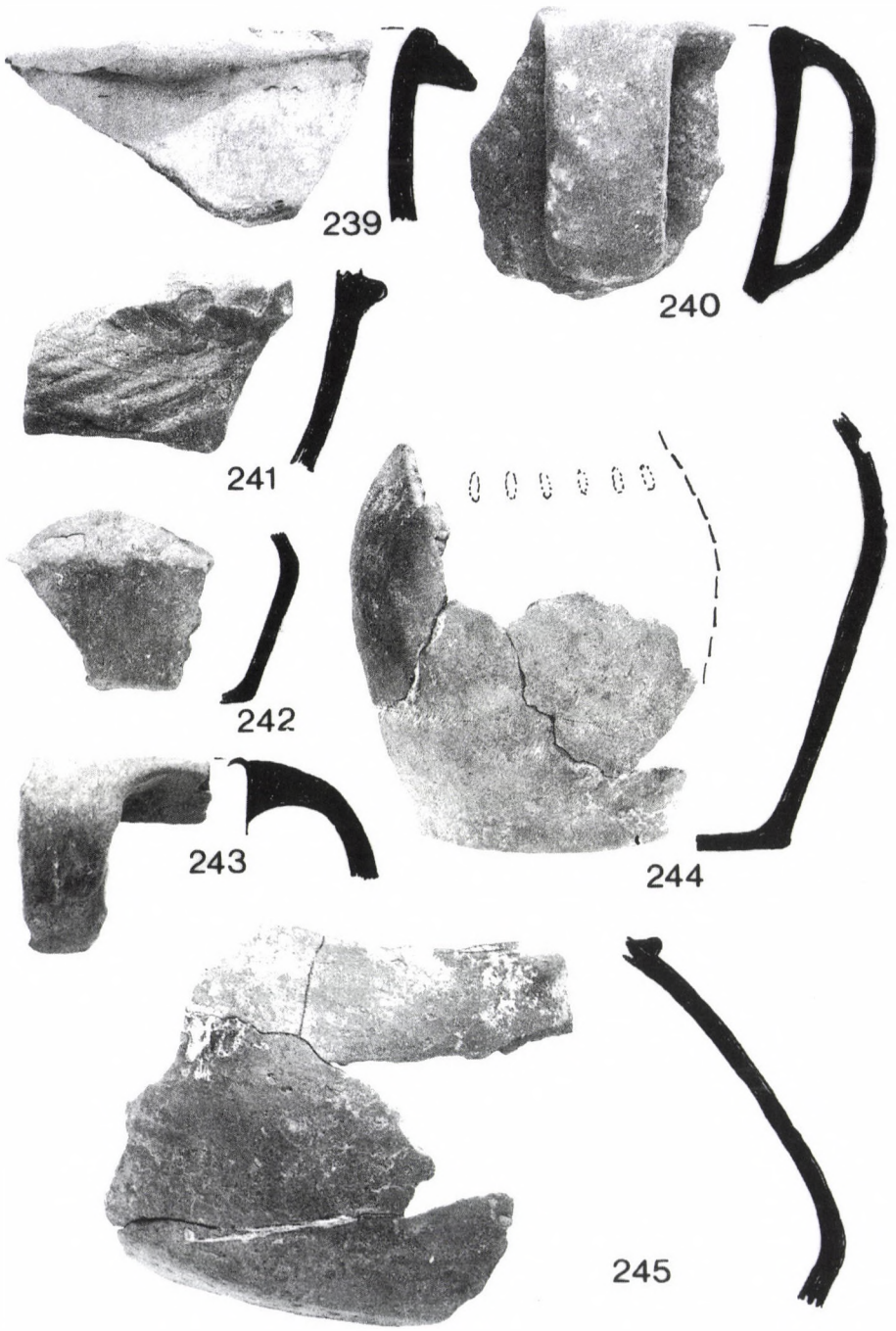
Pl. 154. Börzönce-Temetői dűlő. Features L (216-219) and M (220-223). 1:2.



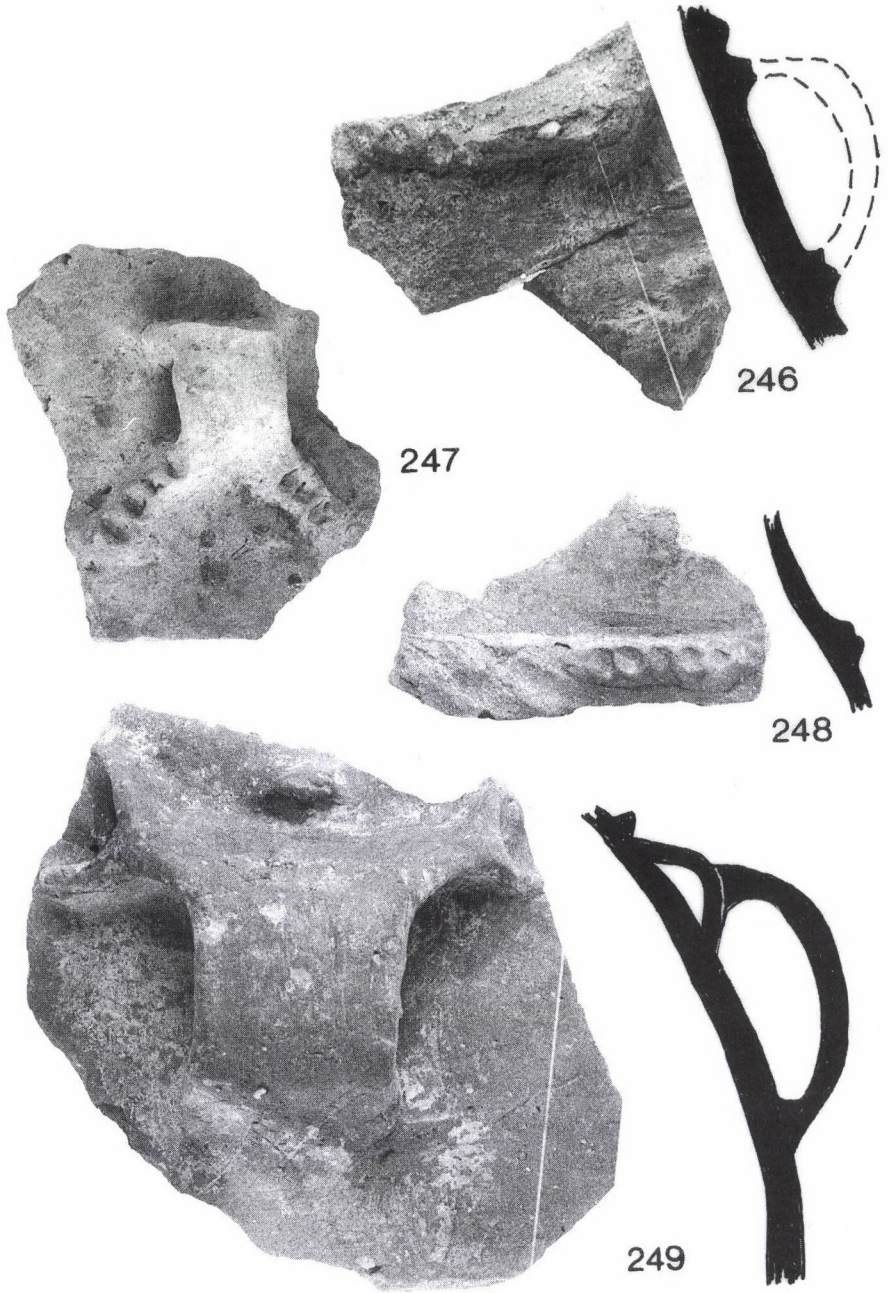
Pl. 155. Börzönce-Temetői dűlő. Feature O. 1:2.



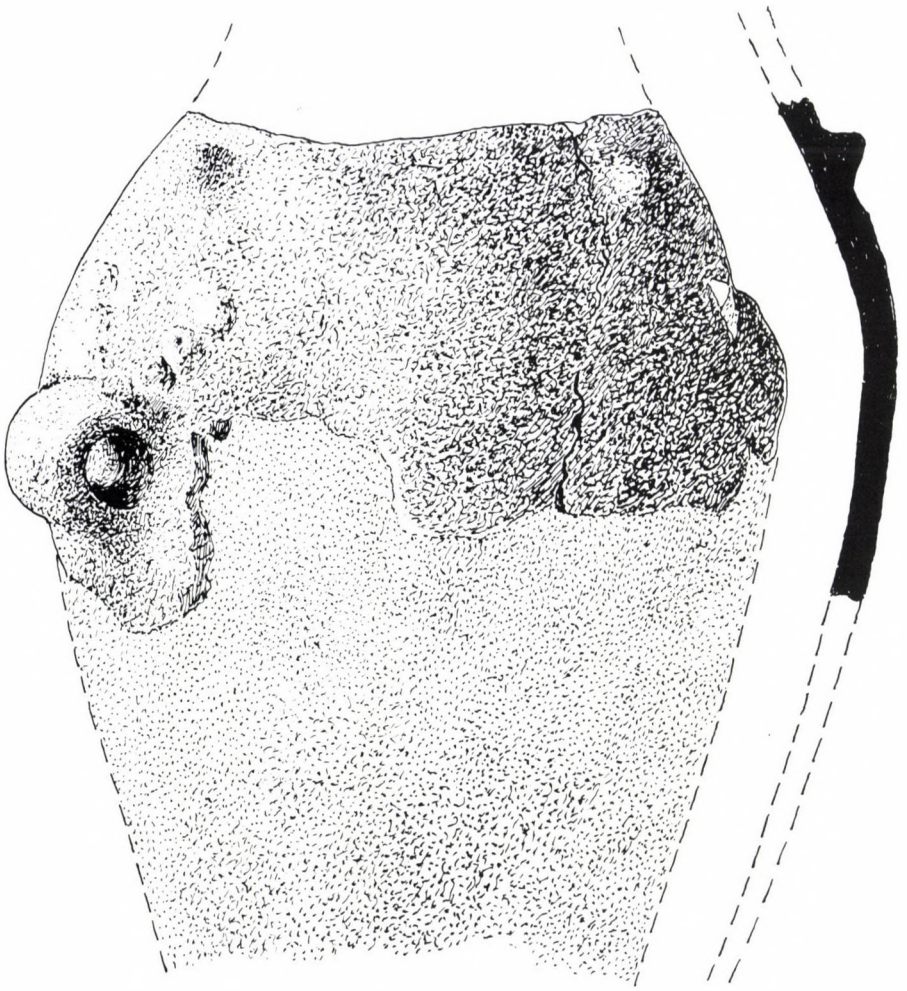
Pl. 156. Börzönce-Temetői dűlő. Feature O. 1:2.



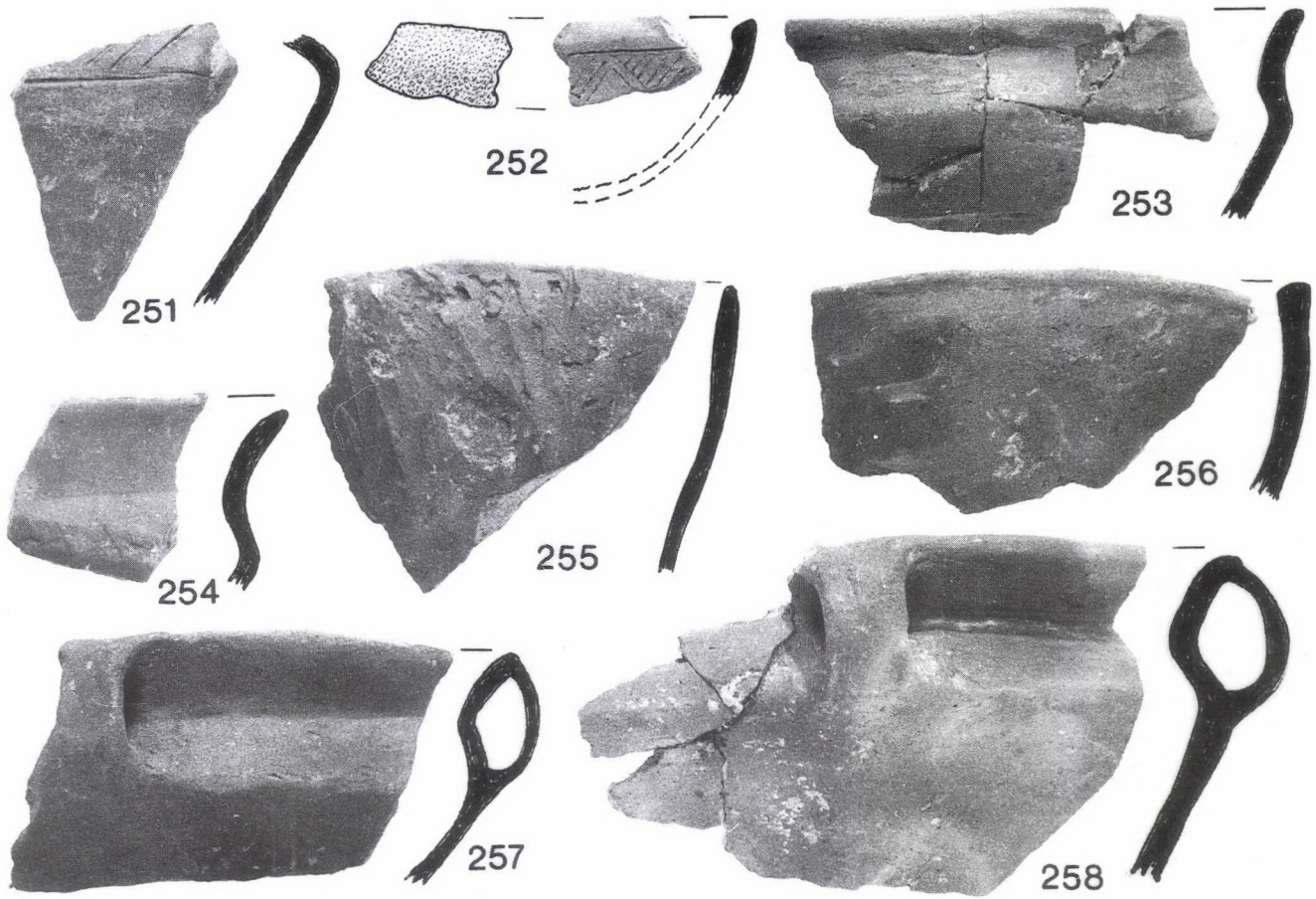
Pl. 157. Börzönce-Temetői dűlő. Feature O. 1:2.



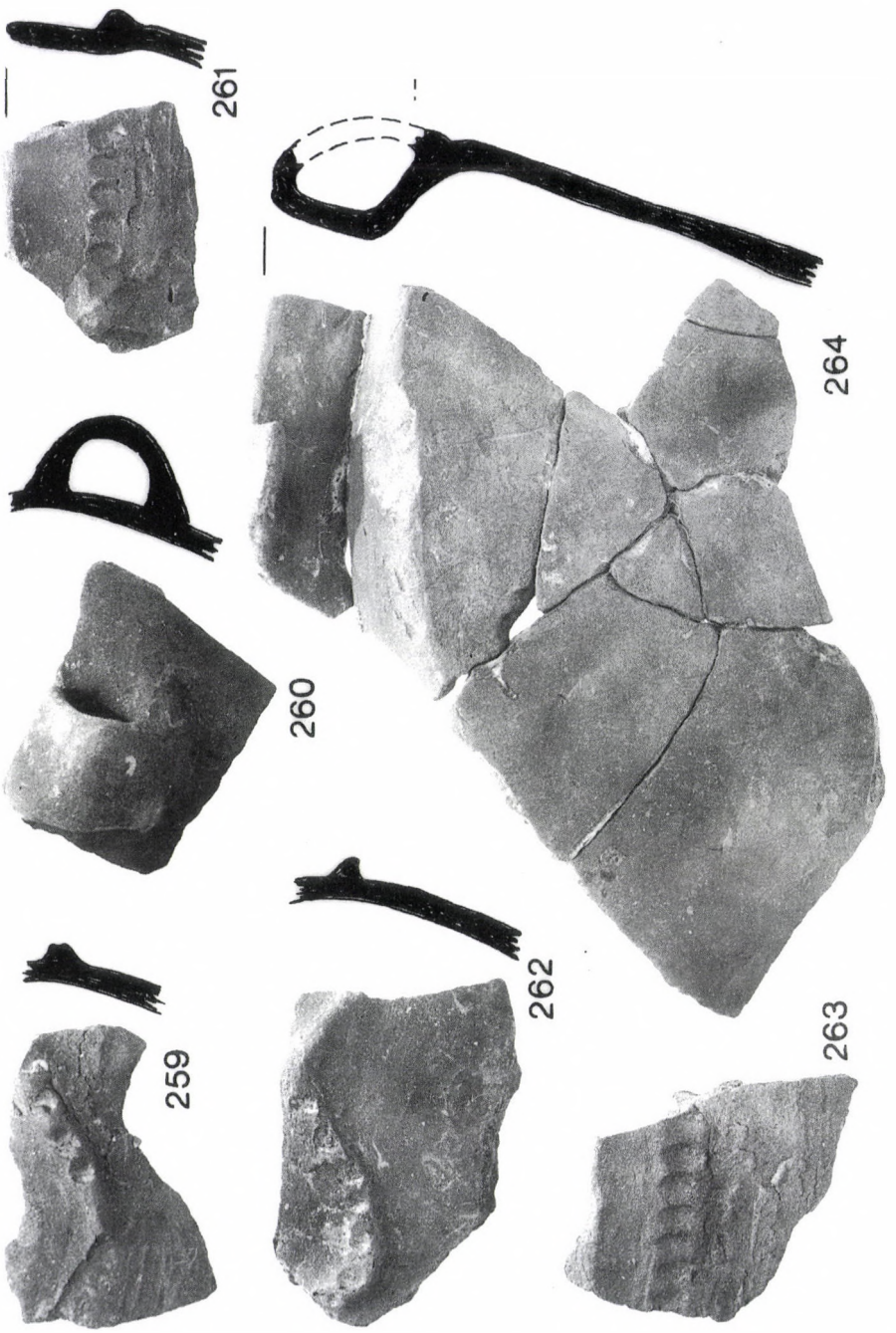
Pl. 158. Börzönce-Temetői dűlő. Feature O. 1:2.



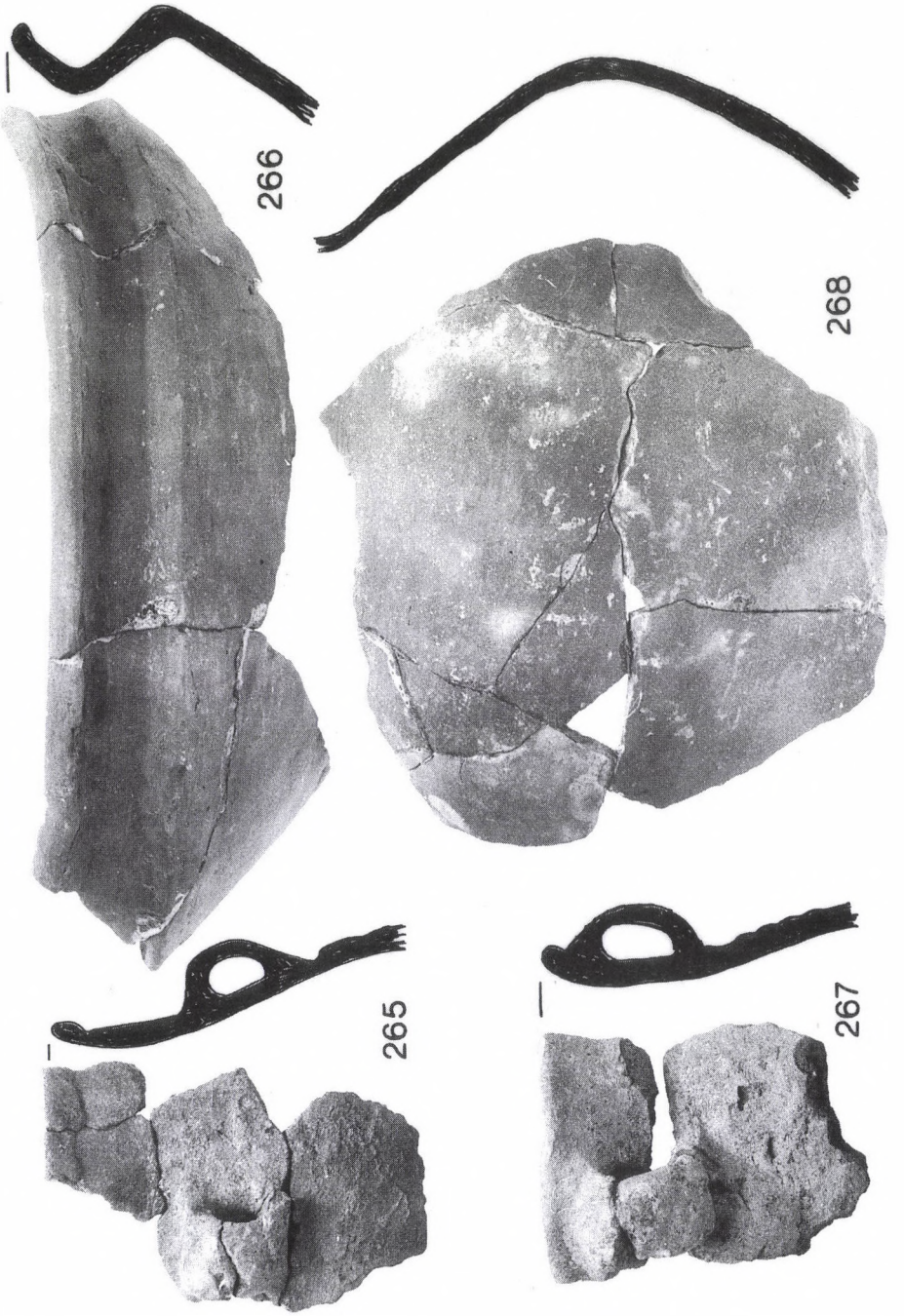
Pl. 159. Börzönce-Temetői dűlő. Feature O. 1:2.



Pl. 160. Börzönce-Temetői dűlő. Feature P. 1:2.

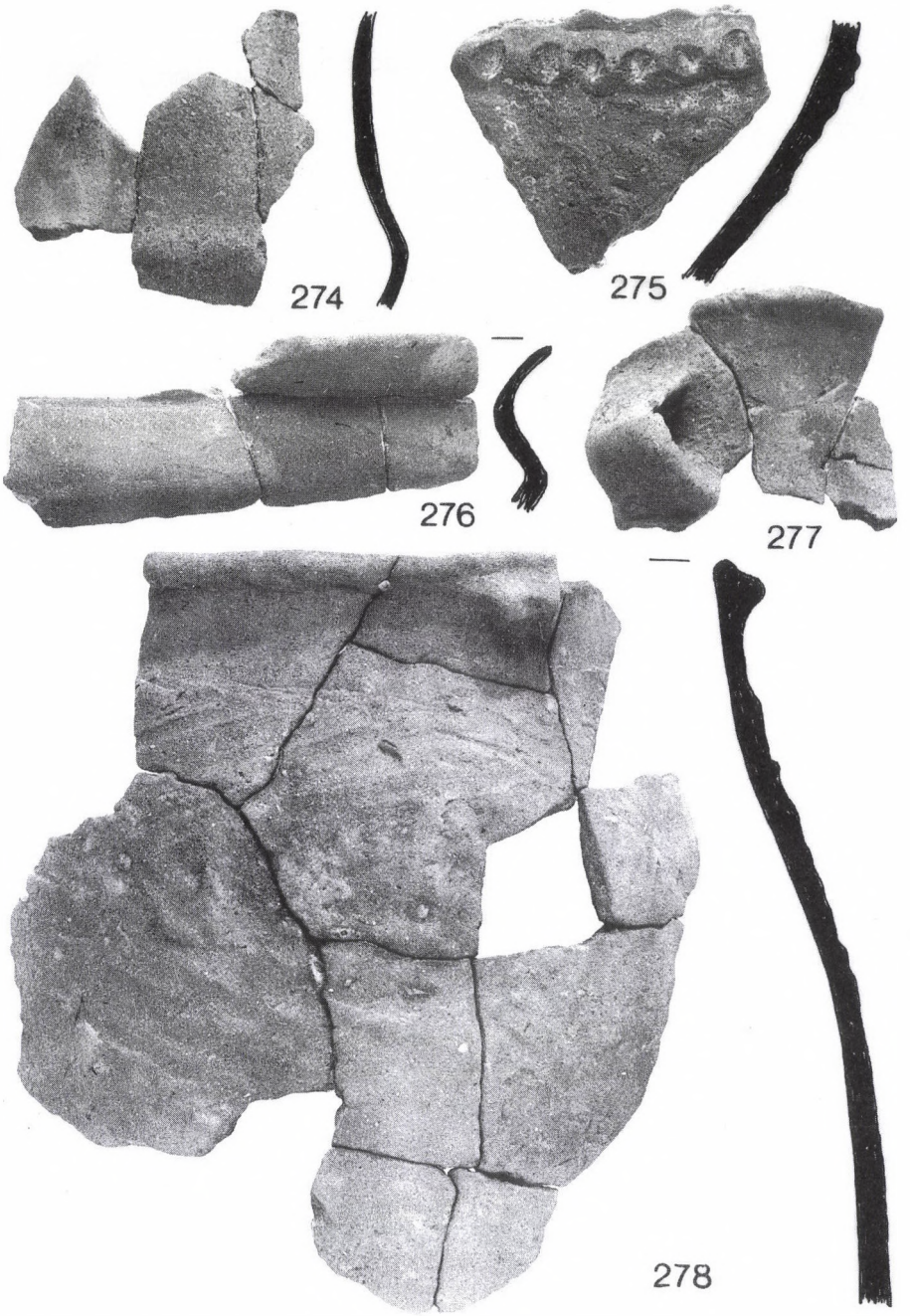


Pl. 161. Börzönce-Temetői dűlő. Feature P. 1:2.

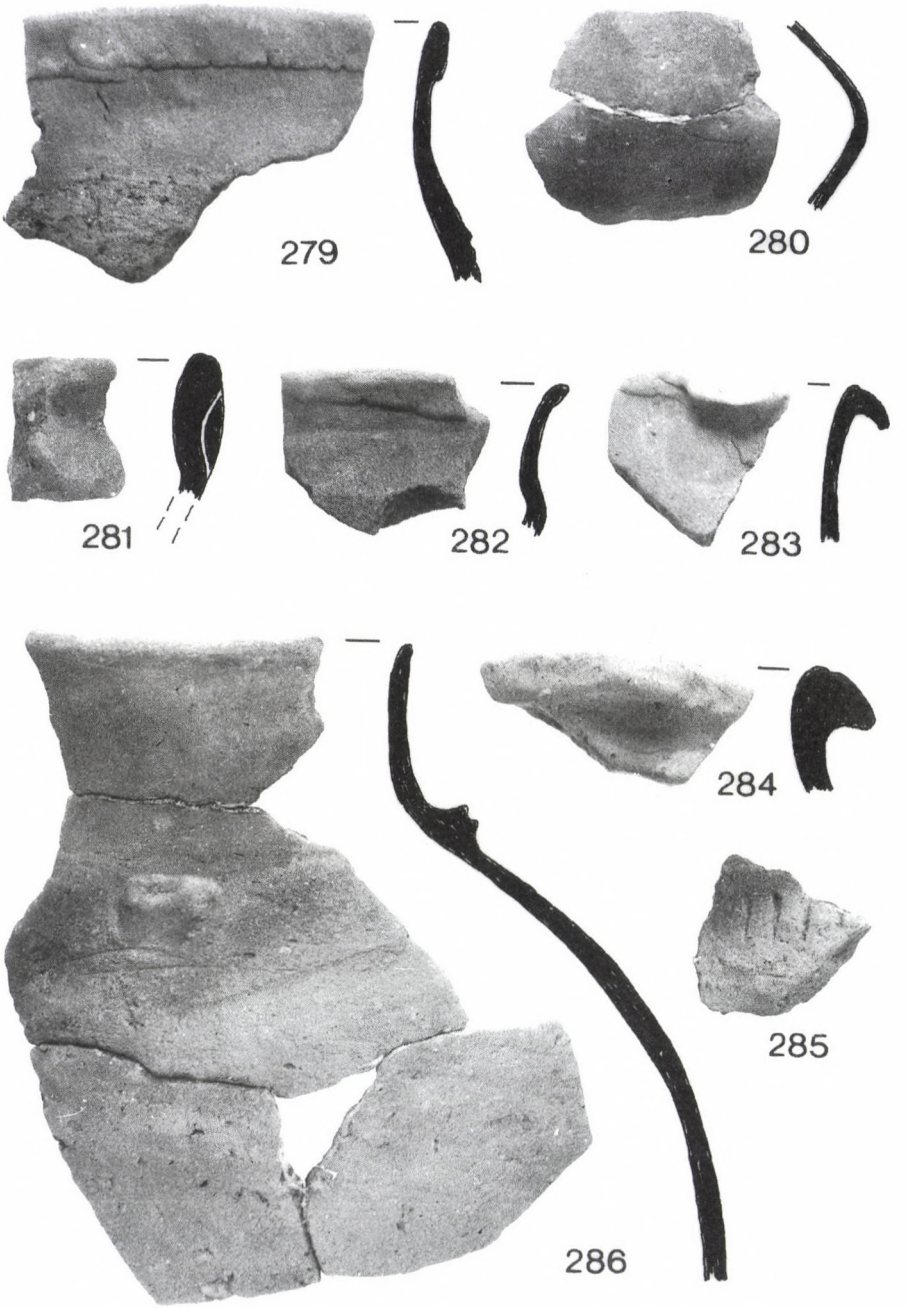


Pl. 162. Börzönce-Temetői dűlő. Feature P. 1:2.

Pl. 163. Börzönce-Temetői dűlő. Feature P. 1:2.



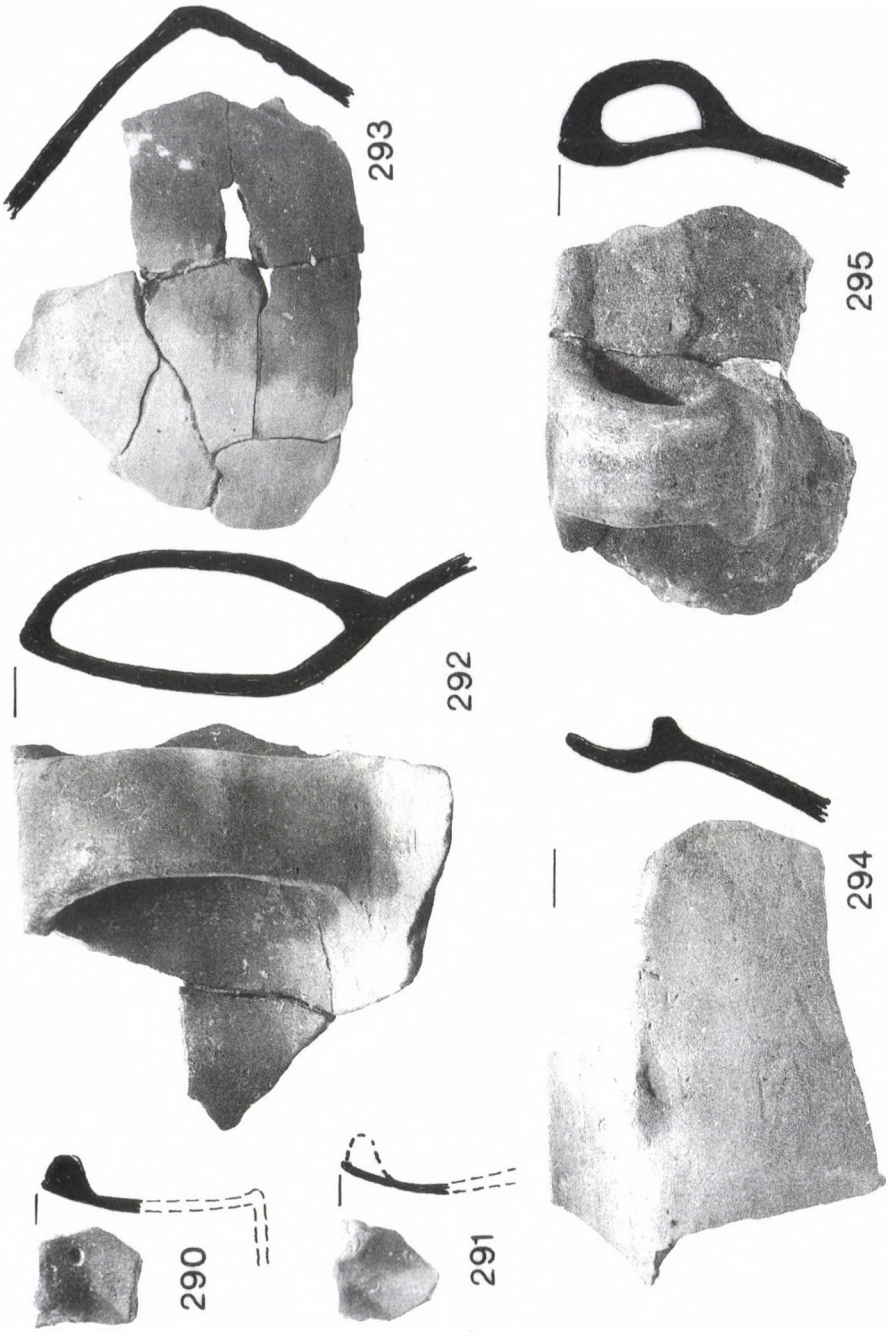
Pl. 164. Börzönce-Temetői dűlő. Feature 7. 1:2.



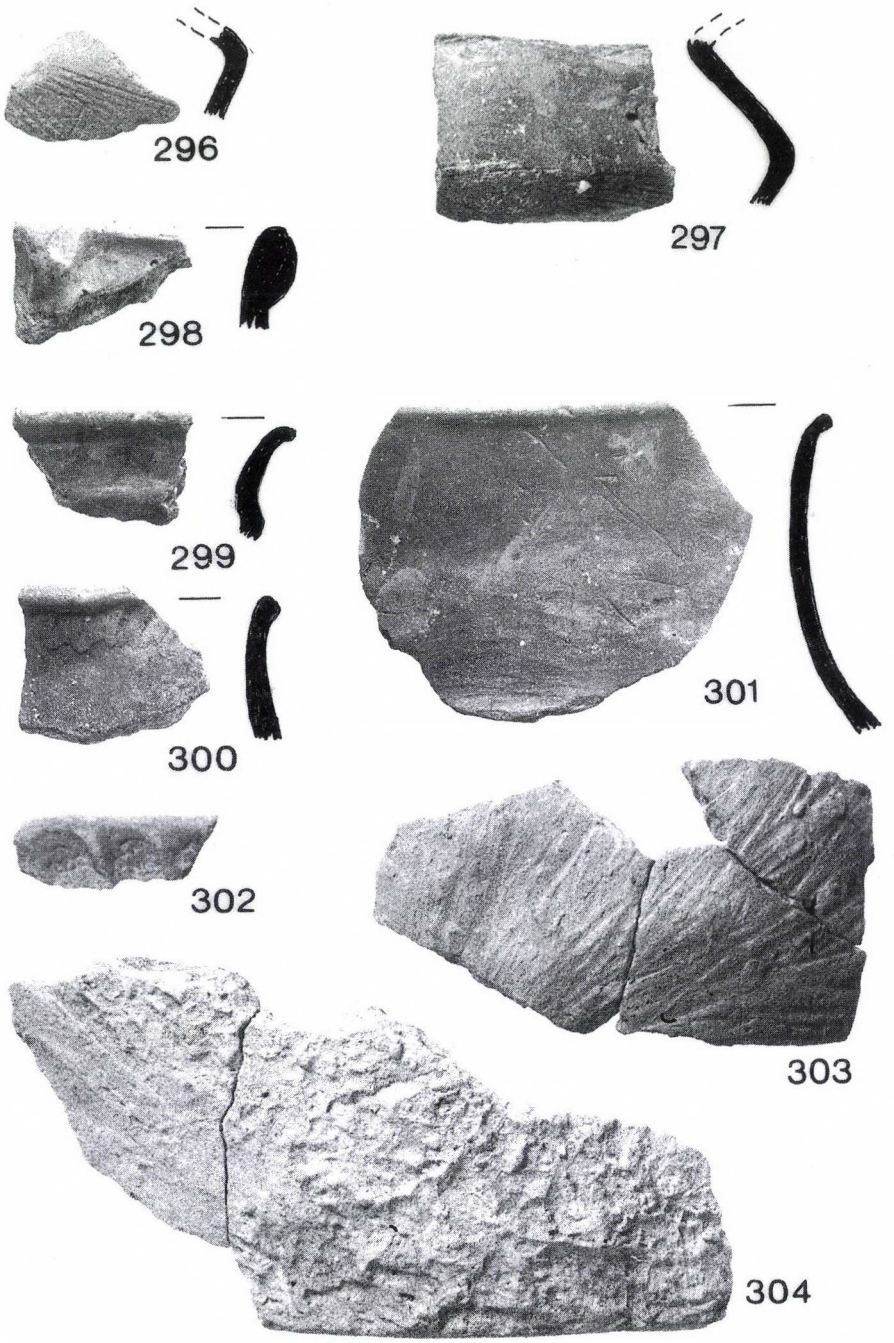
Pl. 165. Börzönce-Temetői dűlő. Feature 11. 1:2.



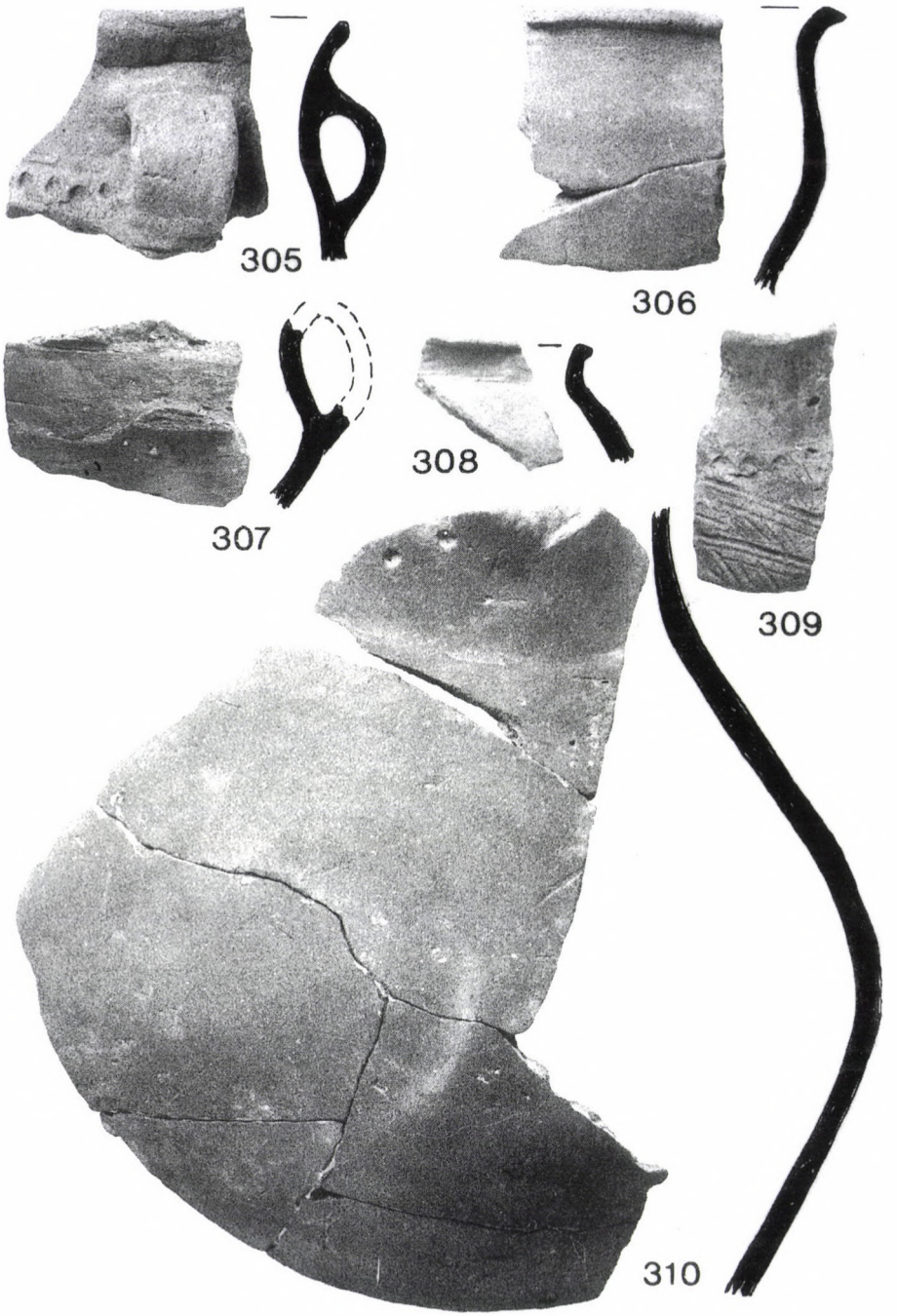
Pl. 166. Börzönce-Temetői dűlő. Feature 12. 1:2.



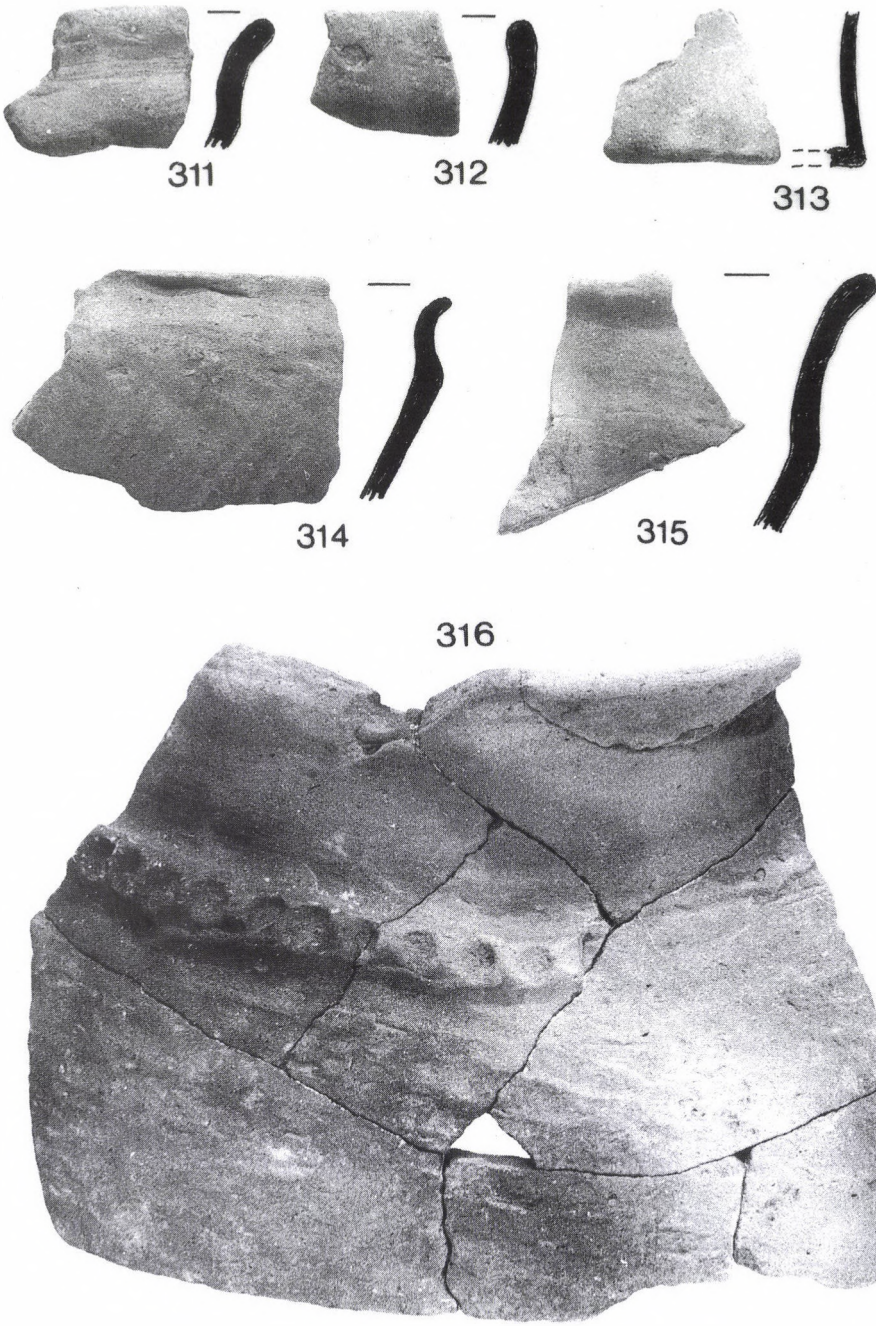
Pl. 167. Börzönce-Temetői dűlő. Feature 12. 1:2.



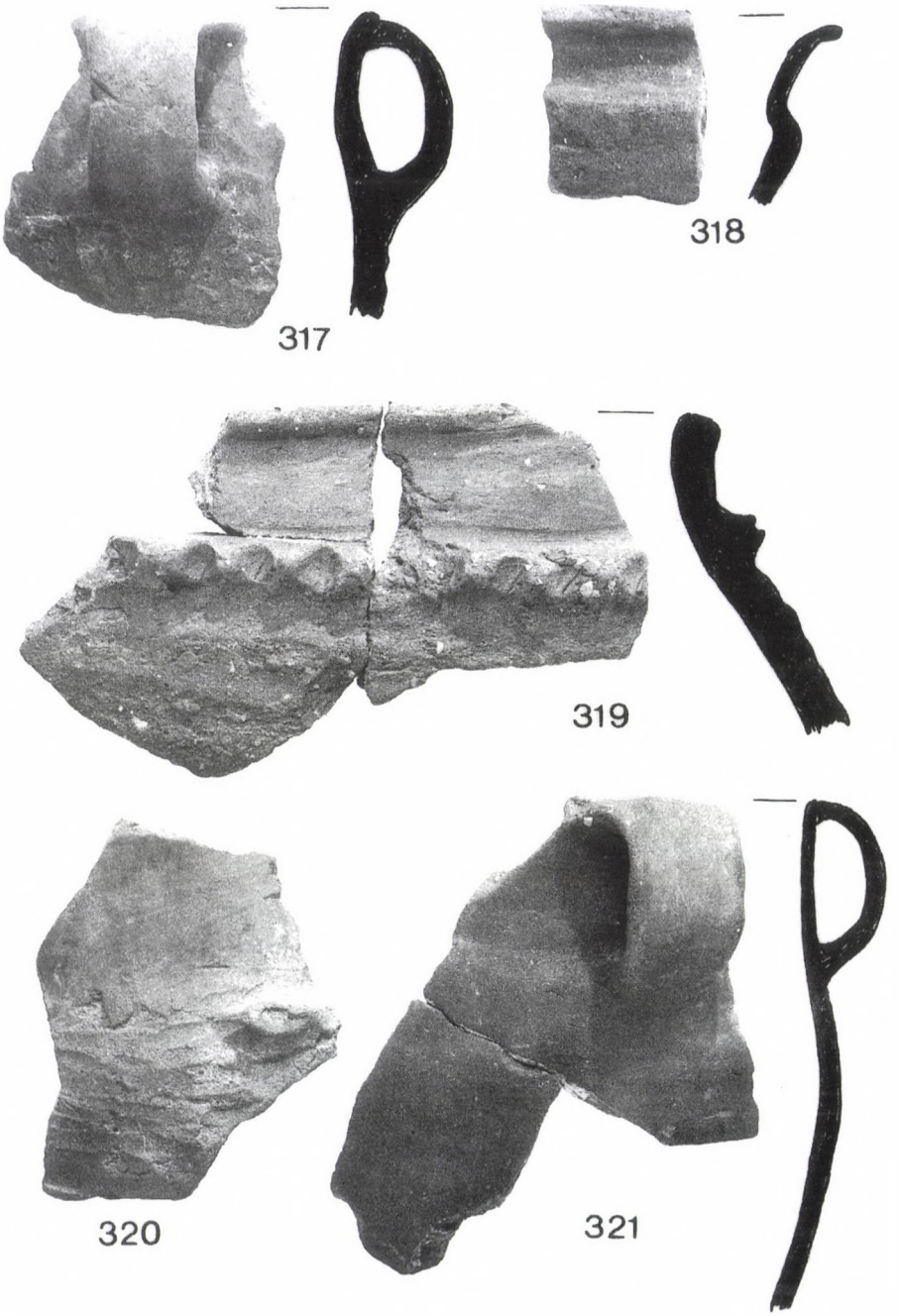
Pl. 168. Börzönce-Temetői dűlő. Features 15 (296-301) and 17 (302-304). 1:2.



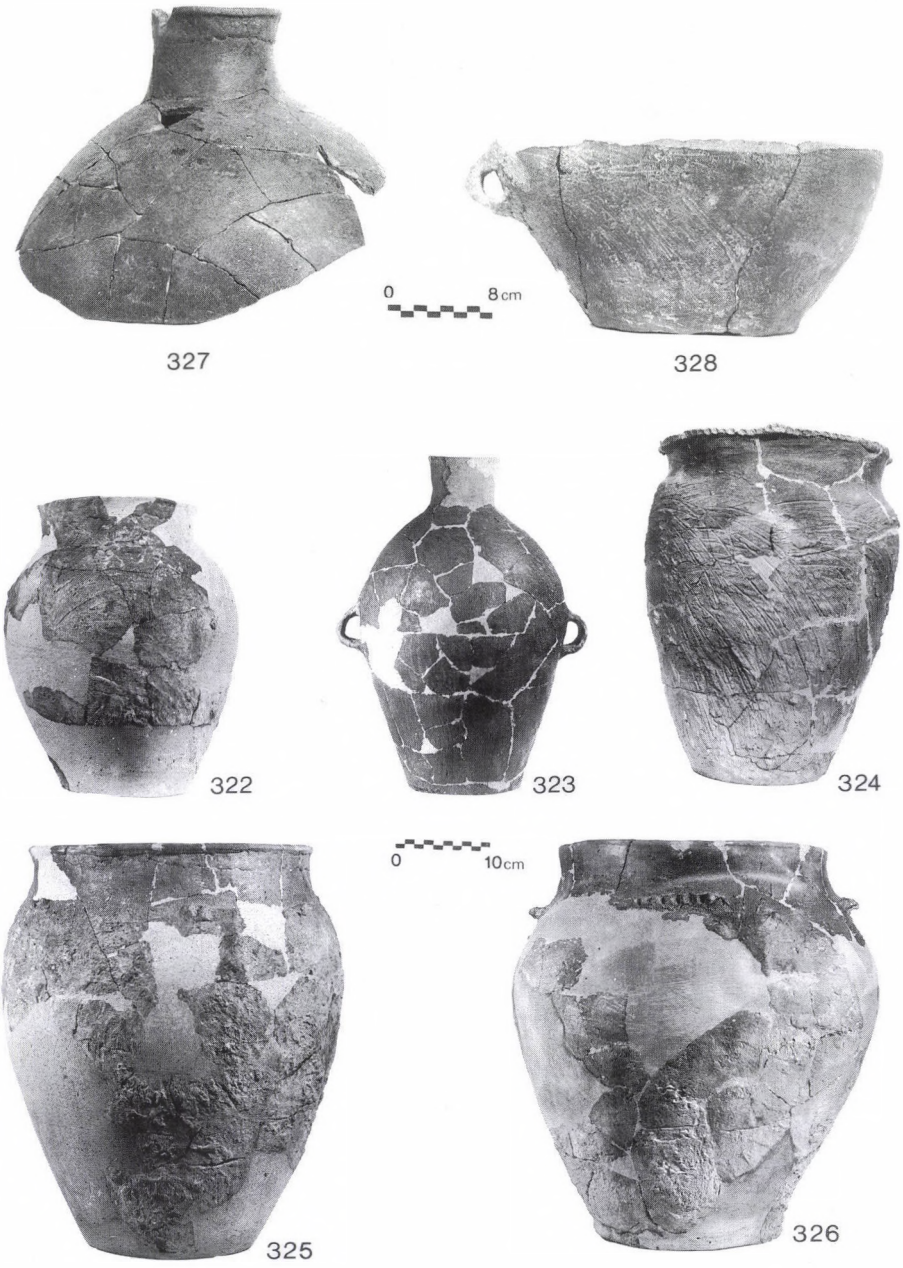
Pl. 169. Börzönce-Temetői dűlő. Feature 17. 1:2.



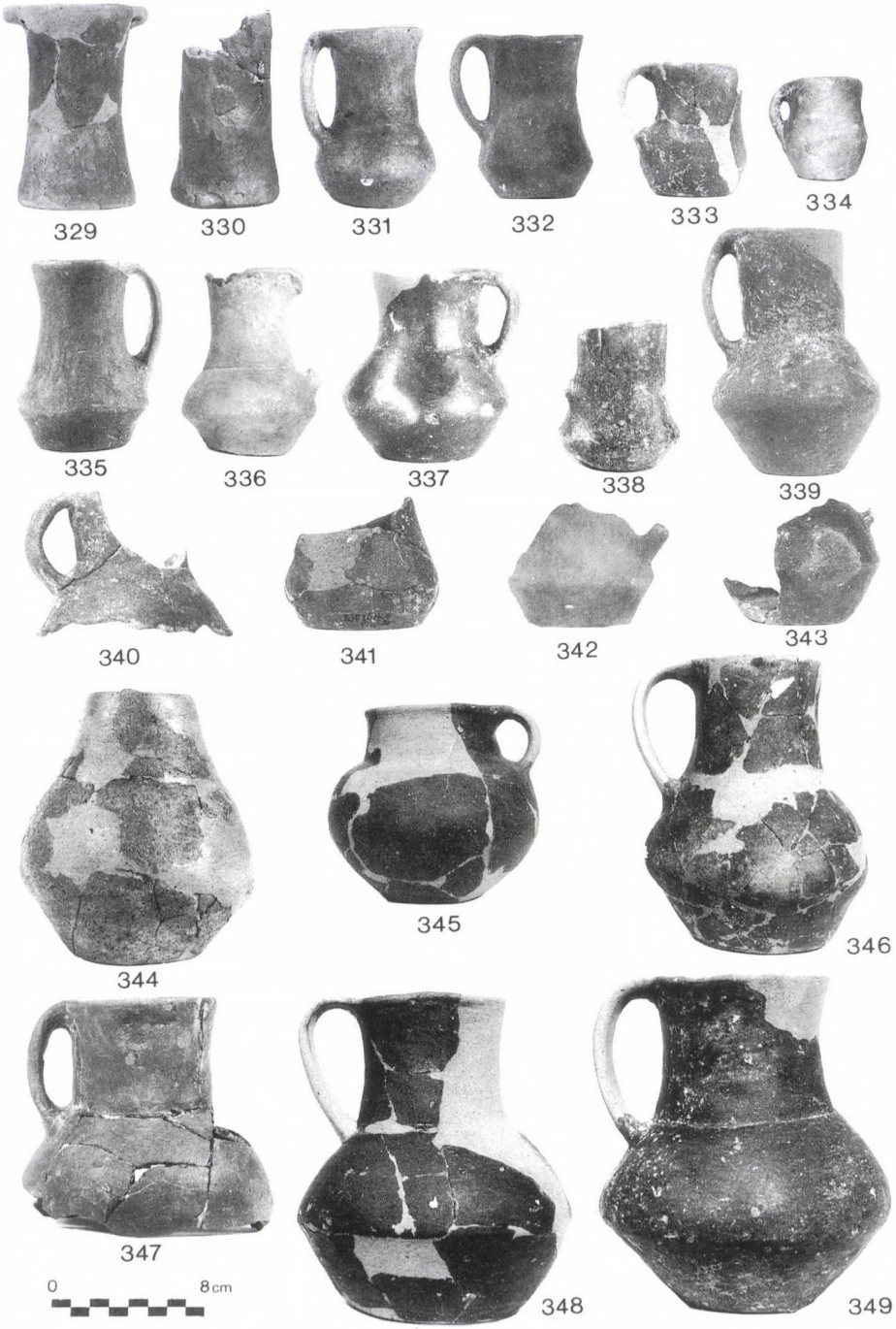
Pl. 170. Börzönce-Temetői dűlő. Feature 19. 1:2.



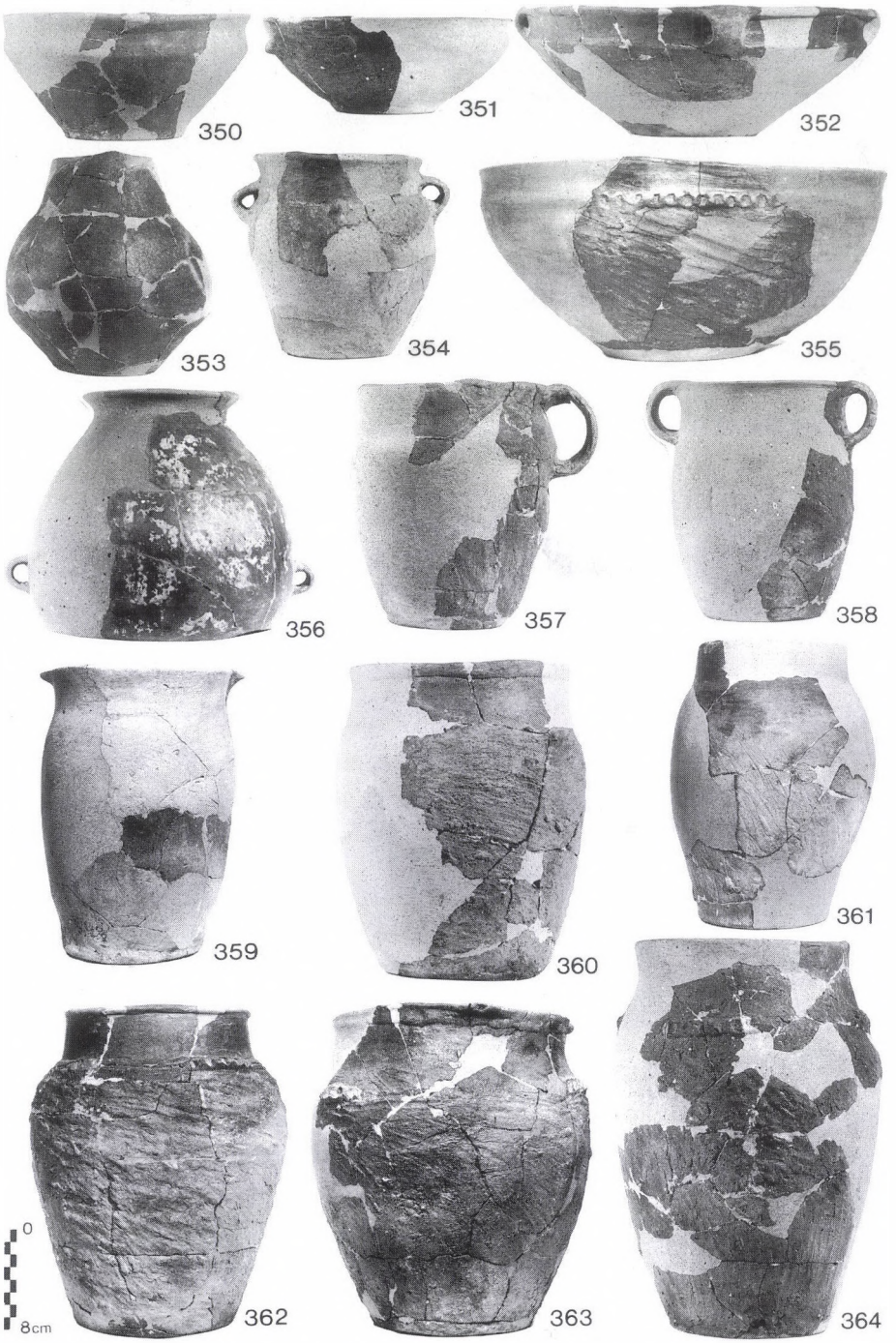
Pl. 171. Börzönce-Temetői dűlő. Featuret 20. 1:2.



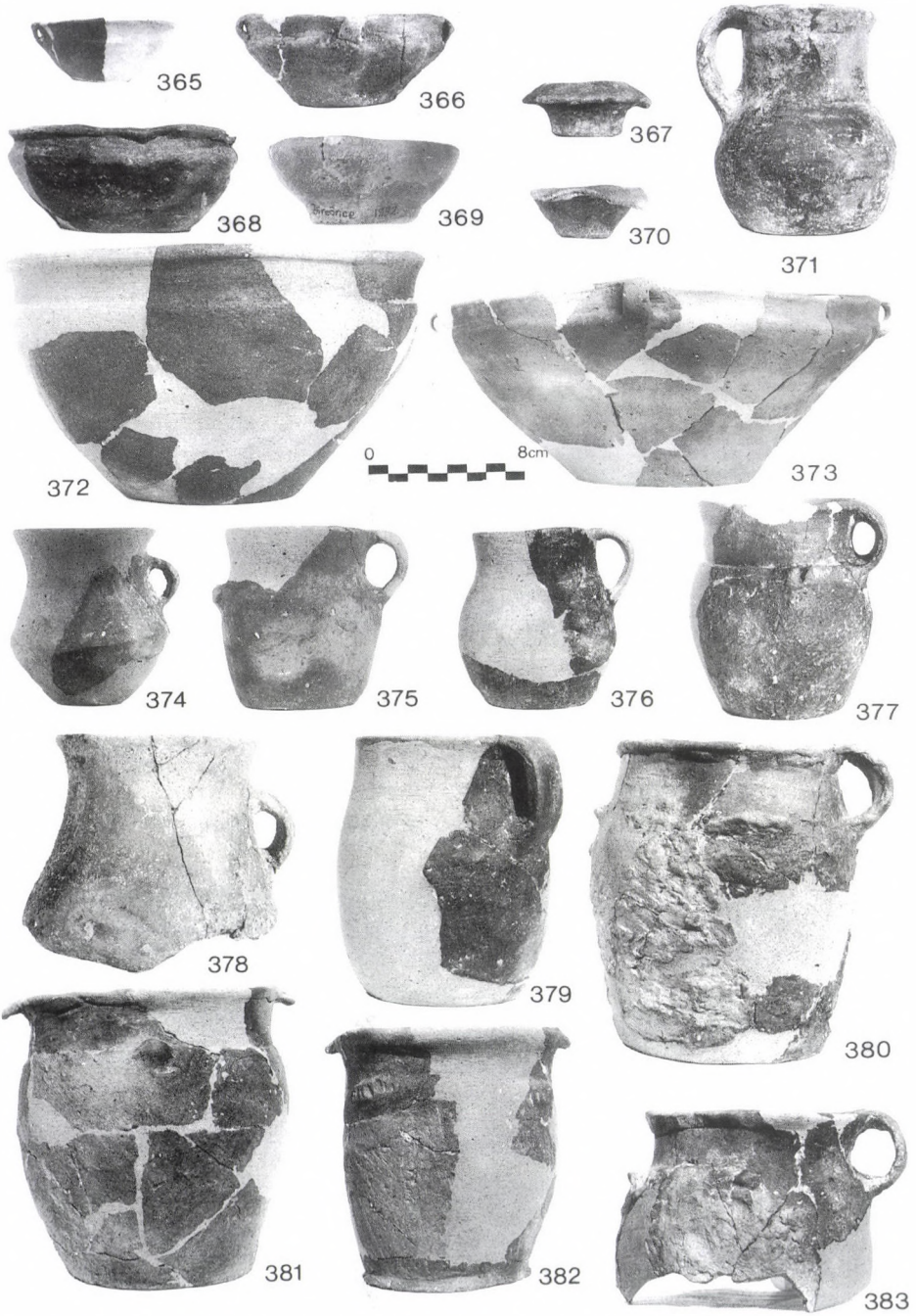
Pl. 172. Börzönce-Temetői dűlő. Pottery finds. Features O (322-323, 325-326), H (324) and 20 (327).



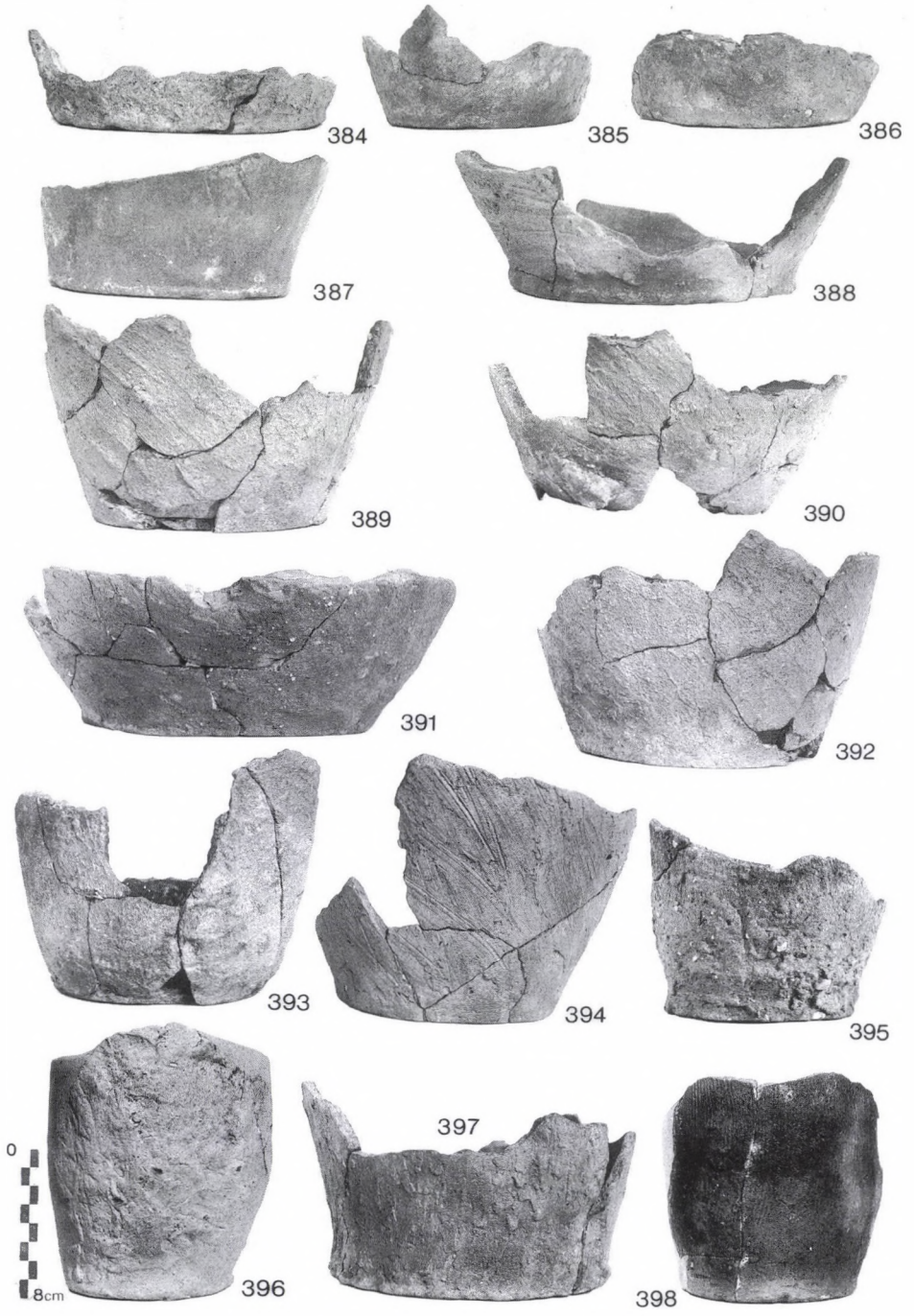
Pl. 173. Börzönce-Temetői dűlő. Pottery finds. Features P (329, 332, 339, 341, 343, 347), 11 (330, 342), 7 (331, 335, 344), O (333), H (334, 340, 346), 20 (336), A (337-338), J (345, 348-349).



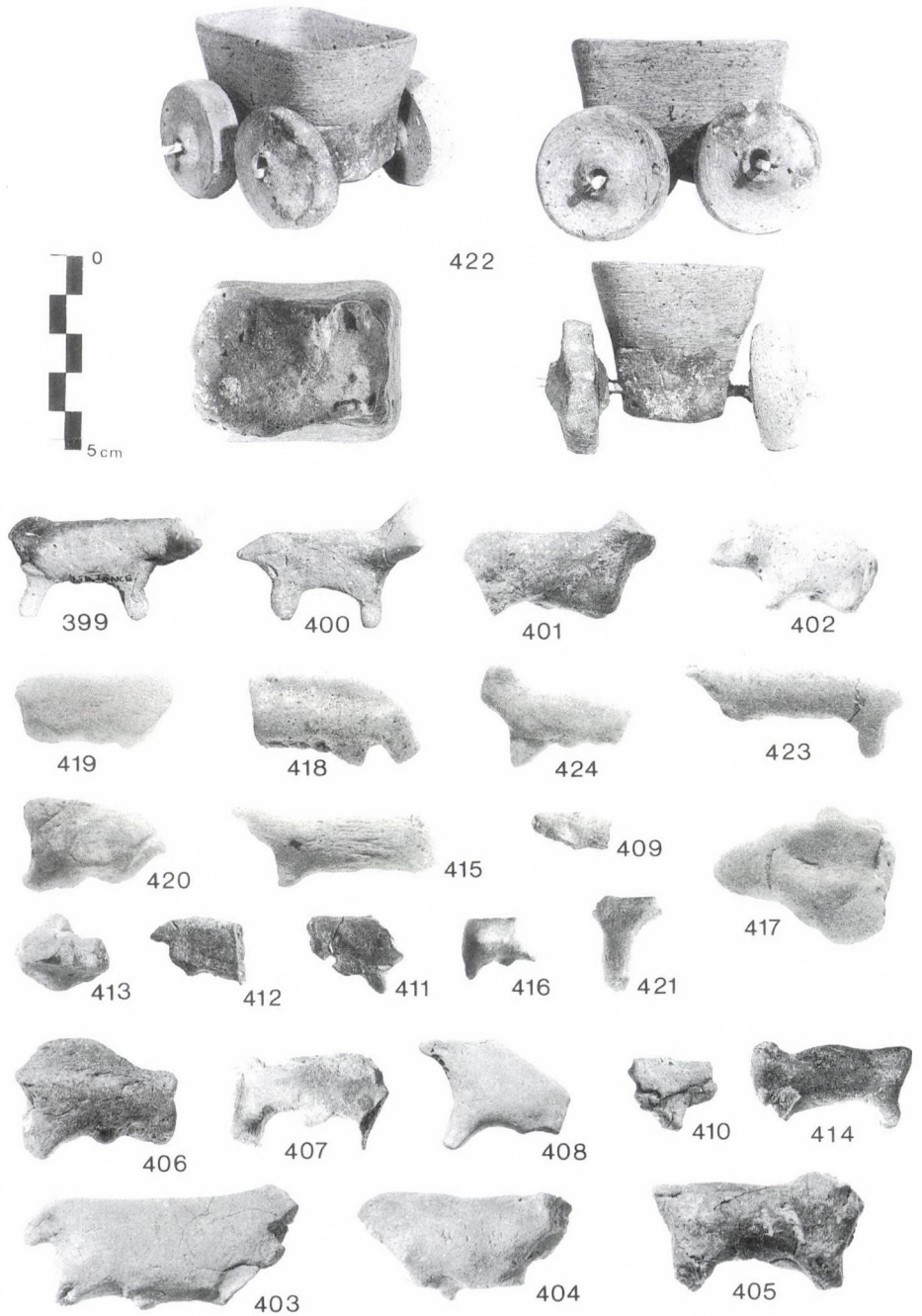
Pl. 174. Börzönce-Temetői dűlő. Pottery finds. Features P (350, 353, 357, 360), 12 (351), O (352, 354, 356, 358, 364), A (355, 363), H (359, 362), J (361).



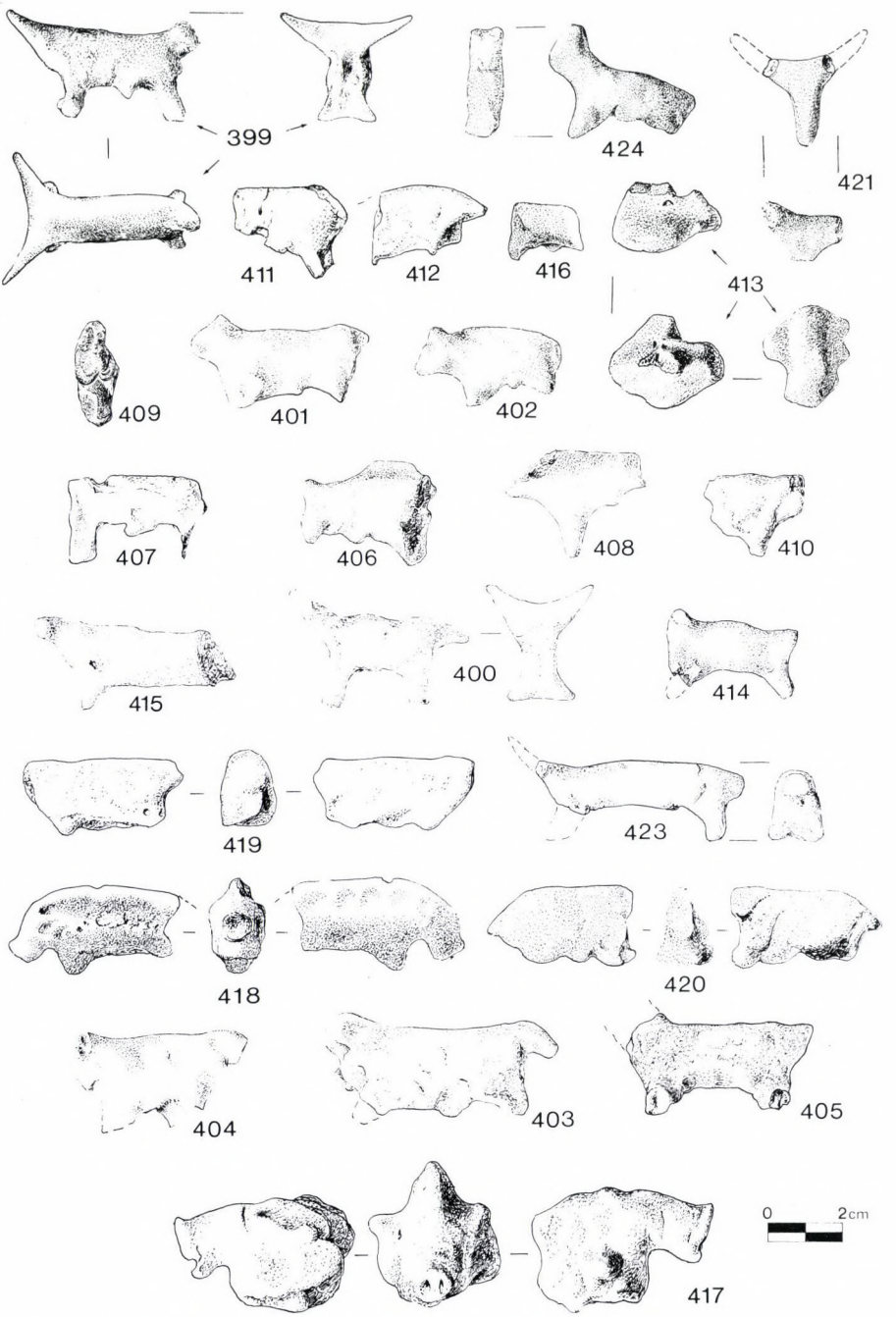
Pl. 175. Börzönce-Temetői dűlő. Pottery finds. Features A (365, 377-378), 7 (366), E (367-368, 376, 379-380, 383), 11 (369), O (370, 374-375), J (371), 17 (372) 19 (373) H (381-382).



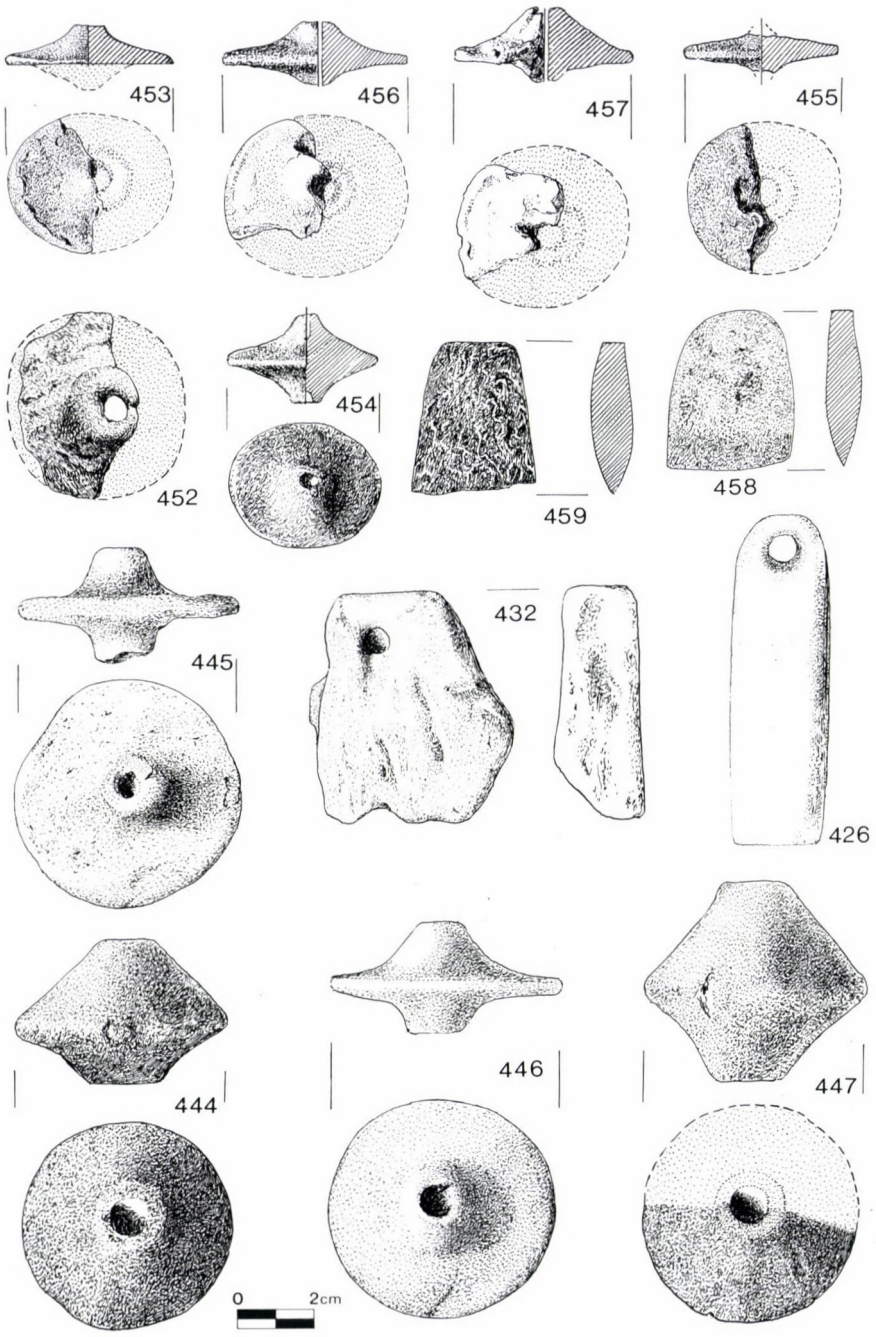
Pl. 176. Börzönce-Temetői dűlő. Pottery finds. Features J (384-386, 389-390, 392), 12 (387), 7 (388, 395), 19 (391), E (393), H (394, 396-398).



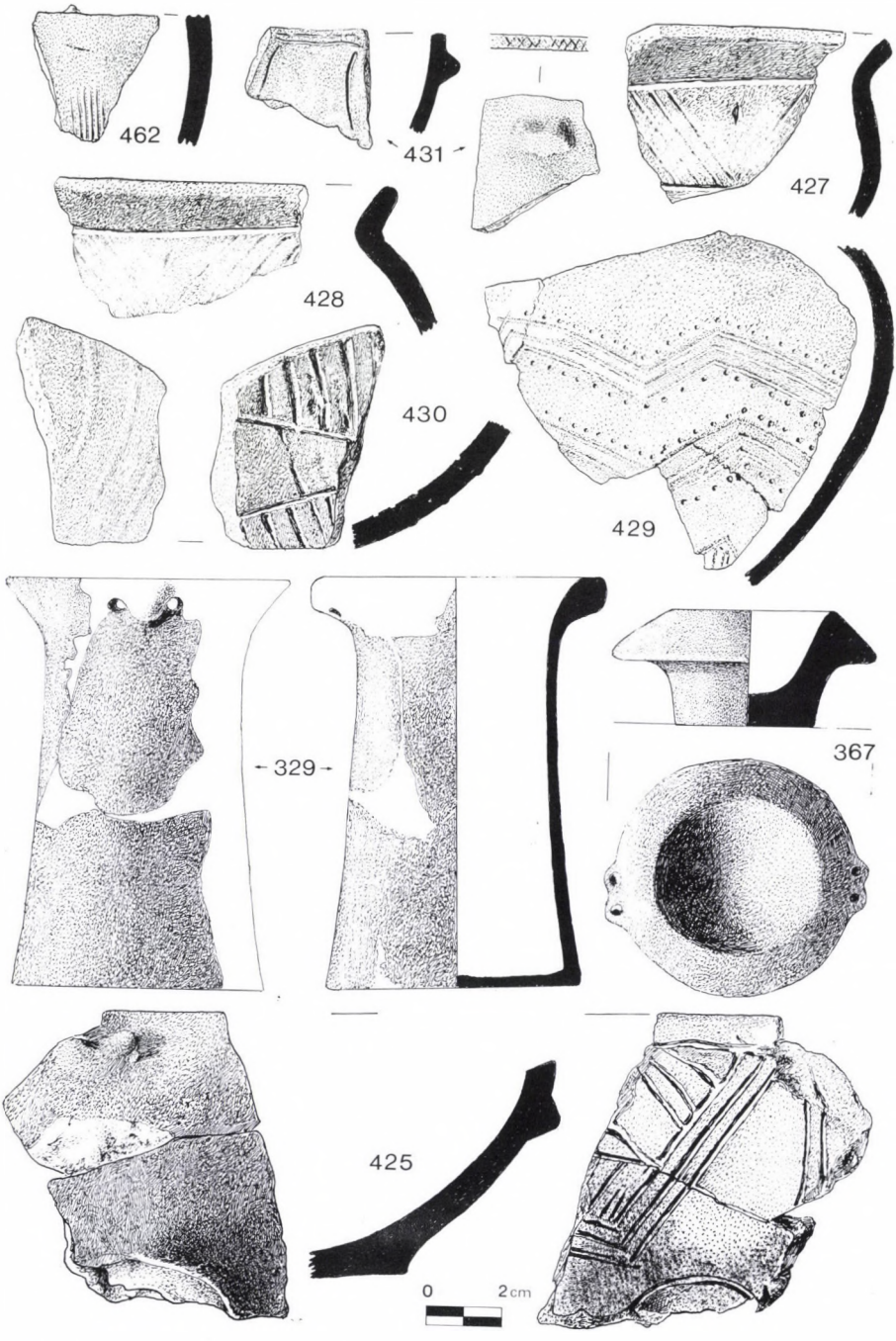
Pl. 177. Börzönce-Temetői dűlő. Wagon model and animal figurines. Features O (399-400, 403-405, 407, 411-413), P (401, 406, 409-410), L (402, 408, 415), J (414, 422), 11 (416, 421, 424), 15 (417-420), 6 (423).



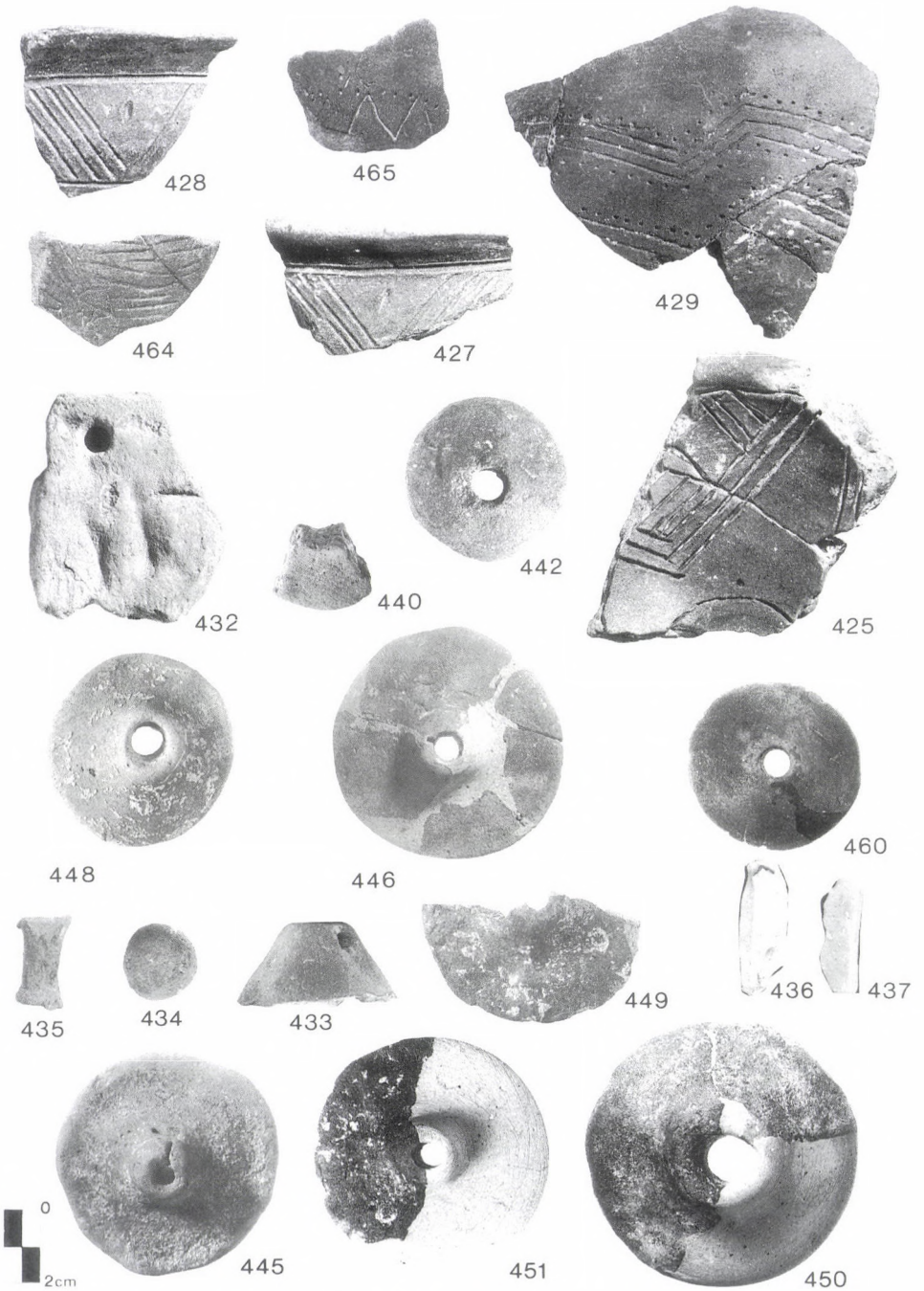
Pl. 178. Börzönce - Temetői dűlő. Animal figurines. Features O (399-400, 403-405, 407, 411-413), P (401, 406, 409-410), L (402, 408, 415), J (414), 11 (416, 421, 424), 15 (417-420), 6 (423).



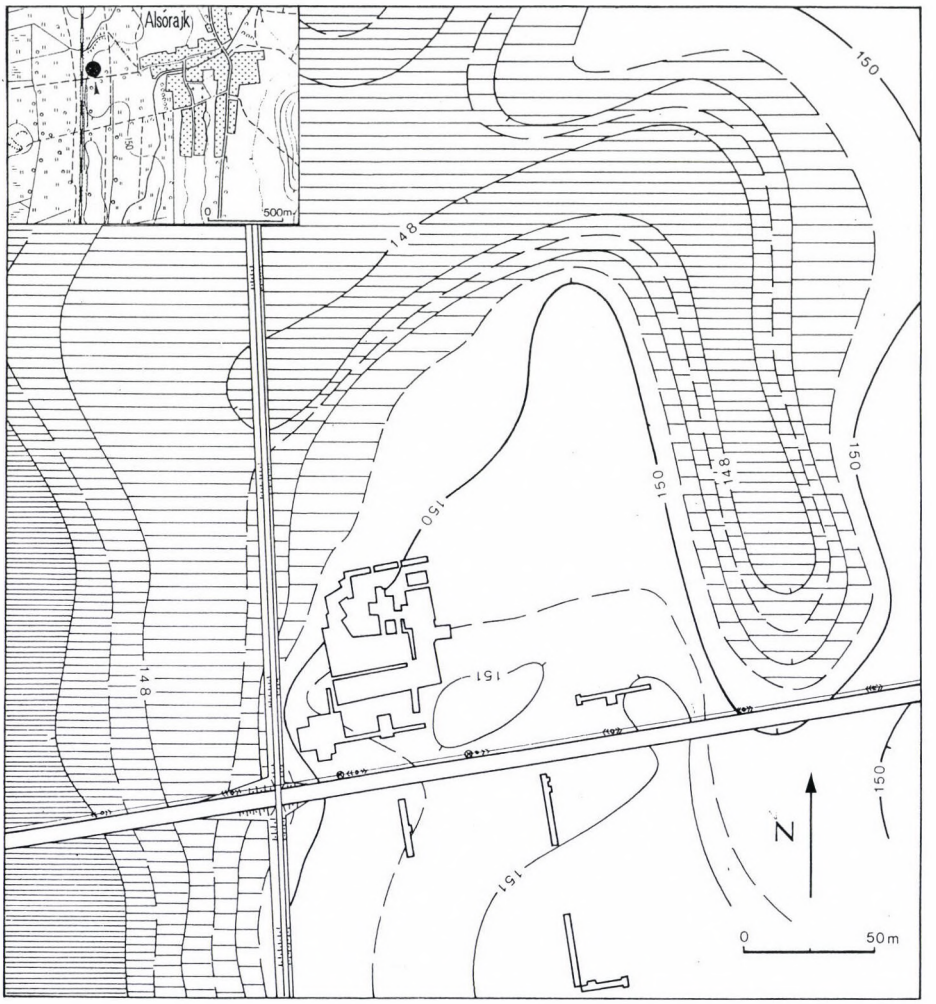
Pl. 179. Börzönce-Temetői dűlő Clay wheels, mould, spindle whorls, loom weights and stone axe. Features 1 (426), O (432, 444, 453, 455-457), P (445-447, 458), L (452), 6 (454), É (459).



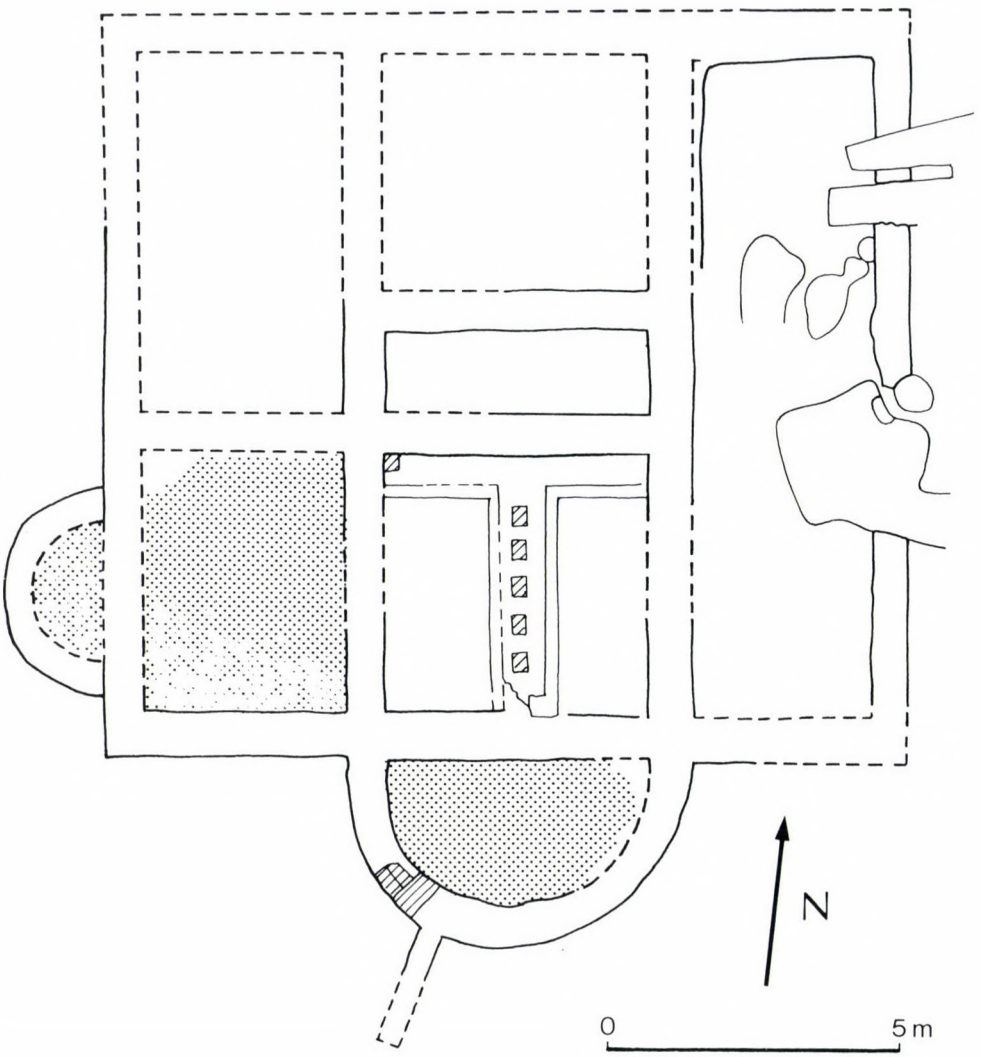
Pl. 180. Börzönce-Temetői dűlő. Pottery finds and ornamented pottery fragments. Features P (329, 427-429), E (367), O (425, 462), L (430), É (431).



Pl. 181. Börzönce-Temetői dűlő. Ornamented potttery fragments and small finds. Features O (425, 432, 437), P (428-429, 433-435, 445-446), 11 (436, 440), 19 (442), A (448-451), J (460, 464-465).



Pl. 182. Alsórajk-Kastélydomb: Contour map of the closer surroundings of the site.



Pl. 183. Alsórajk-Kastélydomb: Building 'A'.



1



2

Pl. 184. Alsórajk-Kastélydomb. 1: Terrazzo pavement in the apse S of building 'A'.
2: Heating channel with the traces of the *hypocaustum* columns in building 'A'.



1

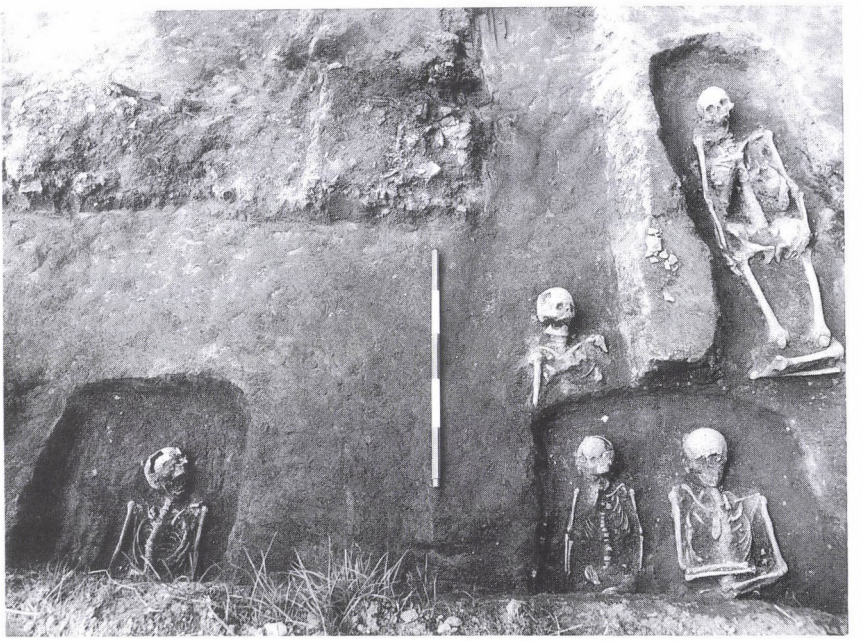


2

Pl. 185. Alsórajk-Kastélydomb. 1: "T" shaped channel of the heating system in building 'A'.
2: The different levels of terrazzo pavement in the apse
and of the heating system.

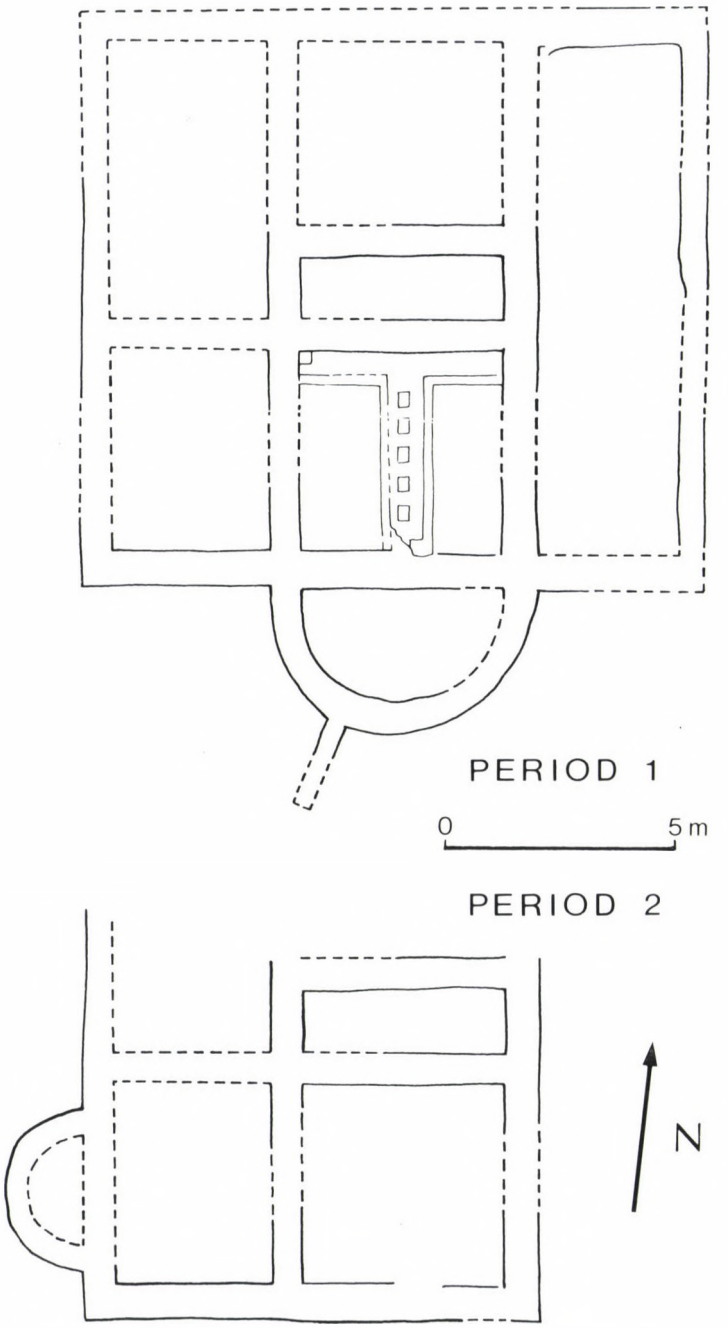


1

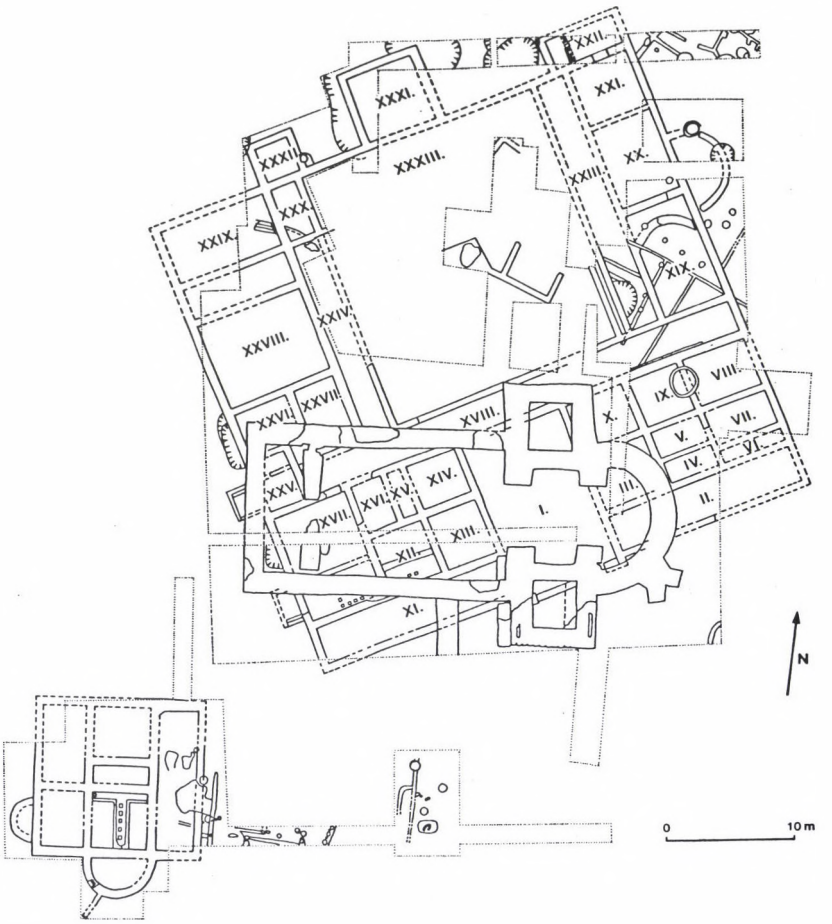


2

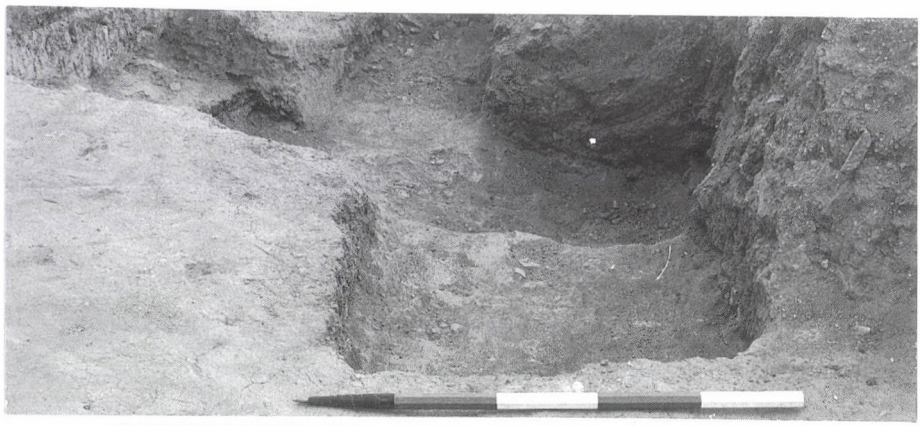
Pl. 186. Alsórajk-Kastélydomb. 1:The trace of a dug wall and stratigraphy in building 'A'.
2: Graves from the Middle Ages around the Roman wall.



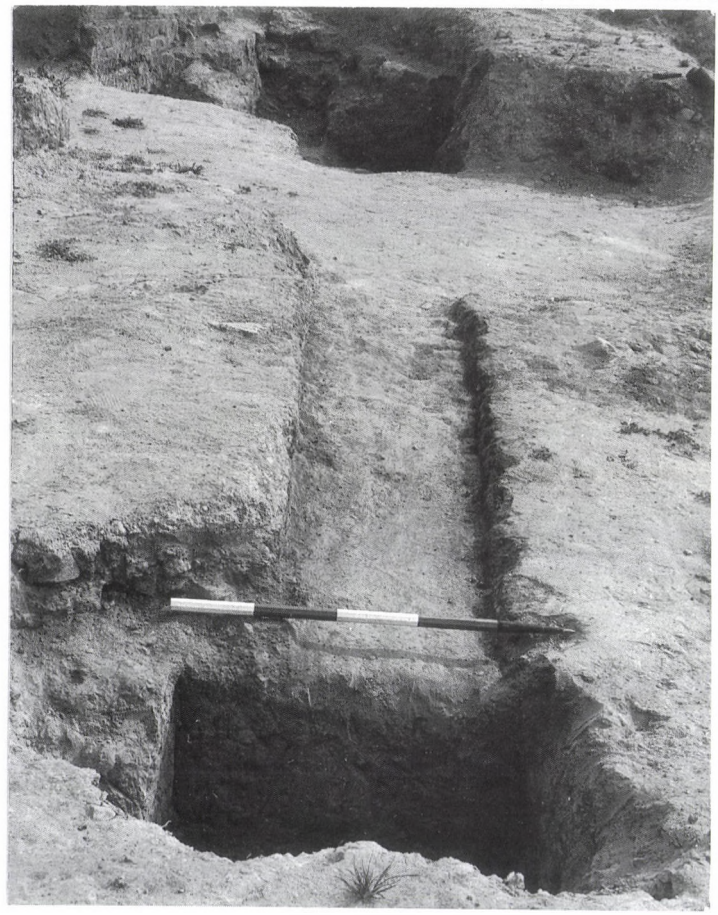
Pl. 187. Alsórajk-Kastélydomb: The two periods of building 'A'.



Pl. 188. Alsórajk-Kastélydomb: Building 'B'.



1



2

Pl. 189. Alsórajk-Kastélydomb: Trace of a doorstep in the gate of building 'B'.



1



2

Pl. 190. Alsórajk-Kastélydomb. 1: Octogonal brick from the portico of the facade.
2: Collapsed octogonal bricks from the portico of the facade.



Pl. 191. Alsórajk-Kastélydomb: The pavement and its foundations in room IX.



1



2

Pl. 192. Alsórajk-Kastélydomb. 1: Remains of a column from the *hypocaustum* of room XVII.
2: *Praefurnia* attached to the W wall of building 'B'.



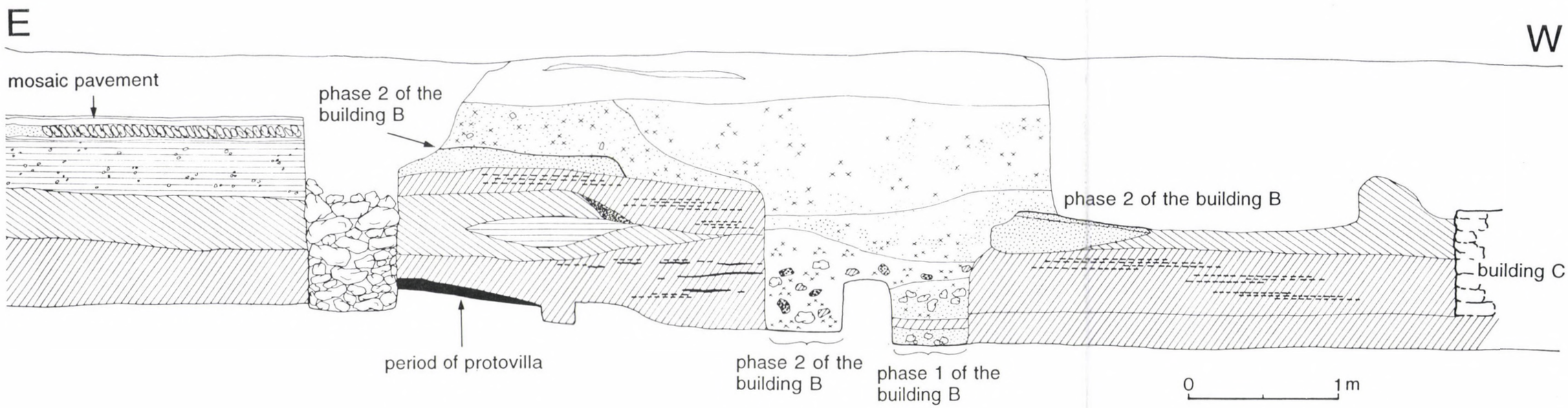
1



2

Pl. 193. Alsórajk-Kastélydomb. 1: Stratigraphy of the walls running along the E side of the *peristylium*.

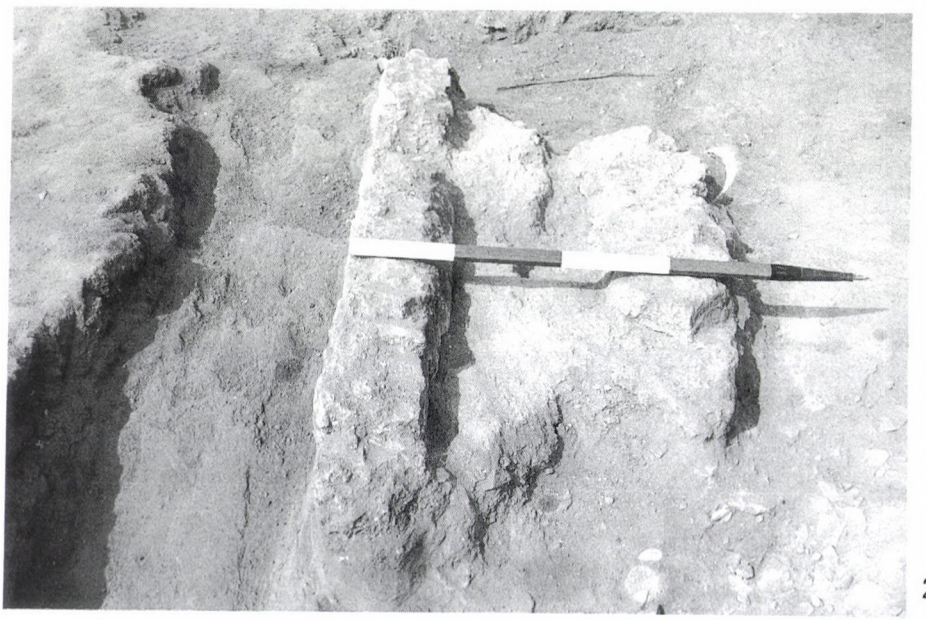
2: Stratigraphic position of the apse of room XIX, and the wall located N of it.



Pl. 194. Alsórajk-Kastélydomb: Stratigraphy of room XIX, and the area to W of it.

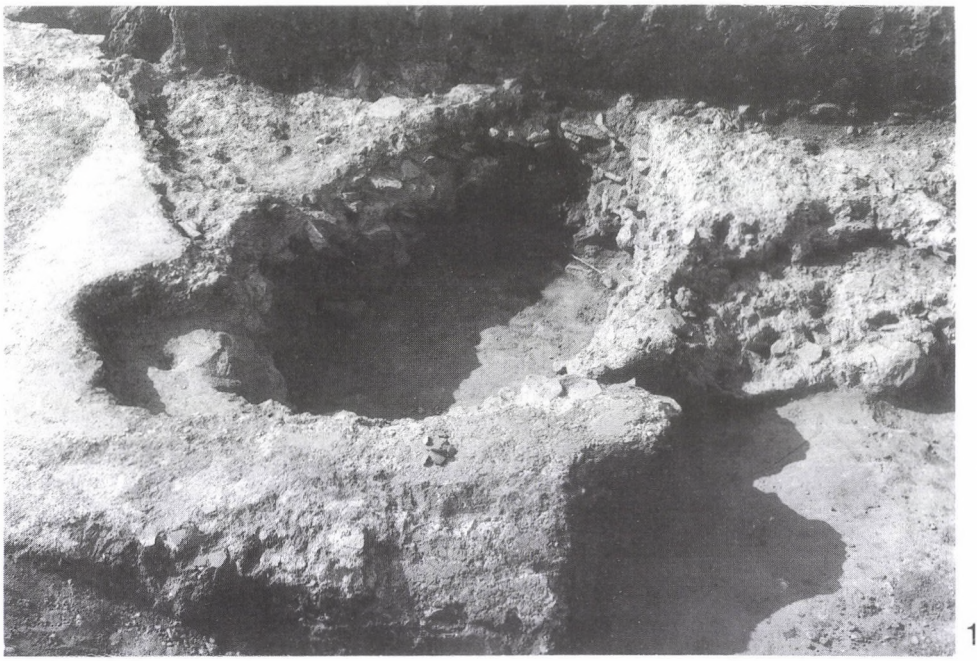


1



2

Pl. 195. Alsórajk-Kastélydomb. 1: NW corner of building 'B'.
2: Fragment of a canal in the NW corner of building 'B'.

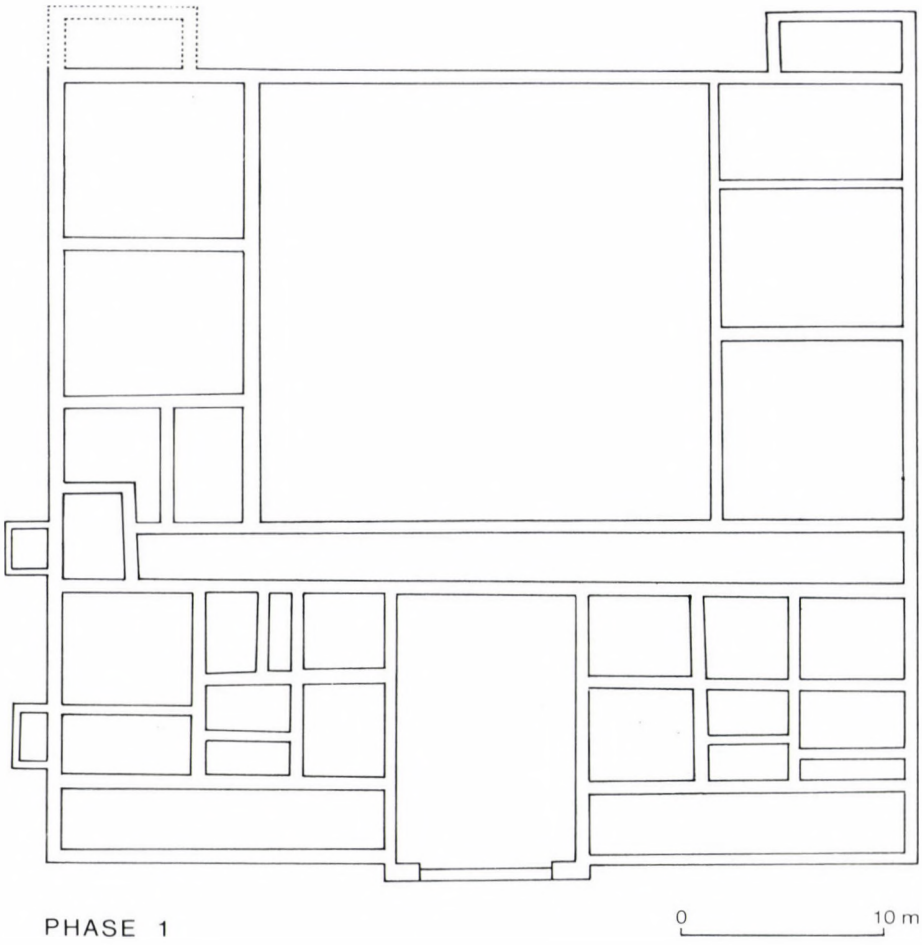


1

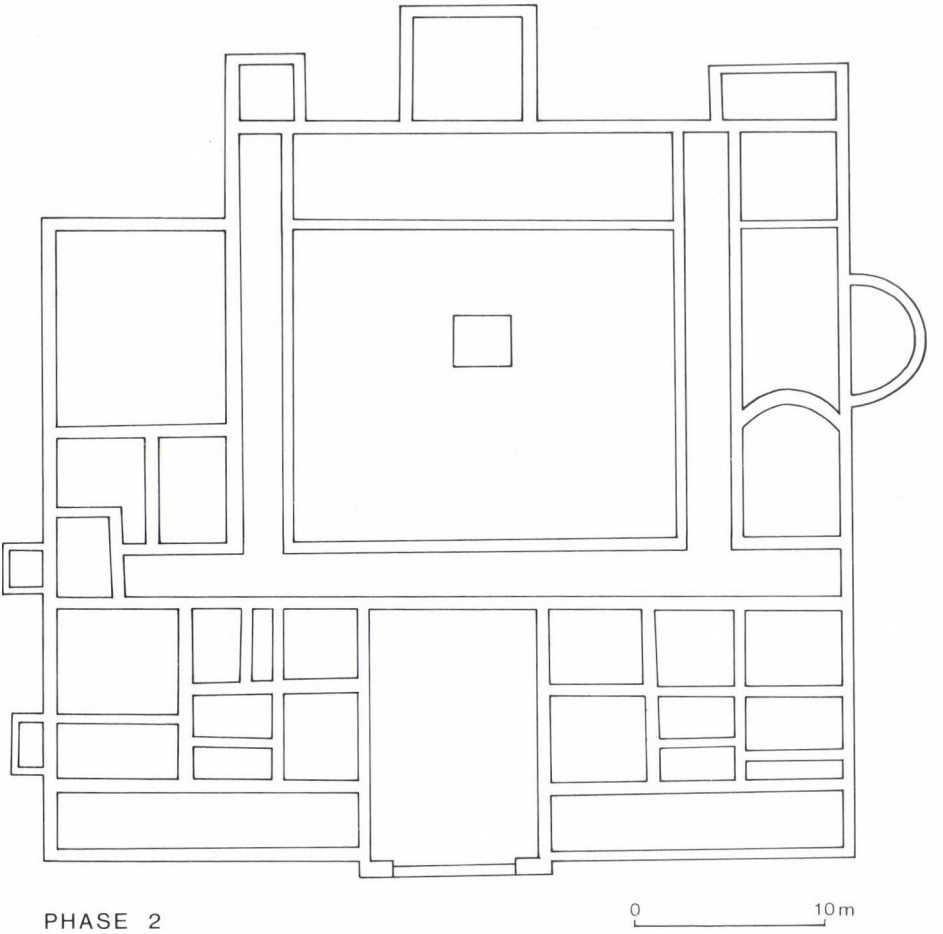


2

Pl. 196. Alsórajk-Kastélydomb. 1: Stone foundation in the centre of the *peristylium*.
2: The N part of building 'B' with the W wall of the *exedra* in the background.



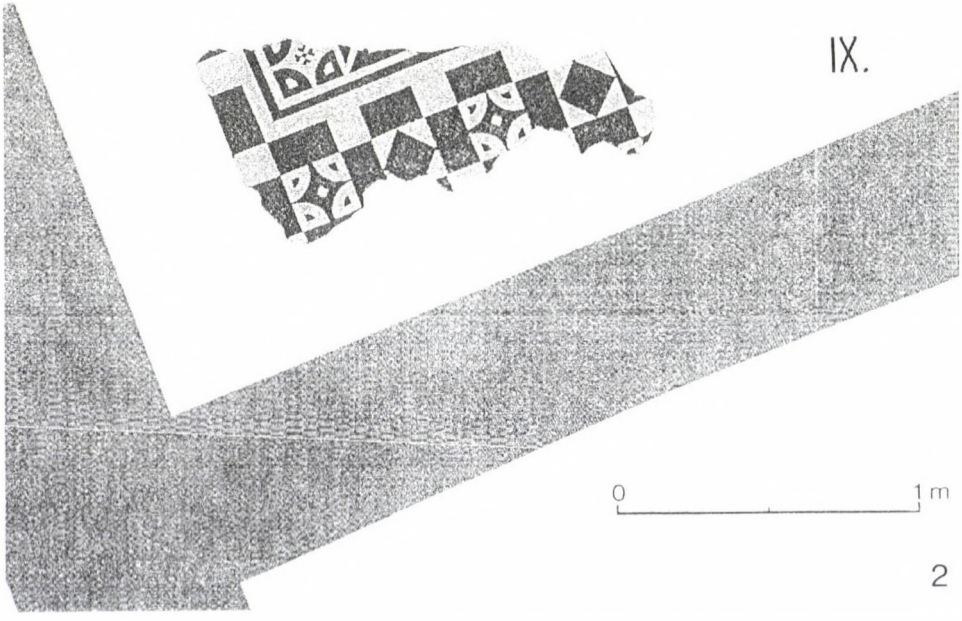
Pl. 197. Alsórajk-Kastélydomb: The reconstructed plane of phase 1 of the building 'B'.



Pl. 198. Alsórajk-Kastélydomb: The reconstructed plane of phase 2 of the building 'B'.

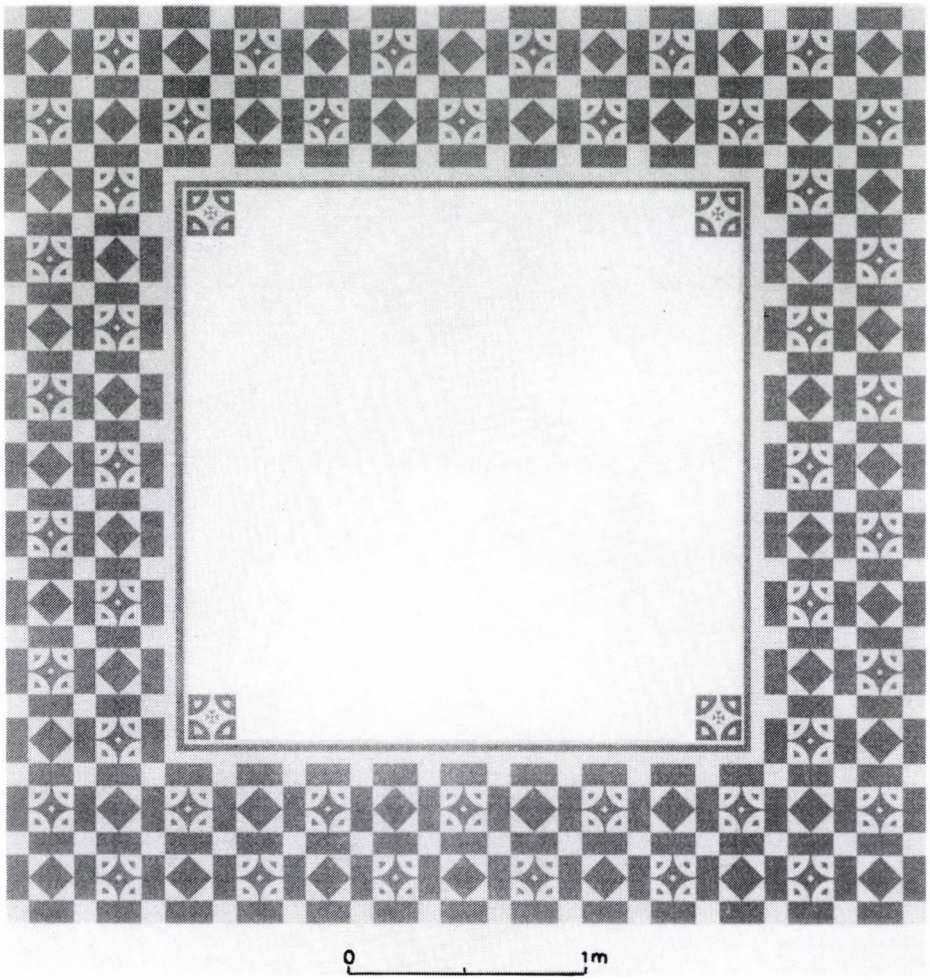


1

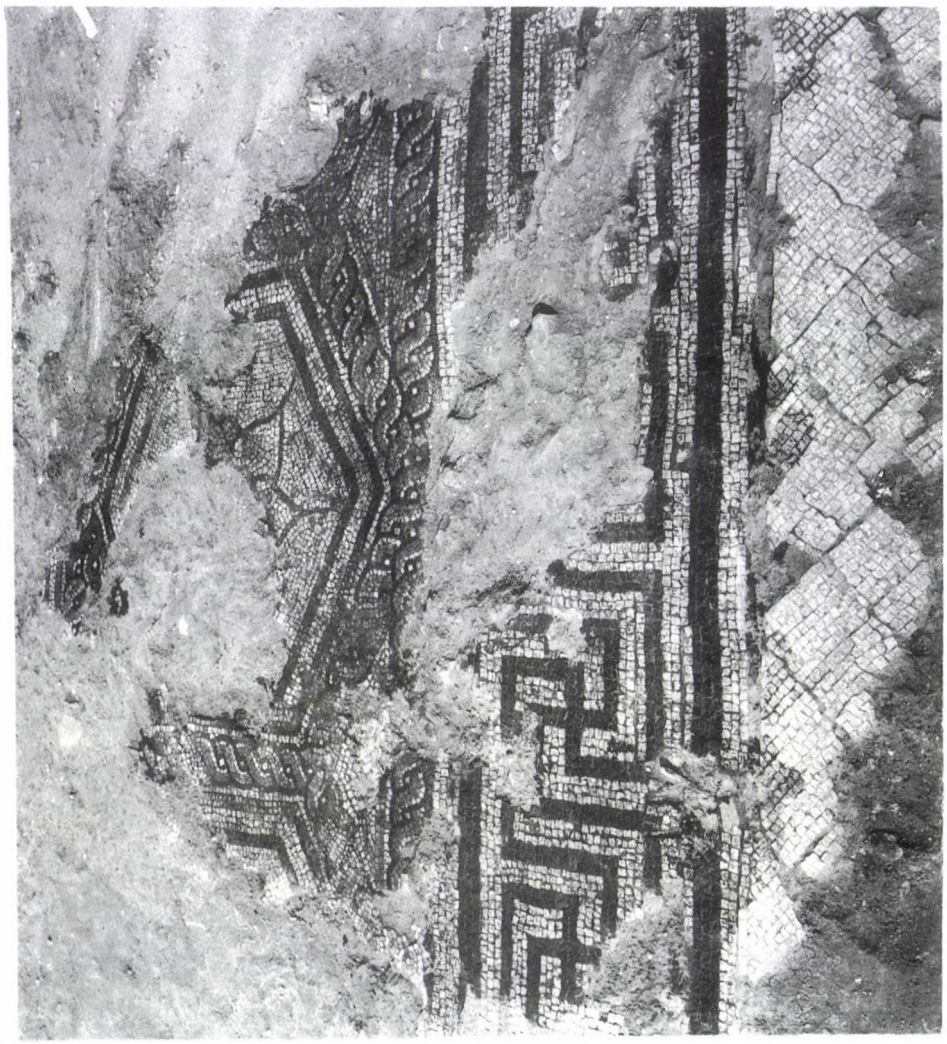


2

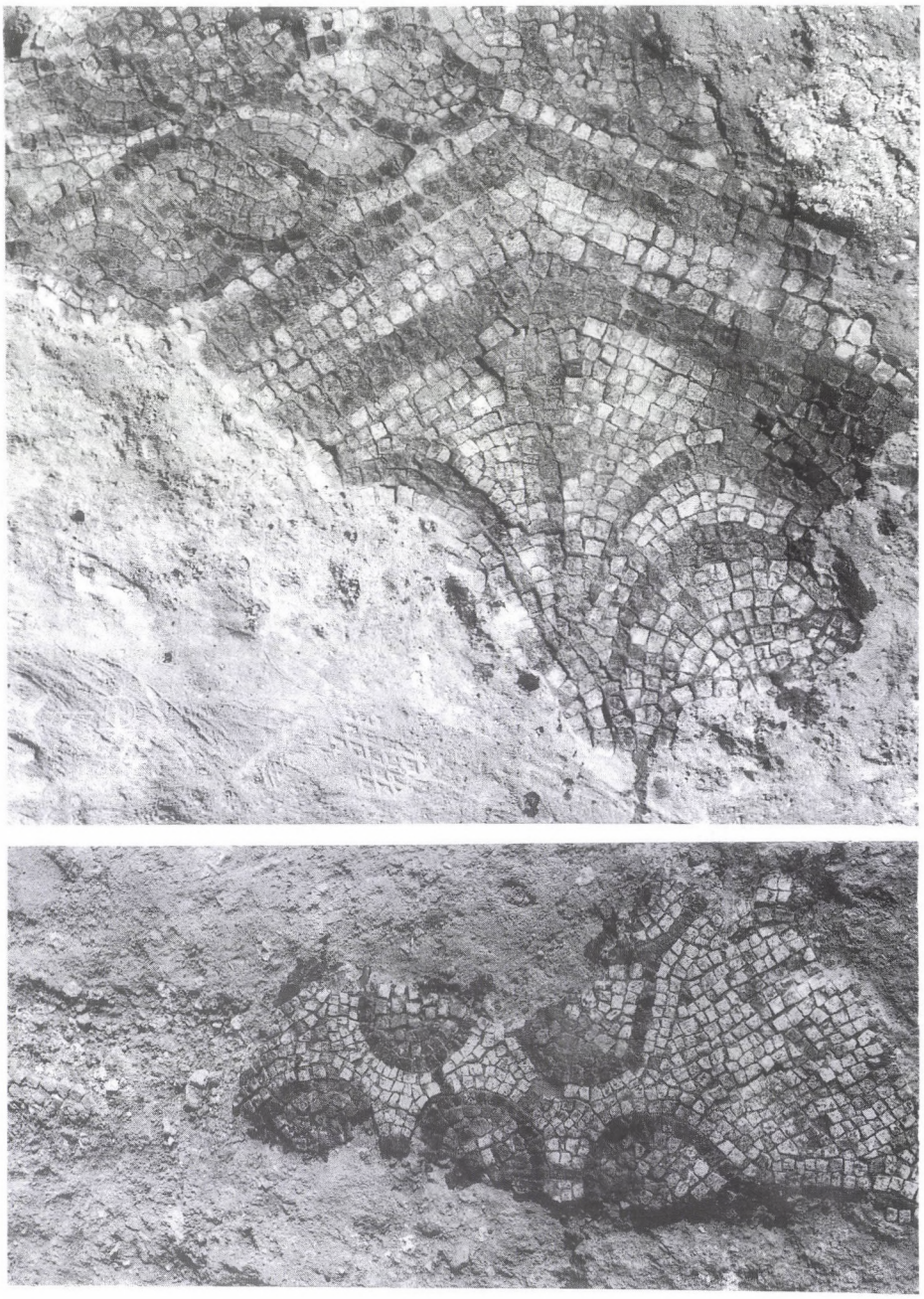
Pl. 199. Alsórajk-Kastélydomb. 1: The mosaic pavement of room IX.
2: Geometric patterns of the pavement in room IX.



Pl. 200. Alsórajk-Kastélydomb: The reconstructable part of the mosaic pavement of room IX.



Pl. 205. Alsórajk-Kastélydomb: The diagonal introductory zone, the border of swastika-meander and a part of the geometric network of *guilloche* from the mosaic pavement of room XIX.



1

2

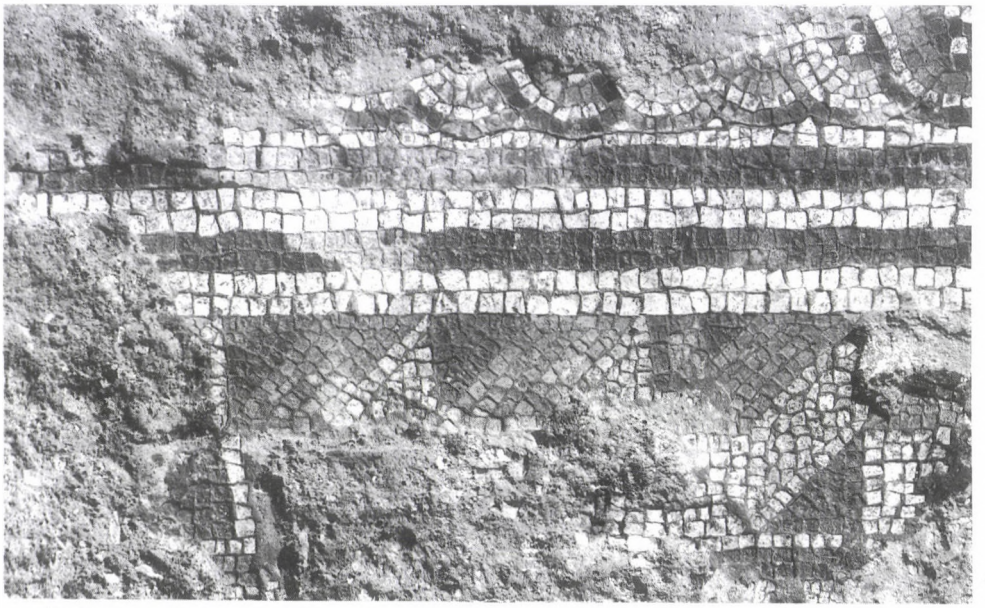
Pl. 206. Alsórajk-Kastélydomb. 1: Motive of a plant from the mosaic pavement of room XIX.
2: Motive of a stylized flower from the mosaic pavement of room XIX.



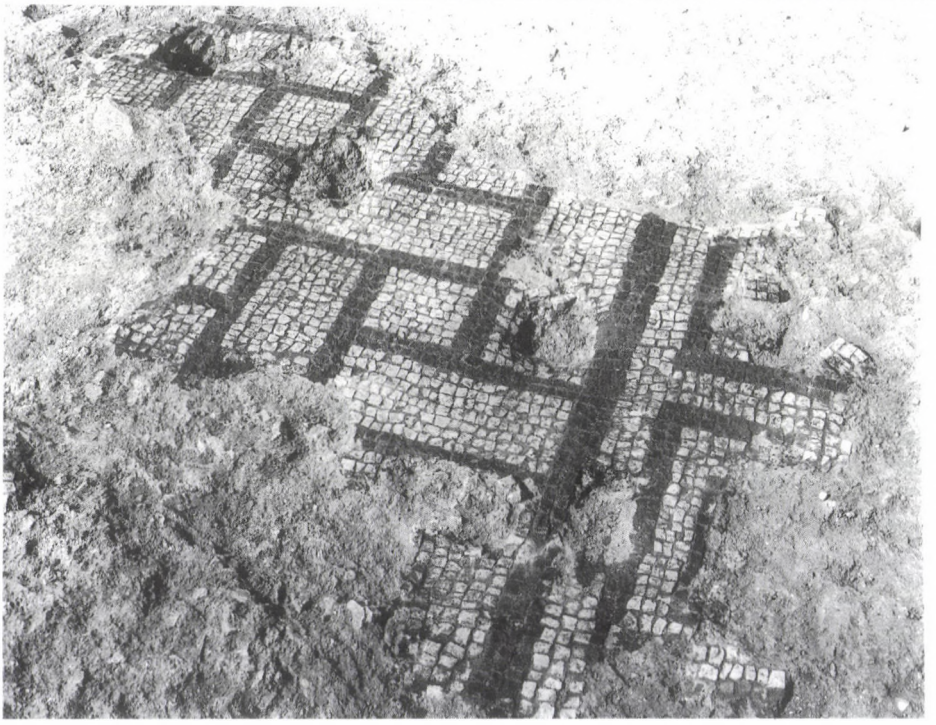
Pl. 201. Alsórajk-Kastélydomb: The mosaic pavement of room XIX from the W.



Pl. 202. Alsórajk-Kastélydomb: The mosaic pavement of room XIX.



1

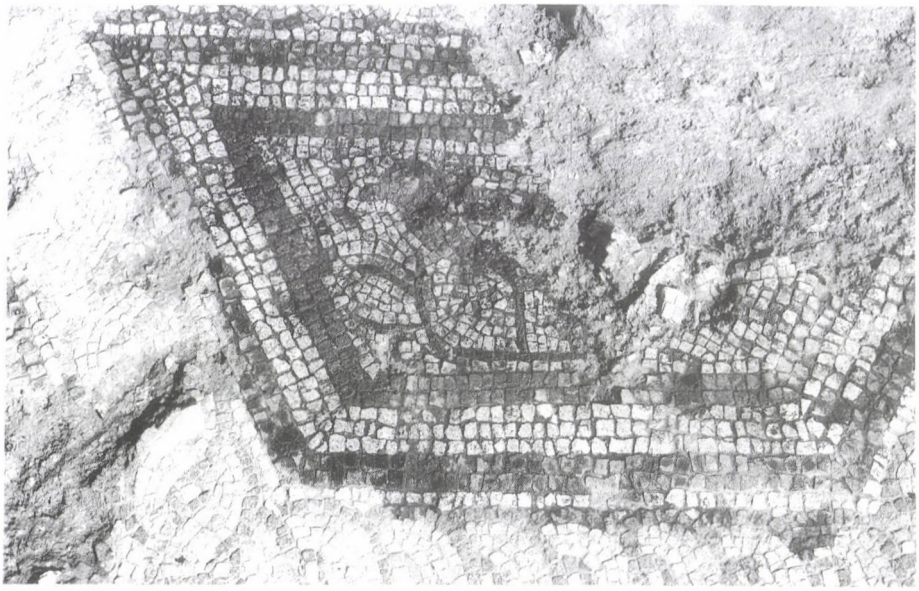


2

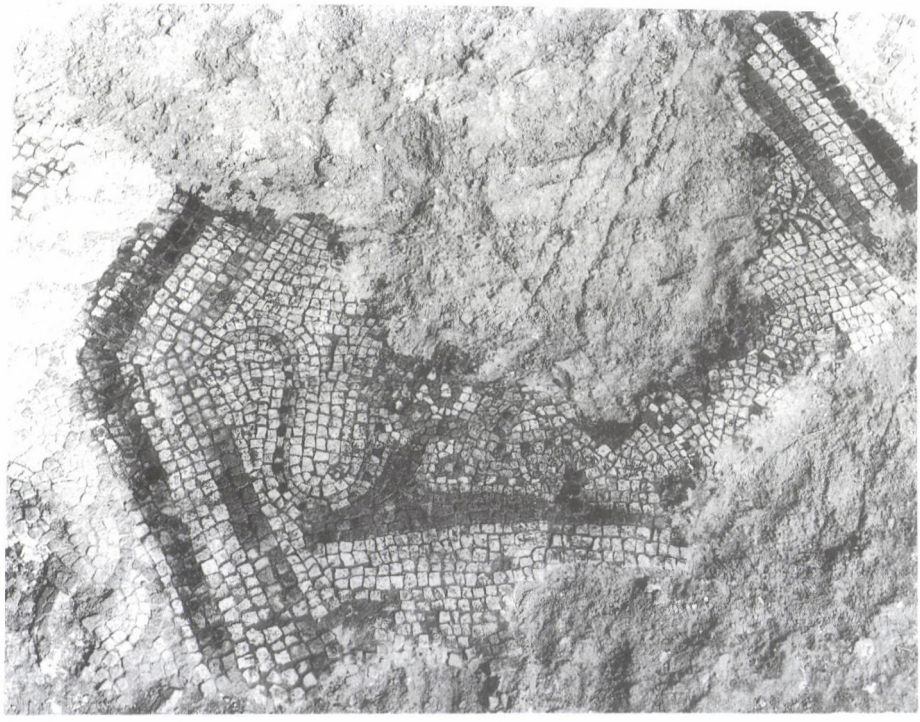
Pl. 203. Alsórajk-Kastélydomb. 1:Geometric motif of the doorstep from the mosaic pavement of the room XIX.
2: Border motive around the *emblema* from the mosaic pavement of room XIX.



Pl. 204. Alsórajk-Kastélydomb: Motive of swastika-meander from the mosaic pavement of room XIX.



1

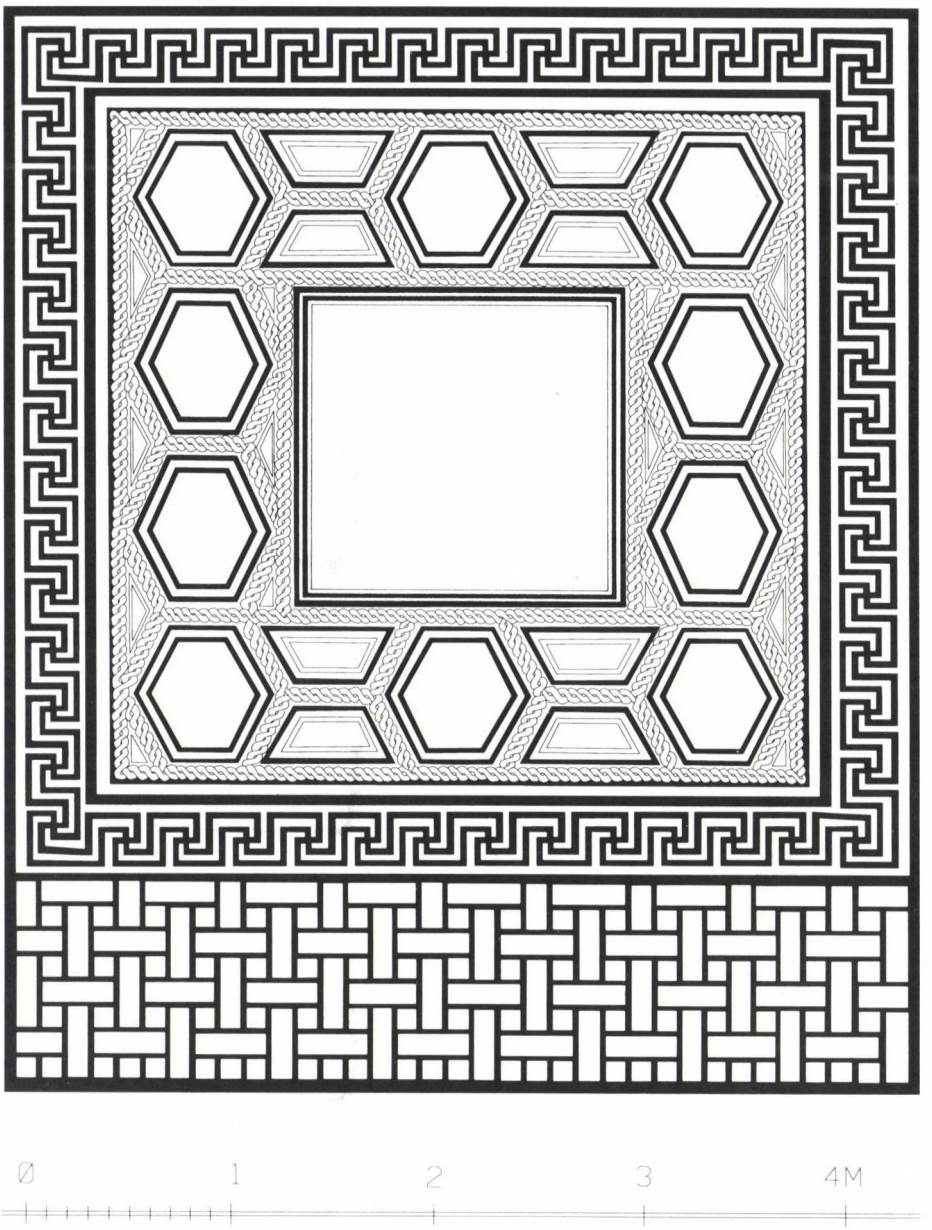


2

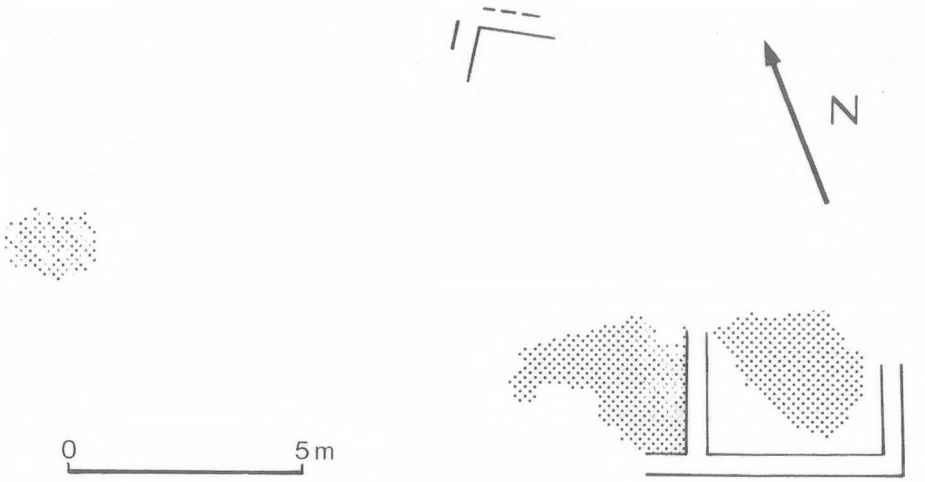
Pl. 207. Alsórajk-Kastélydomb. 1: Motive of a bird from the mosaic pavement of room XIX.
2: Motive of a panther from the mosaic pavement of room XIX.



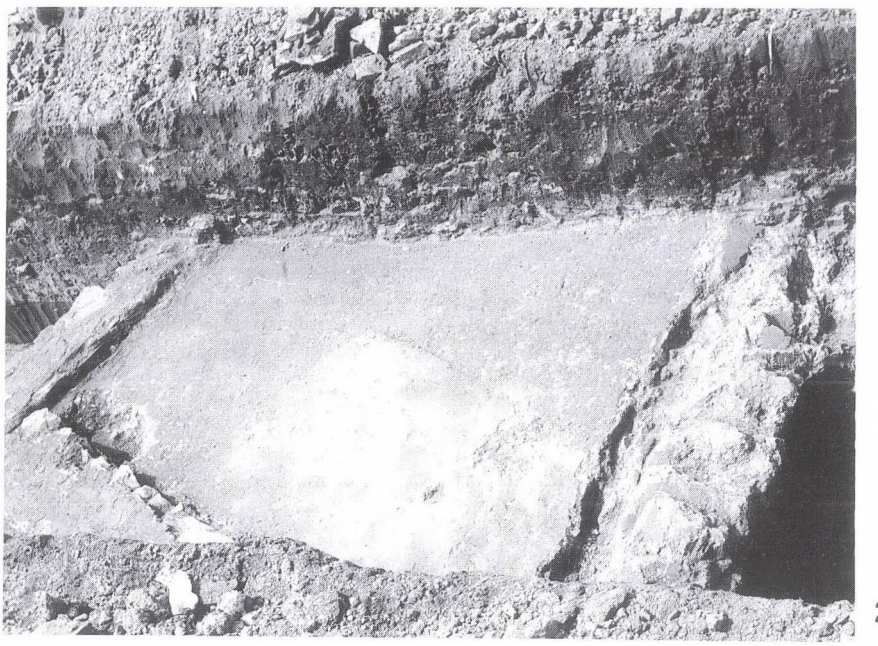
Pl. 208. Alsórajk-Kastélydomb: Head of Okeanos from the mosaic pavement of room XIX.



Pl. 209. Alsórajk-Kastélydomb: Reconstruction of the pavement of the room XIX.



1



2

Pl. 210. Alsórajk-Kastélydomb. 1: Building 'C'.
2: Walls and pavement of building 'C'.

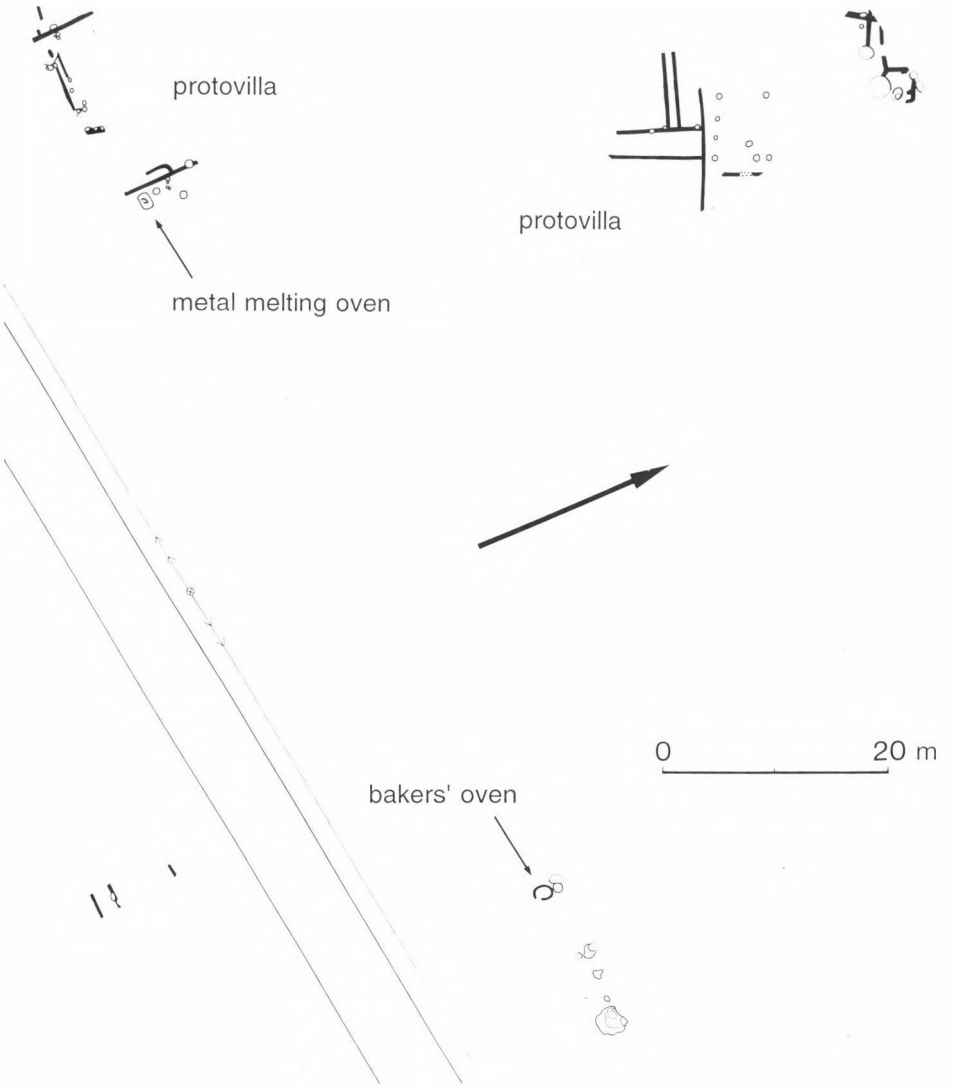


1

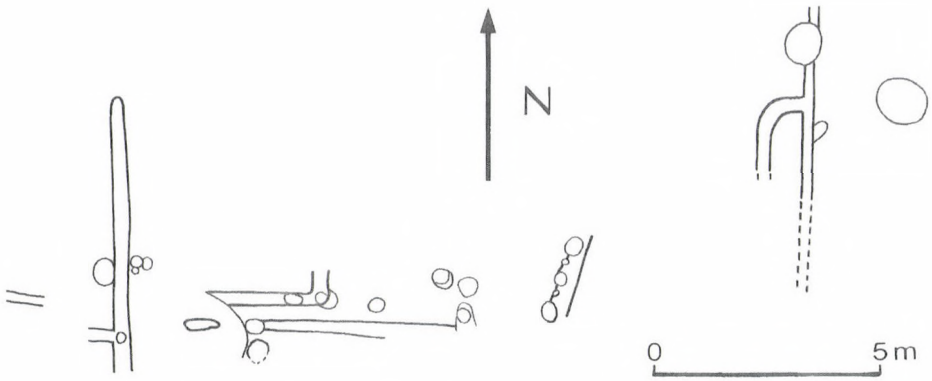


2

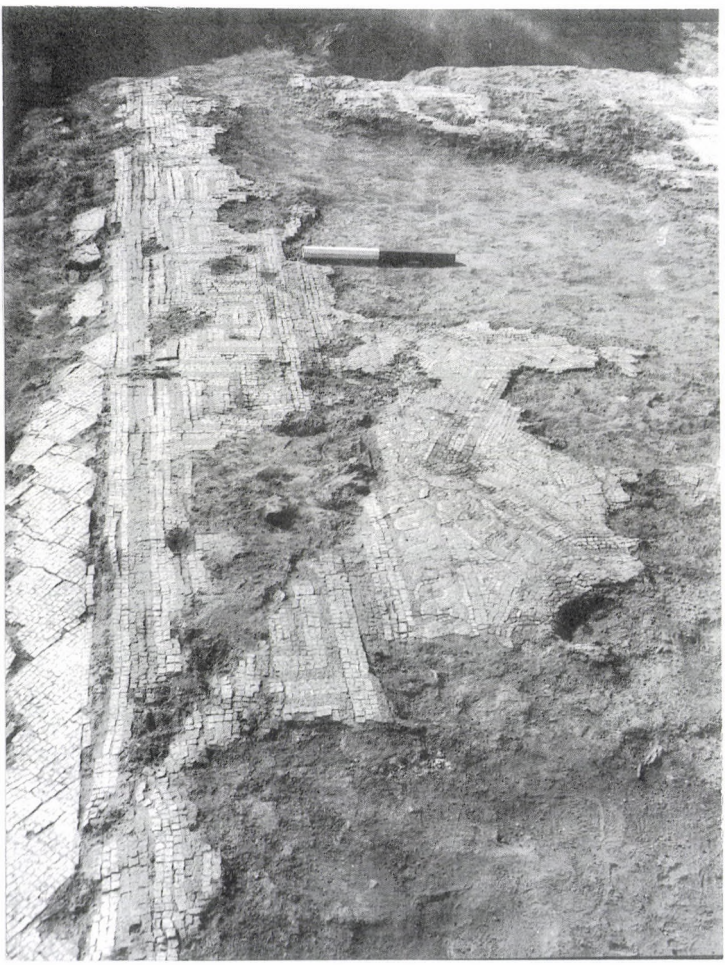
Pl. 211. Alsórajk-Kastélydomb. 1: The wall built with *opus spicatum* technique in building 'C'.
2: The terrazzo pavement of building 'C'.



Pl. 212. Alsórajk-Kastélydomb: The timber walled constructions at the site.

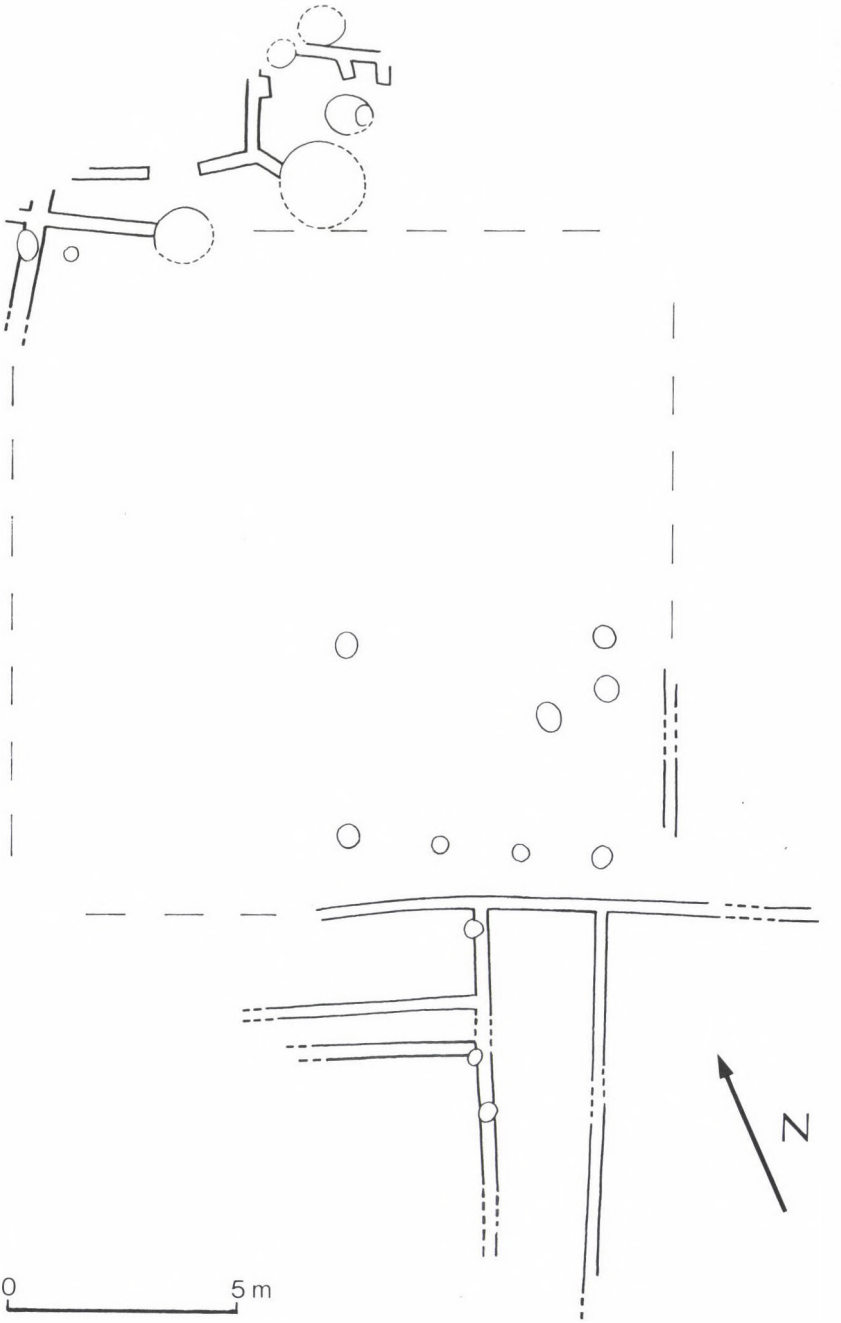


1



2

Pl. 213. Alsórajk-Kastélydomb. 1: Timber constructions E from building 'A.'
2: The mosaic pavement of the room XIX from the N.



Pl. 214. Alsórajk-Kastélydomb: Timber constructions under the NE part of building 'B'.

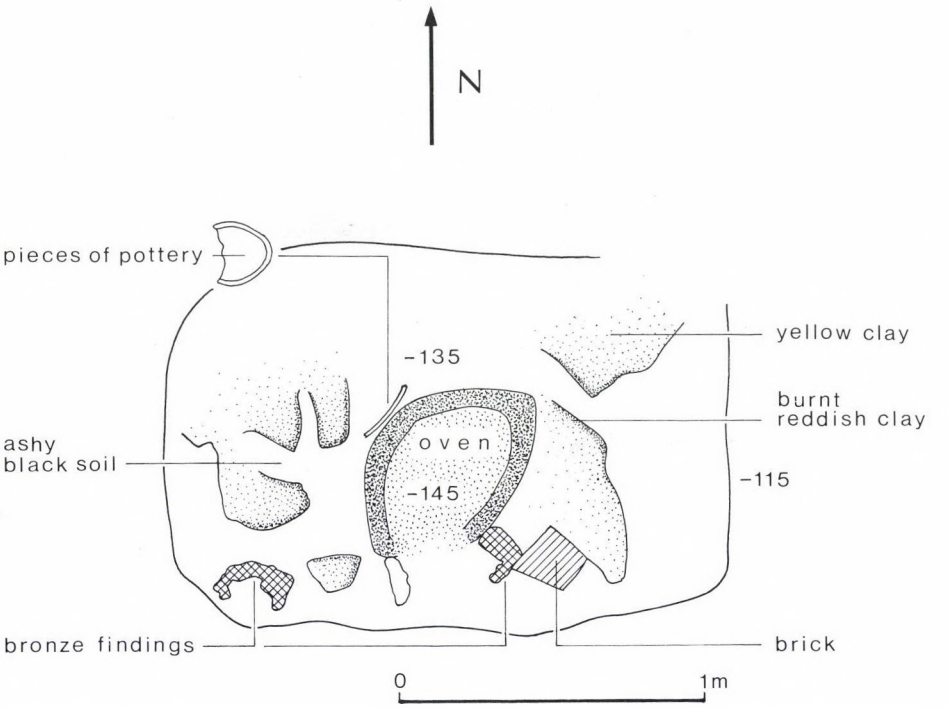


1



2

Pl. 215. Alsórajk-Kastélydomb. 1: Timber walls from the N part of the 'protovilla'.
2: Timber walls from the W part of the 'protovilla'.



Pl. 216. Alsórajk-Kastélydomb: Bronze melting oven S from building 'B'.



1



2

Pl. 217. Alsórajk-Kastélydomb. 1: Traces of the melting oven.
2: Ceramics and bronze finds recovered near the melting oven.



Pl. 218. Alsórajk-Kastélydomb: Bell shaped nails found near the melting oven .

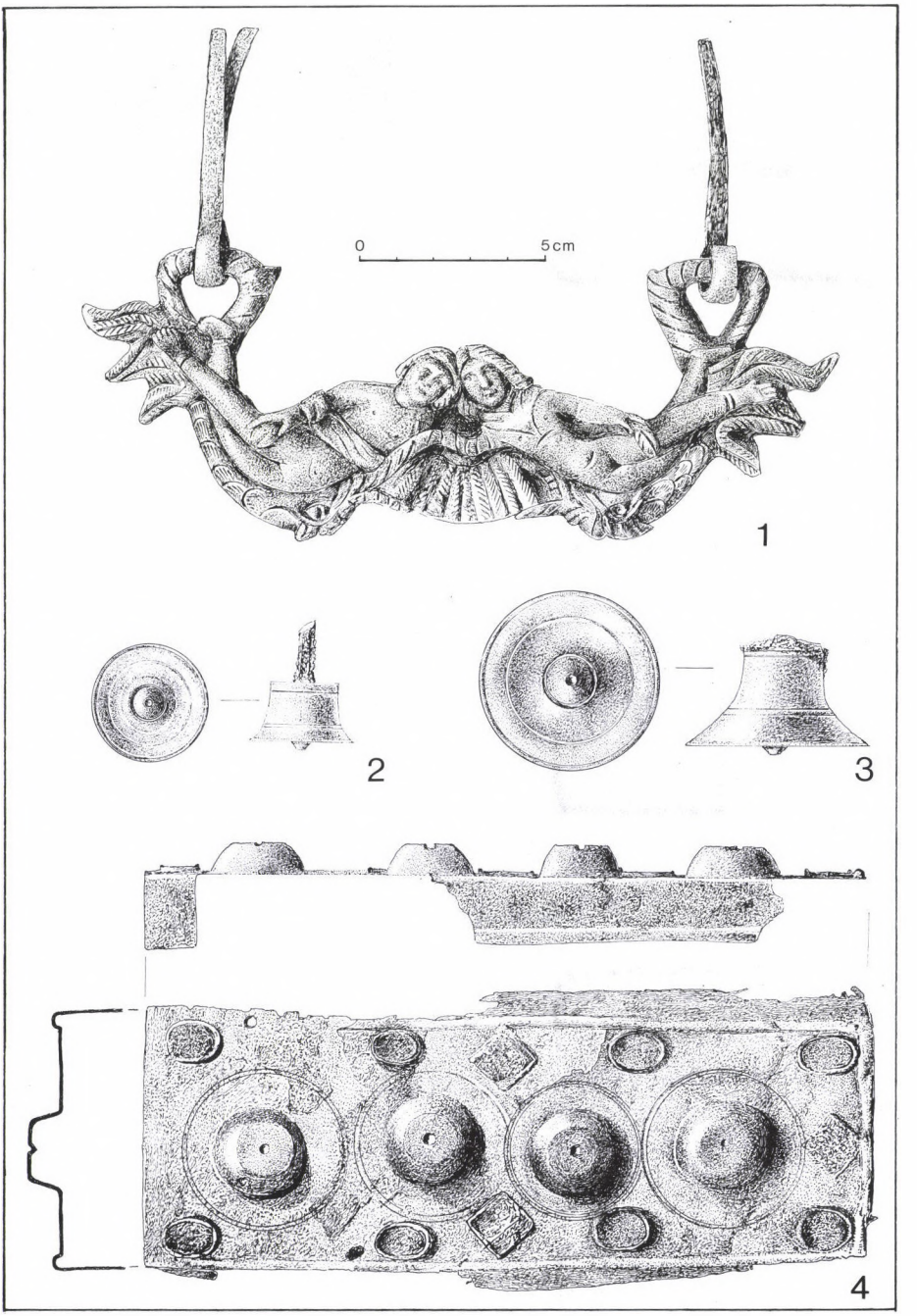


1



2

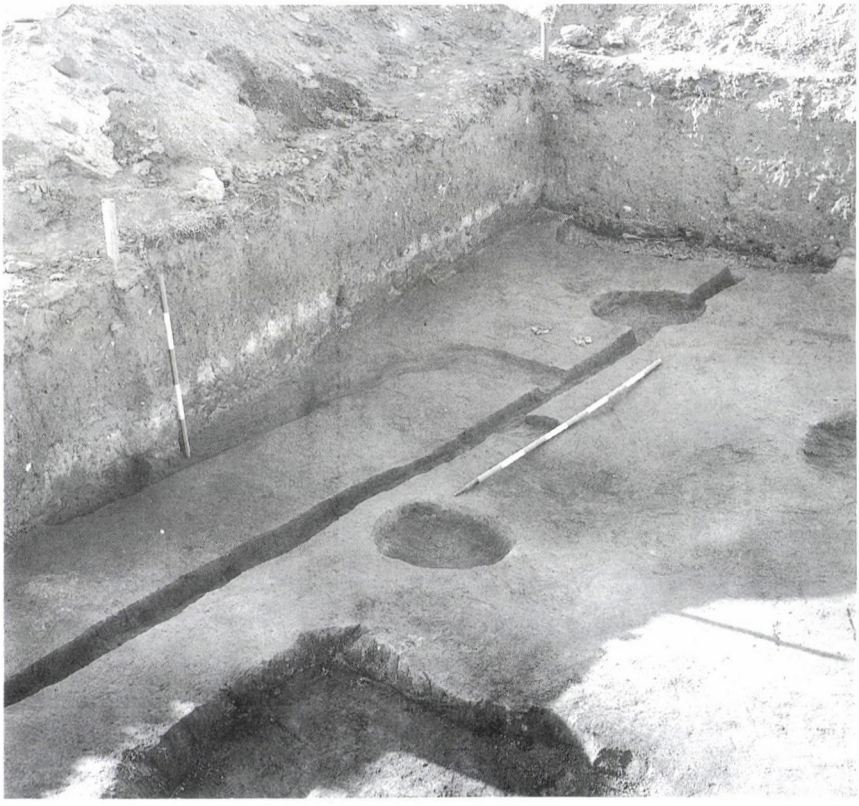
Pl. 219. Alsórajk-Kastélydomb. 1: Bronze plate of a box found near the melting oven .
2: Bronze handle of a box found near the melting oven.



Pl. 220. Alsórajk-Kastélydomb: Bronze findings found near the melting oven.



1



2

Pl. 221. Alsórajk-Kastélydomb. 1: Bronze coins with a piece of lead found near the melting oven.
2: Timber walls W of the melting oven.

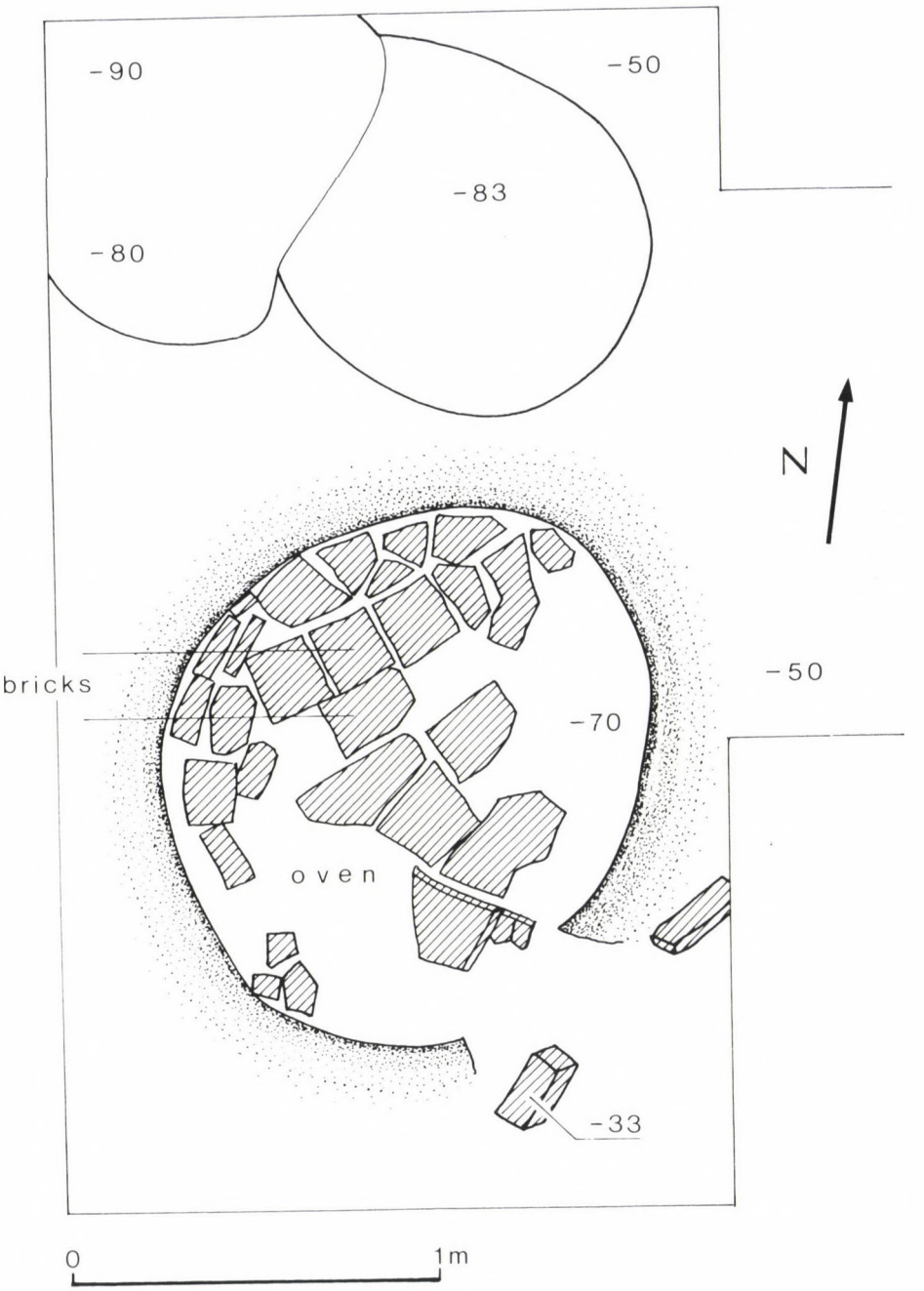


1

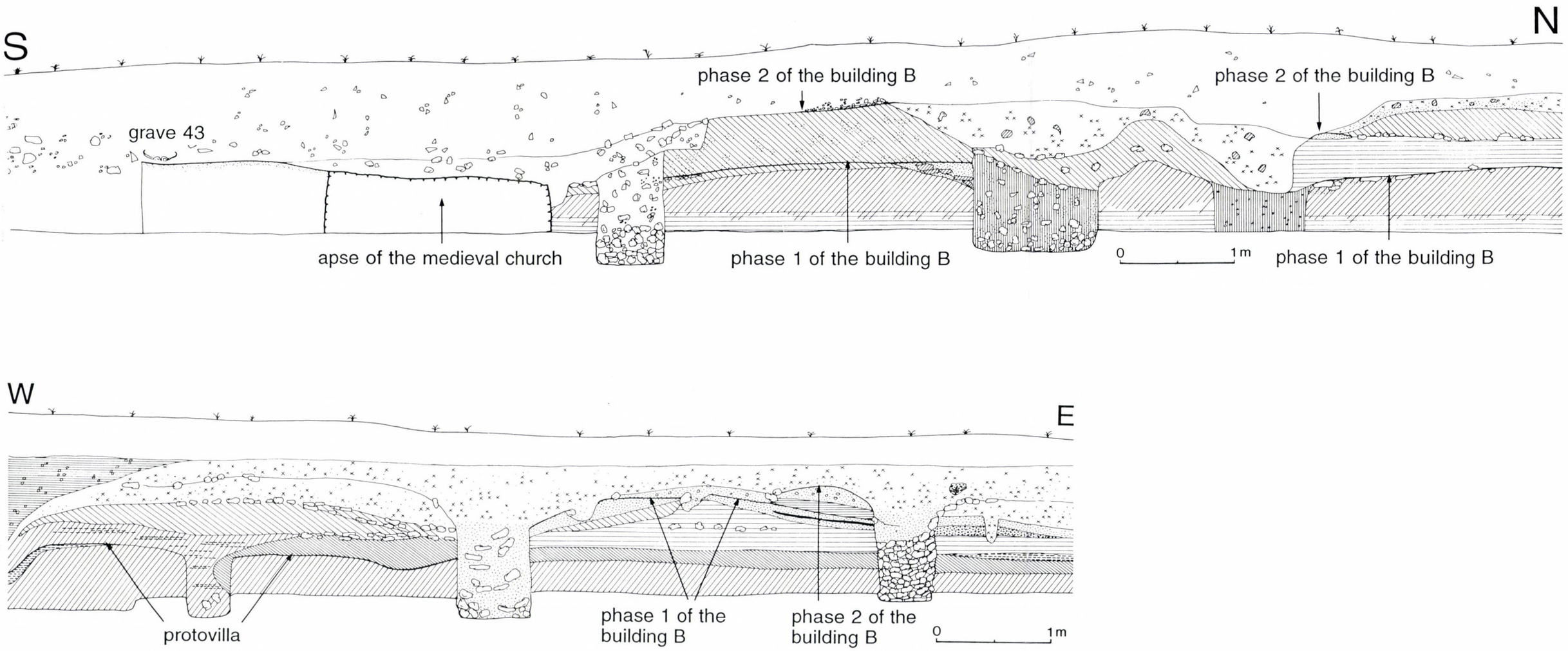


2

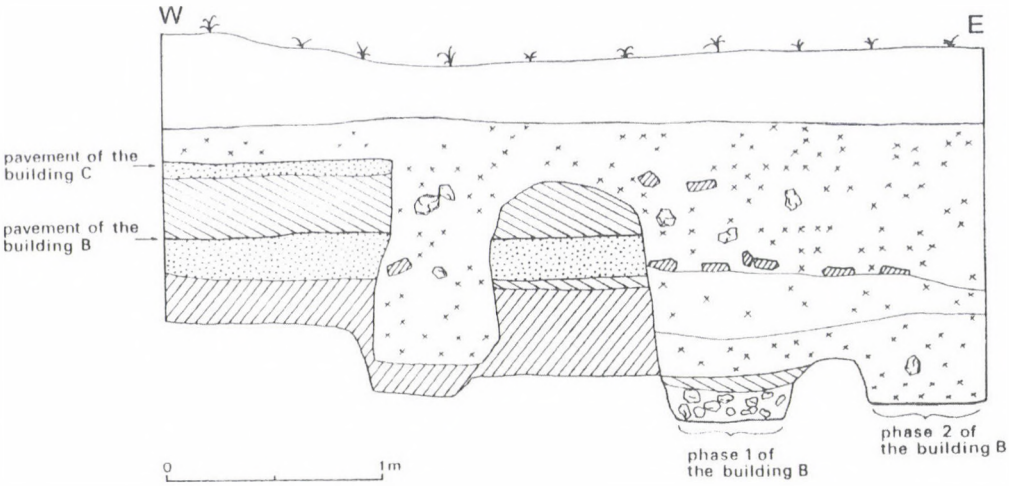
Pl. 222. Alsórajk-Kastélydomb. 1: Partly unearthed baker's oven SE of building 'B'.
2: Baker's oven with secondarily used bricks from a *hypocaustum*.



Pl. 223. Alsórajk-Kastélydomb: The baker's oven.



Pl. 224. Alsórajk-Kastélydomb. 1: S-N stratigraphy from the NE part of building 'B'.
2: E-W stratigraphy from the NE part of building 'B.'



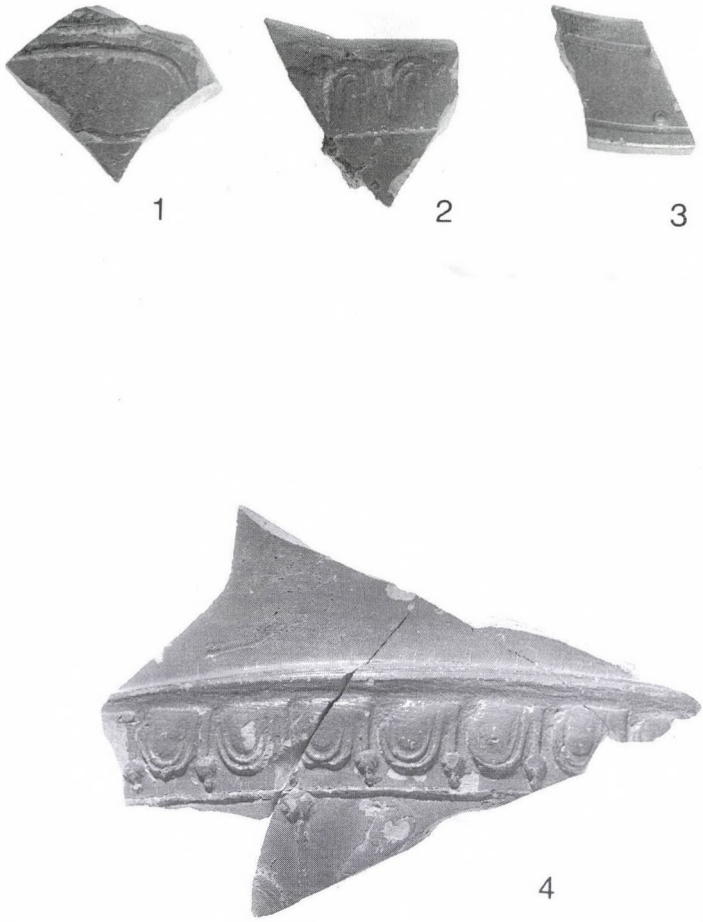
1



2

Pl. 225. Alsórajk-Kastélydomb. 1: Stratigraphy of the different pavements of building 'B' and 'C'.

2: Terrazzo pavement above the walls of building 'B'.



Pl. 226. Alsórajk-Kastélydomb: Dating Samian ware: 1, 2: Hadrianus--Antoninus Pius from under the mosaic pavement of room XIX; 3: Domitianus--Traianus, 4: Nerva--Traianus from the layer of the protovilla.



Pl. 227. Alsórajk-Kastélydomb: Coins.



Pl. 228. 1. Zalaszentbalázs-Szőlőhegyi mező.
Cattle horn core. Top: *norma frontalis*, Bottom: *norma basilaris*.
2. Hahót-Telekszeg. Distal *tibia* fragment from cattle with heavy exostoses on the medial side possibly related to spavin. Square XIV, late medieval ash pit. Medial view.
3. Hahót-Telekszeg. *Acetabulum pervis* fragment from cattle with exostoses and eburnation resulting from arthriic grooving. Square XIV, late medieval ash pit. Distal view.